SOIL BACKGROUND STUDY AND DATA EVALUATION REPORT
Fort Wingate Depot Activity
Gallup, New Mexico

Contract No. W912BV-07-D-2004
Delivery Order DM01

Version 2

Final—October 2010

Prepared for:
U.S. Army Corps of Engineers
Albuquerque District
4101 Jefferson Plaza NE
Albuquerque, New Mexico 87110

Prepared by:
Shaw Environmental, Inc.
2440 Louisiana Blvd. NE, Suite 300
Albuquerque, New Mexico 87110

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.

1. REPORT DATE *(DD-MM-YYYY)*	2. REPORT TYPE	3. DATES COVERED *(From - To)*
13-10-2010	Soil Background Study and Data Evaluation Report	October 2010

4. TITLE AND SUBTITLE

SOIL BACKGROUND STUDY AND
DATA EVALUATION REPORT
Fort Wingate Depot Activity
Gallup, New Mexico

5a. CONTRACT NUMBER

W912BV-07-D-2004

5b. GRANT NUMBER

5c. PROGRAM ELEMENT NUMBER

6. AUTHOR(S)

Jonathan Myers - Shaw

5d. PROJECT NUMBER

133366

5e. TASK NUMBER

Delivery Order DM01

5f. WORK UNIT NUMBER

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)

Shaw Environmental, Inc.
2440 Louisiana Blvd. NE Suite 300
Albuquerque, NM 87110

8. PERFORMING ORGANIZATION REPORT NUMBER

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)

U.S. Army Corps of Engineers
Albuquerque District
4101 Jefferson Plaza NE
Albuquerque, New Mexico 87110

10. SPONSOR/MONITOR'S ACRONYM(S)

11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION/AVAILABILITY STATEMENT

13. SUPPLEMENTARY NOTES

14. ABSTRACT

Shaw Environmental, Inc. (Shaw) performed soil sampling as part of a Background Study conducted at the Fort Wingate Depot Activity (FWDA), located in Gallup, New Mexico. The Background Study was performed for the U.S. Army Corps of Engineers (USACE), Albuquerque District, under Contract Number W912BV-07-D-2004, Delivery Order DM01. The activities described in this report provided representative soil samples of sufficient quantity and quality to determine background concentrations of the 23-element Target Analyte List (TAL) metals in soil at the FWDA. The results from the Background Study will be used to make a statistical determination on the nature and occurrence of inorganic constituents in soil at the FWDA based on site-to-background comparisons.

15. SUBJECT TERMS

Soil, background, statistical evaluation, eco zone

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT	b. ABSTRACT	c. THIS PAGE			Dale Flores
Unclassified	Unclassified	Unclassified	None	351	19b. TELEPHONE NUMBER *(Include area code)* 505-262-8948

NEW MEXICO
ENVIRONMENT DEPARTMENT

Hazardous Waste Bureau

2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6303
Phone (505) 476-6000 Fax (505) 476-6030
www.nmenv.state.nm.us

BILL RICHARDSON
Governor

DIANE DENISH
Lieutenant Governor

RON CURRY
Secretary

SARAH COTTRELL
Deputy Secretary

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

November 23, 2010

Mark Patterson
Ravenna Army Ammunition Plant
Building 1037
8451 State Route 5
Ravenna, OH 44266

Steve Smith
CESWF-PER-DD
819 Taylor Street, Room 3A12
PO Box 17300
Fort Worth, TX 76102-0300

RE: APPROVAL
SOIL BACKGROUND STUDY AND
DATA EVALUATION REPORT (VERSION 2)
FORT WINGATE DEPOT ACTIVITY, NEW MEXICO
EPA ID# NM6213820974
FWDA-10-004

Dear Messrs. Patterson and Smith:

The New Mexico Environment Department (NMED) received the Department of the Army's (the Permittee) *Soil Background Study and Data Evaluation Report (Version 2)* (Report), dated October 2010 submitted pursuant to Section VII.L of the Fort Wingate Hazardous Waste Facility Permit. Based on the information presented in the Report, NMED hereby approves the Report with the following clarifications.

In Appendix A (Annotation of Written Comments), Comment 3, the Permittee indicated that pooling of the background data was acceptable and that no changes to the Report were made. The data for the Ponderosa Woodland ecological (eco) zone appeared slightly elevated for some metals compared to the other eco zones. The intent of NMED's comment was to allow the Facility the option to conduct a refined comparison (e.g., tiered approach) of site data to background for this specific zone if, upon first evaluation, the site data were found to exceed background levels. The Permittee did not use a tiered approach and intends to apply the single

pooled background dataset. NMED concurs with the approach used for this study; however, the Permittee must understand that if there are exceedances in this eco zone, the Permittee will be required to retain the metals as potential contaminants.

Additionally, in Appendix A (Annotation of Written Comments), Comment 6, based on the Permittee's comment resolution, it appears a more rigorous test for outliers was conducted as requested by NMED. Based on the results, the test confirmed that there is a potential outlier for arsenic. In the comment resolution, the Permittee states that an outlier may be representative of natural background, but may be unusually high. While it is preferred that this particular datum is removed as an outlier and the background statistics for arsenic be recalculated, given that the datum did not significantly change the background reference value, no changes at this time are necessary. However, for future studies, the Permittee must ensure that outliers are removed from the data set prior to calculating statistics.

If you have any questions regarding this letter, please contact Tammy Diaz-Martinez of at (505) 476-6056.

Sincerely,

John E. Kieling
Manager
Permits Management Program

cc: Tammy Diaz-Martinez, NMED HWB
Dave Cobrain, NMED HWB
John Kieling, NMED HWB
Laurie King, U.S EPA Region 6
Chuck Hendrickson, U.S. EPA Region 6
Sharlene Begay-Platero, Navajo Nation
Eugenia Quintana, Navajo Nation
Steve Beran, Zuni Pueblo
Edward Wemytewa, Zuni Pueblo
Clayton Seoutewa, Southwest Region BIA
Rose Duwyenie, Navajo BIA
Judith Wilson, BIA
Eldine Stevens, BIA
Ben Burshia, BIA

File: FWDA 2010 and Reading
FWDA-10-004

Document Distribution

Organization (Name)	Number of Printed Copies	Number of Digital Copies
DOI/BLM (Ben Burshia)	0	1
BIA-NR (Rose Duywenie)	1	2
BIA-Z (Clayton Seoutewa)	1	1
DOI/BIA (Angela Kelsey)	0	1
FWDA (Richard Cruz)	2	2
NN (Sharlene Begay-Platero)	1	7
N/C (Charles Long)	1	1
N/EPA (Eugenia Quintana)	0	1
NMED/HWB (James Bearzi)	2	2
NMED/HWB (Dave Cobrain)	Included with James Bearzi	
NMED (Tammy Diaz-Martinez)	2	2
POZ (Steve Beran)	0	1
POZ (Edward Wemytewa,)	1	8
POZ (Marisa Yuselew)	Included with Edward Wemytewa	
USA (Cristy Elser)	1	1
BRACD (Bill O'Donnell)	0	1
USA (Eldine Stevens)	0	1
USA (Judith Wilson)	0	1
USACE (David Henry)	1	1
USACE (Neal J. Navarro)	0	1
USACE SWF (Steven Smith)	1	1
USAEC (Mike Kipp)	0	1
US/EPA (Chuck Hendrickson)	1	1

BIA-NR = *Bureau of Indian Affairs – Navajo representative.*

BIA-Z = *Bureau of Indian Affairs – Zuni representative.*

BRACD = *U.S. Army Base Realignment and Closure Division.*

DOI/BIA = *Department of Interior Bureau of Indian Affairs.*

DOI/BLM = *Department of Interior Bureau of Land Management.*

FWDA = *Fort Wingate Depot Activity.*

N/C = *Navajo Council.*

N/EPA = *Navajo Environmental Protection Agency.*

NMED = *New Mexico Environment Department.*

NMED/HWB = *New Mexico Environment Department Hazardous Waste Bureau.*

NN = *Navajo Nation.*

POZ = *Pueblo of Zuni.*

US/EPA = *U.S. Environmental Protection Agency Region 6.*

USA = *U.S. Army.*

USACE SWF = *U.S. Army Corps of Engineers – Fort Worth District.*

USACE = *U.S. Army Corps of Engineers.*

USAEC = *U.S. Army Environmental Command.*

Table of Contents

Table of Contents (continued)

List of Figures

List of Plates

List of Tables

List of Photos

List of Appendices

Acronyms and Abbreviations

ADR	Automated Data Review
amsl	above mean sea level
bgs	below ground surface
BRAC	Base Realignment and Closure
BIA	Bureau of Indian Affairs
CD	compact disc
CV	coefficient of variation
Eco Zone	ecologic zone
EDD	electronic data deliverable
EDMS	Environmental Data Management System
EPA	U.S. Environmental Protection Agency
°F	degrees Fahrenheit
FWDA	Fort Wingate Depot Activity
GPS	global positioning system
KW	Kruskal-Wallis
MDL	method detection limit
mg/kg	milligram(s) per kilogram
Microbac	Microbac Laboratories, Inc.
MQO	measurement quality objective
NMED	New Mexico Environment Department
PDF	portable document format
QA	quality assurance
QC	quality control
RL	reporting limit
RPD	relative percent difference
Shaw	Shaw Environmental, Inc.
SSL	Soil Screening Level
TAL	Target Analyte List
UCL	upper confidence limit
USACE	U.S. Army Corps of Engineers
UTL	upper tolerance limit

1.0 Introduction

Shaw Environmental, Inc. (Shaw) performed soil sampling as part of a Background Study conducted at the Fort Wingate Depot Activity (FWDA), located in Gallup, New Mexico. The FWDA operates under a Resource Conservation and Recovery Act Hazardous Waste Facility Permit (U.S. Environmental Protection Agency [EPA] ID No. NM6213820974) issued by the New Mexico Environment Department (NMED), (Figure 1-1). The Background Study was performed for the U.S. Army Corps of Engineers (USACE), Albuquerque District, under Contract Number W912BV-07-D-2004, Delivery Order DM01. This Background Study included advancing soil borings, collecting and analyzing surface and subsurface soil samples from each soil boring, surveying each soil boring location using a hand-held global positioning system (GPS), and performing soil boring abandonment. The activities described in this report provided representative soil samples of sufficient quantity and quality to determine background concentrations of the 23-element Target Analyte List (TAL) metals in soil at the FWDA. The USACE is conducting this Background Study under the authority of Base Realignment and Closure (BRAC).

1.1 Purpose and Objectives

The results from the Background Study will be used to make a statistical determination on the nature and occurrence of inorganic constituents in soil at the FWDA based on site-to-background comparisons. The procedures and methods used in the Background Study are consistent with the *Work Plan, Background Study and Data Evaluation, Fort Wingate Depot Activity, Gallup, New Mexico, Contract No. W912BV-07-D-2004, Delivery Order DM01* (hereinafter referred to as the Background Study Work Plan) (Shaw, 2009).

The Background Study consisted of the following tasks:

- **Soil Boring Advancement—**A total of 42 soil borings were advanced (25 soil borings to 10 feet below ground surface [bgs] and 17 soil borings to less than 10 feet bgs). All soil borings were advanced within four different ecologic zones (Eco Zones), within the FWDA footprint.
- **Soil Sampling—**A total of 124 grab samples were collected from varying depths.
- **GPS Survey—**A survey was conducted using a hand-held GPS to establish the geographic locations of the background soil borings.

- **Soil Boring Abandonment—**Each soil boring was properly abandoned upon completion of sampling activities and backfilled with soil cuttings to 1 foot bgs. The remaining 1 foot of each boring was filled with a surface plug consisting of a minimum of 1 foot of bentonite chips placed above the soil cuttings to the ground surface.

1.2 Report Organization

This report presents the site background information in Chapter 2.0 and describes soil collection activities in Chapter 3.0. Borehole abandonment activities are detailed in Chapter 4.0. Chapter 5.0 presents the data evaluation methodology, and the data evaluation results are provided in Chapter 6.0. Chapter 7.0 addresses quality assurance (QA) and quality control (QC) criteria. Chapter 8.0 presents the summary and intended use of the soil background data. Chapter 9.0 provides the references cited in this report. The following appendices supplement the report:

- Appendix A contains the Regulatory comments and the USACE response in a table format.
- Appendix B consists of field documentation including field photographs.
- Appendix C contains the data evaluation results.
- Appendix D provides the soil classification logs.
- Appendix E presents the analytical results.
- Appendices F and G contain the complete laboratory data reports and Automated Data Review (ADR), respectively.
- Appendix H provides the Environmental Data Management System (EDMS).

2.0 Background

2.1 Geographic Setting

The FWDA currently occupies approximately 24 square miles (15,277 acres) of land in McKinley County in northwestern New Mexico. Some of the FWDA land has been transferred to the Base Closure and Realignment Commission. The FWDA is located approximately 7 miles east of Gallup and about 130 miles west of Albuquerque on U.S. Highway 66. The main entrance of the FWDA is on U.S. Highway 66, west from Exit 33 off Interstate 40 (Figure 1-1).

Originally founded in 1860 as a cavalry post, the U.S. Army established Fort Wingate as a munitions storage depot in 1918. The FWDA installation has had a number of missions since then, including ordnance storage, testing, and demilitarization, as well as missile defense testing. The 22,000-acre installation was closed in 1993 under the Base Realignment and Closure program (Malcolm Pirnie, 2000). Approximately half of FWDA is controlled by the Missile Defense Agency/White Sands Missile Range and is used for operations related to missile testing. The remaining FWDA operations are focused on assessment and remediation of contamination resulting from past military activities. Efforts to clean up affected areas have concentrated on the removal of exploded and unexploded ordnance. However, the extent of soil contamination by metals is also being investigated at several areas of concern, including the former Igloo Blocks and Functional Test Ranges. The background summary statistics of metals, established by this study, can be used to determine the presence and extent of soil contamination caused by military activities at the FWDA.

2.2 Environmental Setting

2.2.1 Meteorology

The climate for the Fort Wingate area varies with elevation, but is generally mild during the summer, when temperatures range between 65 and 95 degrees Fahrenheit (°F), and cold during the winter, when average daily temperatures range between 30 and 35°F. The warmest month of the year is July with an average maximum temperature of 89°F (NOAA, 2008), while the coldest month of the year is December with an average minimum temperature of 11°F. Daily temperature variations tend to be considerable during the summer months with a difference near 35°F. The annual average precipitation at Gallup is 11.4 inches (NOAA, 2008). The wettest month of the year is August with an average rainfall of approximately 2 inches. Most of the precipitation occurs as rain or hail in violent summer thunderstorms; the remainder results from light winter snow accumulations.

2.2.2 Demographics

The FWDA installation is almost entirely surrounded by federally owned or administered land, including both national forest and tribal lands. Located north and west of the FWDA are Navajo tribal trust and allotted lands. Development north of the FWDA includes Red Rock State Park; a Zuni railroad siding; an El Paso Natural Gas fractioning plant and housing area; the small Navajo community of Church Rock; the Burlington Northern and Santa Fe Railroad; and transportation corridors for Interstate 40 and U.S. Highway 66. The town of Fort Wingate, located immediately to the east of the FWDA on land administered by the Bureau of Indian Affairs (BIA), was the original site of the fort headquarters. Located to the south and southeast is the largely undeveloped Cibola National Forest. Most of the land to the west is undeveloped and is tribal trust and allotment land managed by the BIA, individual Native American allottees, and the Navajo Nation.

2.2.3 Geology and Soil

2.2.3.1 Regional Geology

The FWDA can be divided into the following three topographic areas: (1) the rugged north-to-south–trending Nutria Monocline (commonly referred to as the Hogback) along the western and southwestern boundaries; (2) the northern hill slopes of the Zuni Mountain Range in the southern portion of the FWDA; and (3) the alluvial plains marked by bedrock remnants in the northern portion of the FWDA (Malcolm Pirnie, 2000). The elevation of the FWDA ranges from approximately 8,200 feet above mean sea level (amsl) in the south to 6,600 feet amsl in the north.

2.2.3.2 Site-Specific Geology

The FWDA is located in an erosional basin within the Navajo section of the Colorado Plateau Physiographic Province. During the uplift of the Zuni Mountain Range in the southern and southeastern portion of the installation, the area occupied by the erosional basin was under tensional stress that extensively fractured the bedrock. Differential weathering and erosion along the fractures resulted in the formation of the basin currently occupied by the FWDA (Anderson et al., 2003).

In the northern portion of the installation, the surface is covered by either remnants of the Chinle Group or alluvial deposits. The alluvial deposits consist of sediment deposited by outwash from the Zuni Mountains to the south and the Hogback in the western area of the installation. The Hogback is a monocline fold, where westerly dipping Mesozoic bedrock is exposed to form a long, sharp-crested ridge trending north to south. In areas east of the Hogback, the bedrock generally dips to the northwest. In the southeastern area of the FWDA, bedrock of Permian and Triassic age was uplifted by a northwest thrust fault (Anderson et al., 2003).

The majority of the FWDA is underlain by the Chinle Group (Triassic age) that has been dissected by arroyos. The Chinle Group consists of the Owl, Petrified Forest, Bluewater Creek, and Shinarump/Moenkopi formations. These formations are predominantly composed of siltstone and mudstone, forming a low permeability sequence that acts as a confining unit for the underlying San Andres-Glorieta aquifer. The Petrified Forest formation directly underlies the majority of the installation, with all three members (Painted Desert, Sonsela, and Blue Mesa) outcropping in various locations. The Painted Desert, Sonsela, and Blue Mesa members of the Petrified Forest formation are mudstone, sandstone, and mudstone, respectively. On the eastern extent of the FWDA installation, the Sonsela and Blue Mesa members outcrop, as does the Bluewater Creek Formation.

The Chinle Group is underlain by San Andres Limestone and Glorieta Sandstone of the Permian age. The San Andres generally consists of two limestone beds separated by a sandstone layer and reaches a maximum thickness of approximately 200 feet. The San Andres-Glorieta aquifer is the principal source of water in the area (Malcolm Pirnie, 2000). This aquifer is confined, except in and near outcrop areas, by siltstone and claystone beds in the overlying Chinle Group. Alluvial deposits are most prevalent in the northern area of the FWDA in lowland areas between bedrock remnants. Alluvial deposits are also present along intermittent streams draining the Hogback and Zuni Mountains, which flow through the northern portion of the installation before joining the South Fork of the Puerco River. The alluvium ranges in grain size from clay to gravel, typical of braided stream deposits (Malcolm Pirnie, 2000).

2.2.3.3 Soil Types

Soil types found at the FWDA are similar to those in cool plateau and mountain regions of New Mexico. The FWDA soil types commonly found in arroyos are permeable sand and sandy loam clay (DOE, 1990); however, most soil is composed of low permeability clay. Soil types at the FWDA are primarily alluvial materials, with the exception of the Hogback along the western border and the northern hill slopes of the Zuni Mountain Range in the extreme southern portion. The alluvial materials, encompassing the area covered by this background study, do not have distinct soil horizons as they are relatively shallow, and the parent bedrock is either at or near the surface within more than a quarter of the installation (DOE, 1990).

2.2.4 Hydrogeology

2.2.4.1 Regional Hydrogeology

Main drainages flow generally toward the north until the South Fork of the Puerco River is encountered, except in the southwestern corner of the installation where drainage is toward the west. Streams are ephemeral and fed by rain and snowmelt from the Zuni Mountain Range and the Hogback. These streams transport sediment to low-lying areas in the northern portion of the installation, creating extensive alluvial deposits among remnants of bedrock.

Due to the nature of precipitation in this semiarid region, the surface drainage is relatively shallow near headwaters. Downward erosion intensifies as the stream moves downstream resulting in a system of well-developed, steep-walled arroyos. Arroyos form because of the erodibility of localized areas of silt and clay rich bedrock (Malcolm Pirnie, 2000).

2.2.4.2 Site-Specific Hydrogeology

The FWDA lies between the South Fork of the Puerco River and the northern foothills of the Zuni Mountain Range. Three major drainage systems may be identified as follows: (1) eastern drainage system; (2) western drainage system; and (3) southwestern-corner drainage system. These are divided by either bedrock ridges or bedrock remnants. Also, in the northwest portion of the site, two artificial channels were constructed during the 1940s to divert water away from Igloo Blocks A and B and the Administration Area (DOE, 1990).

The eastern drainage system consists of washes that run in northwestern and northeastern directions off the slopes of the Zuni Mountains. Alluvial fans form in basins at the front of the slope, as well as between bedrock remnants. In the northeast section of the installation, the drainage flows around bedrock remnants before joining the South Fork of the Puerco River.

The western drainage system (except for the southwest corner) consists primarily of two drainages covering the western portion of FWDA. Tributaries of the western drainage system pass the demolition area, cross the Hogback, and then join, flowing north depositing alluvium along the bedrock remnants.

The southwestern-corner drainage system flows southwest and joins the Bread Springs Wash on the western side of the Hogback. Because this system is hydrogeologically isolated from the other parts of the site and installation activities have apparently not occurred in this area, the drainage system is of less environmental concern (DOE, 1990).

3.0 Sample Collection Activities

Sample collection activities performed during this Background Study were designed to generate data to support a statistical evaluation to determine the nature and occurrence of inorganic constituents in soil at the FWDA, based on site-to-background comparisons. The following soil sampling activities were performed during the Background Study:

- Advancement of 42 soil borings (25 soil borings to 10 feet bgs and 17 soil borings less than 10 feet bgs) within four Eco Zones throughout the FWDA (Figure 3-1).
- Collection of 124 soil samples, including 12 split soil samples (Figure 3-1).

A summary of soil samples collected during the Background Study is presented in Table 3-1. The methods and techniques specific to the soil sampling activity are discussed in the following sections.

3.1 Soil Sampling Location Selection and Rationale

The background study boundary was defined in the Background Study Work Plan (Shaw, 2009) as occurring in parcels that were believed not to have been impacted by depot activities. Most of the parcels are located around the periphery of the FWDA but are within the footprint of the FWDA (Figure 3-1).

Soil sampling locations were developed with the USACE and NMED representatives during a site walk and meeting held at the FWDA on June 17, 2009. During the course of the site visit, a combination of field observations and a map with the Eco Zones plotted were used to select which parcels of the FWDA should be sampled. The sampling locations were either logged with a hand-held Garmin GPS or marked on the site map based on consensus achieved among the parties present on June 17, 2009.

A total of 42 soil borings were advanced in 4 distinct Eco Zones (desert scrubland, desert riparian, piñon-juniper woodland, and ponderosa woodland) throughout the FWDA (Figure 3-1). The rock outcrop Eco Zones were not sampled because there are no solid waste management units or areas of concern located in these Eco Zones throughout the FWDA. Therefore, site to background comparisons are not applicable to these Eco Zones. A large plate map, Plate 3-1, of the FWDA has also been included in this report to show greater detail of the areas that were sampled. The sampling location rationale is presented in greater detail in Table 3-2.

3.2 Soil Sampling Methodology

This Background Study includes both subsurface and surface soil samples. Soil samples were collected and standard operating procedures were followed as described in the Background Study Work Plan (Shaw, 2009).

A truck-mounted Geoprobe® was used to advance 36 soil borings (2-inch-diameter) for geologic description and soil sample collection. In remote areas a hand auger was used to advance 6 soil borings for geologic description and soil sample collection (Photos 3-1 and 3-2). Two to three grab samples were collected from each soil boring.

Because of the shallow bedrock and other field conditions throughout the FWDA, several soil borings could not be advanced to 10 feet bgs. In the event that advancing to 10 feet bgs was not possible, an attempt was made to collect as many of the planned soil samples from the length that was able to be retrieved; these samples were relocated at closer intervals along the length of retrieved core. In cases of extremely short borehole advancement (e.g., 2 feet bgs), fewer samples were collected, the number of which was determined by the amount of soil retrieved.

For example, borehole number 20 (BH20) achieved a maximum depth of 7 feet bgs and borehole number 28 (BH28) achieved a maximum depth of only 2.25 feet bgs. Samples were collected at 0 to 2, 4.5 to 5.5, and 6 to 7 feet bgs in BH20, and 0 to 1.5 and 1.5 to 2.25 feet bgs in BH28. Even though BH28's total depth is described as "surface soil" (0 to 2 feet bgs) in the Background Study Work Plan (Shaw, 2009), two soil samples were collected (0 to 1.5 and 1.5 to 2.25 feet bgs) within this range to give a top and bottom boundary for statistical analysis. Table 3-1 summarizes soil boring samples and depths.

3.3 Soil Sampling Procedures and Documentation

Once the borehole was advanced to the desired sampling depth, the entire length of the soil boring was logged by the Field Geologist. Upon completion of logging the borehole, the Field Geologist determined which portion(s) of the soil boring would be sampled.

Soil for TAL metal analyses was screened through a U.S. standard No. 4 sieve prior to sample homogenization (Photo 3-3). Grain sizes less than 4.76 mm can pass through a No. 4 sieve. At each borehole, the soil was homogenized in a plastic bowl prior to collecting samples. Samples were collected in 4-ounce, wide-mouth, glass jars provided by the contract laboratory. Photo 3-4 shows the sample collection setup used at each borehole. Upon filling each sample container, the sample was immediately placed into a laboratory-provided cooler with ice. Shaw maintained custody of the samples at all times until relinquished to Federal Express for priority overnight shipment to the laboratory.

Each sample has been assigned a unique field identification nomenclature specific for the FWDA. Sample identification (ID) for FWDA consists of a combination of parcel, ecologic zone (Eco Zone), source of sample, type of sample, and matrix as follows:

- Parcel: 8
- Eco Zone: DS (in this case, it is desert scrubland)
- Borehole number: BH-25
- Matrix: SO (Soil)
- Depth Interval: 1 = first depth interval below ground surface (bgs)
  2 = second depth interval feet bgs
  3 = third depth interval feet bgs

An example of a sample ID for a surface soil sample from BH-25 in Parcel 8 would therefore be 8DS-BH25-SO-1.

Nondisposable sampling equipment, such as plastic bowls and No. 4 sieve, were decontaminated between each sample collection depth and soil boring location using a solution of deionized water and Alconox®, followed by a final deionized water rinse. Sterile, disposable scoops were used during soil homogenizing to reduce the risk of cross-contamination between samples.

Chain-of-custody documentation was electronically generated in the field using the EPA software program, FORMS [Field Operations and Records Management System] II Lite, Version 5.1 (DynCorp, 2002) and placed in each cooler to accompany samples to the contract laboratory.

Table 3-1 provides a summary of all soil samples collected during the Background Study. Field documentation, including Field Activity Daily Logs, Soil Sample Collection Logs, Analysis Request/Chain-of-Custody Records and photos of the soil borings and sampling activities are included in Appendices A1, A2, A3, and A4, respectively, of this report.

3.4 Soil Analytical Parameters

Soil samples collected for chemical analysis were submitted to Microbac Laboratories, Inc. (Microbac) in Marietta, Ohio, for analysis of TAL metals by EPA Methods 6010B/6020/7471A (EPA, 1986). Field QA/QC samples were collected from five soil boring sampling locations as field duplicates and for matrix spike/matrix spike duplicate analyses.

This page left intentionally blank.

4.0 Soil Boring Abandonment

The soil borings were abandoned by backfilling with soil cuttings removed from the soil boring to a depth of 1 foot bgs. A surface plug consisting of a minimum of 1 foot of bentonite chips was placed above the soil cuttings to the ground surface. The bentonite plug was hydrated with approximately 1 gallon of water. As the locations are considered background (i.e., not impacted by depot activities), any remaining soil cuttings were thin-spread on site.

This page left intentionally blank.

5.0 Data Evaluation Methodology

This chapter describes the methodology used to characterize background distributions for the 23 TAL metal elements in soil at the FWDA. Background concentrations of naturally occurring elements form a distribution of values over the domain of interest. The characterization of background can be defined as the process of describing the statistical distributions of concentration values from samples obtained at representative locations. The objective of this background investigation is to provide the actual concentration data as well as statistical descriptions of the distributions of 23 elements in soil at the FWDA.

These statistical descriptions may be used for a variety of purposes. The primary purpose of the background distributions is for comparison with distributions from site investigations to determine whether local releases have occurred. Other possible uses for the background characterization data include supporting human health and ecological risk assessments, proposals for no further action, developing realistic remediation goals, and evaluating the success of remediation efforts. These uses require the ability to distinguish between site-related and non-site–related impacts. Accordingly, any contributions of "anthropogenic background" or non-site–related regional sources of metals, such as mercury fallout from power plants, if present, would be considered to be part of the background distribution for these purposes.

The statistical methodology used to characterize background distributions is based on published EPA guidance (EPA, 1989; 1992; 1994; 1995; 1996; 1997; 2006; and 2009a). The following key issues are addressed in the background characterization methodology:

- Handling of duplicates
- Handling of nondetections
- Handling of outliers
- Appropriate spatial grouping of soil samples
- Evaluation of distributional assumptions
- Calculation of summary statistics

The following sections explain how these key issues are addressed.

5.1 Handling of Duplicates

A total of 112 primary samples were obtained at 42 locations. A surface sample was obtained at each location, and intermediate and deep samples were also obtained if the borehole advancement was deep enough. Details of the sampling are provided in Chapter 3.0. Field duplicates were obtained for 12 of these samples, yielding a total of 124 samples. The duplicates were obtained for the purpose of determining the reproducibility of the analyses and the natural

variability of co-located samples. Comparisons of the primary and duplicate soil sample pairs are provided in Chapter 7.0. Analytical results of the duplicate samples were not used in the statistical characterization to avoid any bias introduced by giving extra weight to the locations where the duplicates were obtained.

5.2 Handling of Nondetections

A certain proportion of nondetectable concentrations of trace elements are common in background data sets. There are a variety of methods to deal with nondetections, each of which has advantages and disadvantages with respect to introducing unwanted bias into the description of background distributions. In accordance with EPA guidance, nondetections were replaced with a value equal to the method detection limit (MDL) for that analyte for the purpose of calculating the mean, median, and standard deviation. The analytical laboratory routinely assigns "estimated" ("J") qualifiers to results that fall between the MDL and the quantitation limit, so it is likely that concentrations reported as nondetectable are between zero and the MDL. Nondetect results with replacement values that fall within the top 10 percent of the distribution are eliminated from the data set as high nondetects because the presence of these values will introduce a high bias into the calculation of background screening values.

Calculations of the 95th upper confidence limit (UCL) of the mean and the 95th upper tolerance limit (UTL) used the Kaplan-Meier method (also known as the product-limit estimator), as implemented in the ProUCL software to deal with data sets containing non-detect results (Kaplan and Meier, 1958). This method reduces the bias introduced by the presence of nondetect results with varying reporting limits (RL).

5.3 Handling of Outliers

Outliers are defined as data points with values that are anomalously high relative to the rest of the data set (EPA, 2009a). The following are possible reasons for outliers:

- Improper sampling, analytical error, or laboratory contamination
- Errors in transcription of data values, decimal points, or units
- The presence of actual contamination in the sample
- A natural background concentration that is unusually high

The "5 X" outlier test and Tukey's outlier test were used. For the "5 X" test, the concentrations of each element are rank-ordered, and the maximum value is flagged as an outlier if it is greater than five times the second-highest value (EPA, 1989). Advantages of the 5 X test are that it is valid for any shape of distribution, and it can be performed on data sets with high proportions of nondetects.

The Tukey test is recommended by the EPA (EPA, 2009a) for nonparametric distributions. This test calculates an upper limit of the expected range based on the interquartile range (difference between the 75^{th} and 25^{th} percentiles). An upper limit is defined as:

$$\text{Limit} = 75^{th} \text{ percentile} + (T \bullet (75^{th} \text{ percentile} - 25^{th} \text{ percentile}))$$

where T can range from 1.5 to 3.0. Concentrations that exceed the limit are considered to be outliers. Because the test is nonparametric, the data need not conform to a specific distribution. There is however, an assumption of symmetry, which is not the case for these distributions which are all right-skewed to varying degrees. An additional concern is the presence of nondetects. The interquartile range is uncertain if the distribution has more than 25 percent nondetects, and cannot be defined if the distribution has more than 75 percent nondetects.

Samples flagged as outliers are further examined to determine whether there is an error in the recorded concentration. Statistical outliers will be eliminated from consideration only if there are additional reasons to suspect either errors in the data or site-related contamination in the sample. Results of the outlier testing are provided in Section 6.1.

5.4 Spatial Grouping of Soil Samples

It is generally preferable to characterize background distributions on as broad a spatial scale as possible. Arbitrarily subdividing soil samples by depth, region of the site, soil type, or other parameters results in smaller data sets per group, which increases the uncertainty in inferring the characteristics of the sampled population. However, if the distributions of element concentrations are indeed significantly different in spatial subgroups of samples, then separate background characterizations should be performed for those groups.

The statistical test most often recommended in EPA guidance (EPA 1989, 1996, 2009a) to compare subgroups of samples is the Kruskal-Wallis (KW) test (Kruskal and Wallis, 1952). The KW test is a modification of the Wilcoxon Rank Sum test (a.k.a. Mann-Whitney *U* test) to allow comparisons of more than two groups of data. The KW procedure tests the null hypothesis that the groups of samples are drawn from the same population. It is a nonparametric test that is performed with the actual sets of values rather than summary parameters such as the mean or standard deviation, so it is valid for a wide range of distributional shapes.

The KW test calculates the *H* statistic, which is then used to find the two-sided significance. If the test statistic yields a probability of a Type I error (p-level) less than 0.01, then there is a statistically significant difference between the medians of one or more of the groups at a 99-percent confidence level. The test is performed at a 99-percent confidence level rather than the usual 95-percent confidence level because more than two groups are being compared. This so-called “Bonferroni correction” is a multiple-comparison correction that is used when several

statistical tests are being performed simultaneously (EPA, 1989; Weisstein, 2008). A given confidence level may be appropriate for each individual comparison, but that same confidence level is overly conservative for the set of all comparisons. The confidence level is thus adjusted upward to account for the number of comparisons being performed.

A Type I error involves rejecting the null hypothesis when it is true. If the *p*-level is greater than 0.01, then the null hypothesis is accepted, and the groups are assumed to be drawn from the same population. If the *p*-level is less than 0.01, then the medians of one or more of the groups are significantly different at the 99-percent confidence level. If four groups are being compared, then a *p*-level less than 0.01 can occur if one of the groups is shifted higher or lower relative to the other three, or if two of the groups are shifted relative to the other two groups, or if all four are different from each other.

The following factors should be kept in mind when evaluating KW test results:

- Dividing the original data set data into a larger number of subgroups increases the false-positive error rate because the probability of getting a larger number of groups to agree is lower than getting a fewer number of groups to agree.
- Dividing the data into a larger number of subgroups results in smaller sample sizes in each group, which are thus less representative of the sampled population. This effect further increases the false-positive error rate of the test and also increases the uncertainty in the estimates of the population statistics.
- Analytes with higher variances are generally prone to higher false-positive errors in subgroup comparison tests because more samples are needed to adequately characterize populations with higher variance. When the data is subdivided into groups, then the analytes with higher variances show more frequent false-positive test results due to insufficient sample size in one or more groups.
- The presence of nondetect results can increase the error rates of the test, especially if the surrogate values assigned to nondetects are not constant.

Results of the statistical comparisons of the soil samples by depth and by ecological zone are provided in section 6.2.1.

5.5 Evaluation of Distributional Assumptions

The shape of the distribution, considered to be either normal, lognormal, or nonparametric, is reported as part of the characterization (the term *nonparametric* is not a specific shape, but is used to describe distributions that are neither normal nor lognormal, in accordance with EPA guidance). The selection of an appropriate type of statistical distribution is based on EPA guidance (EPA, 1989; 1992; and 2009a) which recommends the Shapiro-Wilk test for

determining whether the distribution of concentration data is normal. Lognormality is tested by taking the logarithm (log-transform) of the data and testing for normality (EPA, 1992).

The test returns a "*p*-level" value between 0 and 1, indicating the "goodness of fit" to the tested distribution. A *p*-level of 0.05 or greater indicates an acceptable fit to a normal (or lognormal) model at a 95-percent confidence level; therefore, there is only a 1-in-20 chance of falsely identifying the distribution as normal when it actually is not. If the test statistic for the untransformed data is above the critical value for a 95-percent confidence level and is higher than the test statistic for the transformed data, then the distribution is identified as normal. If the test statistic for the log-transformed data is above the critical value for a 95-percent confidence level and is higher than the test statistic for the untransformed data, then the distribution is identified as lognormal. If the Shapiro-Wilk test indicates that a data set is neither normal nor lognormal at this confidence level, then the data are assumed to have a nonparametric distribution. Data sets with greater than 15 percent nondetects are automatically treated as nonparametric distributions according to EPA (1989) guidance. Results of the distribution testing is provided in Section 6.3.

5.6 Calculation of Summary Statistics

Complete statistical descriptions of the background distributions of elements in soil are provided in Section 6.4. These descriptions include the number of samples, percent nondetects, minimum concentration, median concentration, geometric mean, arithmetic mean, 95th UCL of the mean, 95th UTL, and the maximum concentration. Also provided are three measures of the variance of the distributions, including the interquartile range (difference between the 25th and 75th percentiles), standard deviation, and coefficient of variation (CV) (ratio of standard deviation to mean). The shapes of the distributions, defined as either normal, lognormal, or nonparametric, are also provided.

The 95th UCL of the mean is a value that has a 95-percent probability of bounding (being greater than) the true population mean. It is often used as an exposure point concentration in human health and ecological risk assessments. The 95th UTL is a value that has a 95-percent probability of bounding the true 95th percentile of the population. It is often used as a background screening value as recommended in EPA (1989) guidance. It should be kept in mind that there is a five percent probability that a concentration in any randomly collected uncontaminated sample will exceed the background 95th UTL. If a concentration in a site investigation sample exceeds a background 95th UTL, then that sample should be considered to be suspect, but it may not be necessarily be contaminated.

The summary statistics are calculated for each element in soil using standard Excel functions, except for the 95th UCL of the mean and the 95th UTL, which are calculated using procedures implemented in the ProUCL software package (Version 4.00.04) (EPA, 2009b). This software is

developed, maintained, and distributed by the EPA for the specific purpose of calculating UCLs and UTLs, and is based in part on guidance provided in EPA 2002a and 2002b. ProUCL provides several different UCLs and UTLs for each data set, which are calculated using a variety of methods. The selection of the appropriate UCL and UTL is based on careful consideration of the size of each data set, the proportion of nondetect results, and differences in the RLs of the nondetect results.

The UCLs and UTLs for data sets with fully detectable results are calculated using the percentile bootstrap method based on 2,000 replications. Bootstrap procedures are nonparametric techniques that operate on the actual data rather than statistical parameters (such as mean and standard deviation). They do not require assumptions regarding the statistical distribution of the underlying population and are valid for any distributional shape (EPA, 1997).

Data sets containing between 1 and 15 percent nondetects are calculated using the nonparametric Kaplan-Meier percentile bootstrap method. Data sets with greater than 15 percent nondetects are calculated using the Kaplan-Meier bootstrap-*t* method. Details of these methods are provided in the *ProUCL Version 4.00.04 Technical Guide* (EPA, 2009b).

The complete descriptions of background distributions that are provided in Section 6.4 are sufficient to allow the calculation of additional statistical parameters of interest, such as the variance, standard error of the mean, two standard deviations above the mean, etc. The descriptions can also be used to support statistical site-to-background data set comparisons. There are two general types of statistical site-to-background comparisons. Parametric comparisons, such as the two-sample *t*-test, require the means and standard deviations of the distributions that are being compared. Nonparametric comparison tests, such as the Wilcoxon Rank Sum test and the Gehan test, require the actual data rather than summary statistics. The actual background analytical data are provided in Appendix E1.

6.0 Data Evaluation Results: Background Distributions of Elements in Soil

This chapter provides the results for the soil background characterization. The results are presented in the form of summary statistics in Table 6-1.

6.1 Results of Outlier Testing

Two outlier tests, ("5 X" and Tukey's) described in Section 5.3, were performed for each element in the soil data set. No outliers were identified with the 5 X test.

Tukey's outlier test (EPA, 2009a) was also applied to all the elements. The lack of symmetry in the distributions was partially corrected for by performing the test on log-transformed data. This test, using a *T* coefficient of 2.8 (within the recommended range of 1.5 to 3.0) resulted in one statistical outlier which was the maximum arsenic concentration of 11.2 mg/kg. This sample also has the highest iron concentration of 27,600 mg/kg. Arsenic has a well known affinity to adsorb on the surfaces of iron oxides, so samples high in iron are expected to have naturally higher arsenic concentrations. These observations suggest that the maximum arsenic concentration in this sample is expected, and is probably natural.

The EPA, 2000 guidance on outliers states that:

> "If a data point is found to be an outlier, the analyst may either: 1) correct the data point; 2) discard the data point from analysis; or 3) use the data point in all analyses. This decision should be based on scientific reasoning in addition to the results of the statistical test. For instance, data points containing transcription errors should be corrected, whereas data points collected while an instrument was malfunctioning may be discarded. One should never discard an outlier based solely on a statistical test. Instead, the decision to discard an outlier should be based on some scientific or quality assurance basis. Discarding an outlier from a data set should be done with extreme caution, particularly for environmental data sets, which often contain legitimate extreme values. If an outlier is discarded from the data set, all statistical analysis of the data should be applied to both the full and truncated data set so that the effect of discarding observations may be assessed. If scientific reasoning does not explain the outlier, it should not be discarded from the data set."

Based on this guidance, there is insufficient justification to remove the maximum arsenic concentration.

6.2 Grouping of Samples

The samples were grouped into three different depth categories and four different Eco Zones and compared. The comparison methodology employed is described in Section 5.4. The following sections discuss the results of these comparisons.

6.2.1 Comparison of Soil Samples by Depth

The 112 samples were grouped into three depth categories (shallow [*n* = 42], mid [*n* = 41], and deep [*n* = 29]), and the subgroups were quantitatively compared using the KW test as described in Section 5.4. The KW test was performed on 22 of 23 analytes. Antimony was excluded because all of the samples had nondetectable concentrations. Mercury and silver had high proportions of nondetects (88.4 and 81.3 percent, respectively), but were included in the comparison even though the results may be uncertain.

Table 6-2 provides the KW test results for the comparisons of the three depth groups for the 22 elements tested. Box plots comparing the three depth intervals for the 22 elements are provided in Appendix C1. All of the elements passed at both the 95- and 99-percent confidence levels, with the exception of sodium, which showed a significant difference between the three groups. A possible explanation for the failure of sodium is that the number of samples in each subgroup was insufficient to accurately estimate population medians (the smallest subgroup had 29 samples). The number of samples required to estimate a population statistic such as the mean or median at a given confidence level increases with the square of the standard deviation of the population.

As sodium has the highest relative standard deviation of the 23 elements (CV = 1.58), a larger number of samples are required to accurately estimate the population medians of the three subgroups for this element. In addition, when the test is performed at the 95-percent confidence level, a false-positive error rate of 5 percent (1 in 20) is expected, which is close to what was observed (1 in 22). These results indicate that there are no statistically significant differences between the distributions of elements in the three depth intervals; therefore, it is valid to combine samples from the three intervals for the purpose of characterizing background distributions.

6.2.2 Comparison of Soil Samples by Eco Zone

The 112 samples were grouped by the Eco Zone from which they were obtained. The four zones that were sampled include ponderosa pine (*n* = 18), desert scrub (*n* = 52), piñon-juniper (*n* = 22), and desert riparian (*n* = 20). These subgroups were quantitatively compared using the KW test as described in Section 5.4 for 22 of 23 analytes. Antimony was excluded because all of the samples had nondetectable concentrations. Mercury and silver had high proportions of nondetects (88.4 and 81.3 percent, respectively), but were included in the comparison even though the results may be uncertain.

Table 6-2 provides the KW test results for the comparisons of the four Eco Zone groups for the 22 elements tested. Box plots comparing the four Eco Zones for the 22 elements are provided in Appendix C. All of the elements passed at the 99-percent confidence level, with the exceptions of sodium, potassium, arsenic, and nickel.

As discussed in Section 5.4, subdividing the data into four groups rather than three (as was done for the sample depth comparison) increases the probability of more test failures. In addition, the sample sizes in each of the four groups are smaller (minimum is 18), which makes the subgroups less representative of the population. Also, the four elements that failed the test had higher CVs, as shown in Tables 6-1 and 6-2 (arsenic and sodium have CVs above 1.1). Elements with higher CVs require a larger number of samples to confidently estimate population statistics and perform accurate subgroup comparisons.

These results indicate that it is valid to combine samples from the four Eco Zones for the purpose of characterizing background distribution. The failures of 4 of the 22 elements (arsenic, nickel, potassium, and sodium) are most likely the result of too few samples in each subgroup to allow for a valid comparison.

6.2.3 Summary of Soil Subgroup Comparisons

The large proportion of elements that passed comparisons of the three depth intervals (21 of 22) and comparisons of the four Eco Zones (18 of 22) indicates that it is valid to combine data from these subgroups. The advantage of pooling the data (when it is statistically valid to do so) is because the summary statistics are then based on a larger number of samples, and are thus more representative of the population. Increasing the number of sample from the range of 18 to 52 (which would be the case if each Eco Zone were treated separately) to 112 (the full data set) provides a significant increase in the confidence that can be placed in the inferred properties of the sampled population.

6.3 Evaluation of Distributional Assumptions

The shape of each distribution was determined using the methodology described in Section 5.5. None of the 23 elements passed the test for normality. Eight of the elements passed the test for lognormality (calcium, copper, magnesium, nickel, potassium, selenium, vanadium, and zinc). The remaining 15 elements are treated as nonparametric distributions.

6.4 Summary Statistics

Summary statistics for the 23 analyzed elements are provided in Table 6-1. The sample statistics include the number of samples, percent nondetects, minimum concentration, median concentration, geometric mean, arithmetic mean, and the maximum concentration. The shapes of the distributions, defined as either normal, lognormal, or nonparametric, are also provided, along

with three measures of the variance of the distributions, including the interquartile range (difference between the 25th and 75th percentiles), standard deviation, and CV (ratio of standard deviation to mean).

Population statistics that are provided include the 95th UCL of the mean and the 95th UTL. The methodology used to calculate these parameters is discussed in Section 5.6. The 95th UTLs are the recommended background screening values. The statistical results are provided in Table 6-1and Appendix C

The complete descriptions of background distributions that are provided in Table 6-1 are sufficient to allow the calculation of additional statistical parameters of interest, such as the variance, standard error of the mean, two standard deviations above the mean, etc. The descriptions can also be used to support statistical site-to-background data set comparisons. There are two general types of statistical site-to-background comparisons. Parametric comparisons, such as the two-sample *t*-test, require the means and standard deviations of the distributions that are being compared. Nonparametric comparison tests, such as the Wilcoxon Rank Sum test and the Gehan test, require the actual data rather than summary statistics. The actual background data are provided in Appendix E.

7.0 Quality Assurance and Quality Control

7.1 Laboratory Quality Control

Microbac performed the measurement quality objectives (MQO) specified for each analytical method during analysis of the background soil samples. QC measurements are typically made on laboratory-prepared, standard materials and samples to monitor MQOs for accuracy and precision. The laboratory QC checks included the following:

- Calibration checks
- Calibration blanks
- RLs and MDLs
- Laboratory control samples
- Matrix spike samples
- Duplicate samples
- Method blank samples

7.1.1 Data Evaluation

Analytical data results for the background soil samples were provided in hard copy paper reports and electronic data deliverable (EDD) format (Appendix F). Analytical data produced electronically included files in portable document format (PDF) and ADR file format for data review and evaluation, as specified in the Background Study Work Plan (Shaw, 2009).

Analytical data were reviewed and evaluated in each Microbac-provided EDD using the ADR software. Once the EDD was uploaded and electronically checked for errors, the software automatically compared instrument calibration and QC measurements for each analytical method, matrix, and analyte against acceptance criteria in the project-specific library.

A data review report, generated using the ADR software in PDF format, is included on a compact disc (CD) in Appendix G. The data review report includes sample listings, analytical result tables, outlier reports, data qualifiers and definitions, manually-changed qualifiers, and bias indicators. Also included on the CD in Appendix G are the post-reviewed ADR EDD text files and Staged Electronic Data Deliverable Stage 1 files exported using the ADR software. Additionally, the project-specific ADR analytical methods library, constructed for the background soil sampling and analysis task is included.

Following data review with the ADR software system, the reviewed EDD files were uploaded to the EDMS, a database application running on Microsoft® Access. The EDMS was used to query data for preparation of this report and generate QC summary tables. QC summary report tables generated with the EDMS are provided in Appendix H.

7.1.2 Data Usability

In general, analytical QC measures and analytical results data were acceptable and usable for project objectives. QC measurements outside of acceptance criteria resulted in the qualification of some data, which generally were flagged as estimated values (J-qualified) with positive or negative bias indicators. Qualified data are considered usable.

The analytical RLs and MDLs actually achieved at Microbac during analysis of the background soil samples were evaluated against applicable MQO requirements provided in the sampling and analysis plan in the Background Study Work Plan (Shaw, 2009). When chemical analyses showed quantified or detected but estimated results, the MQO RL and MDL requirements are considered to be met. However, when chemical analyses do not detect the analyte of interest, then applicable RLs and MDLs should meet MQO requirements. Nondetected antimony results in soil samples exceeded MQO RL criteria. Antimony RLs ranged between 0.345 and 2.23 milligrams per kilogram (mg/kg) while the RL MQO was 0.2 mg/kg. While nondetected analytical results for antimony did not meet the planned MQO, the actual RLs achieved are well below the advisory evaluation criteria of 31.3 mg/kg (Appendix E3). Consequently, the antimony results are usable and were not rejected.

Completeness, calculated in accordance with Section 4.2.6.4 of the Background Study Work Plan (Shaw, 2009), was 91.4-percent analytical completeness, 93.1-percent contract compliance completeness, and 100-percent technical completeness for the soil analytical results. Analytical completeness is the percentage of unqualified results, while technical completeness is the percentage of usable analytical results. Field sampling completeness was 93.9 percent. Of 132 background soil samples planned, 124 soil samples were collected. Some borehole samples could not be collected when the Geoprobe® met refusal before reaching the planned total depth.

7.2 Field Quality Control Samples

A total of 12 field duplicate soil samples were collected during the Background Study. Field duplicate samples were collected from different soil types, depths, and Eco Zones. Field duplicate soil samples were split from the homogenized soil immediately prior to filling the sample jars. Field duplicate QC samples were analyzed for TAL metals using methods identical to the parent samples. Field duplicate samples were the only type of field QC samples that were collected.

The analytical results for field duplicate samples are included in the complete analytical results tables provided in Appendix F. Relative percent differences (RPD) for metals detected above the RL in both the original and field duplicate subsurface soil samples, and that were not qualified as estimated values during data validation, are presented in Table 7-1.

Field duplicate results for background soil samples were generally comparable with the original parent sample results. The RPD measurements calculated for paired metal results shown in Table 7-1 range from 0 to 134 percent. The average RPD for all duplicate pairs shown in the table is 29 percent with a standard deviation of 11 percent. Field duplicate precision measurements exceeding the established MQO were noted during data validation and are reported in Appendix G.

This page left intentionally blank.

8.0 Summary and Intended Use of Background Characterization Data

The primary use of the background characterization data is for comparisons with distributions from site investigations at FWDA to determine whether on-site releases have occurred. Other possible uses for the background characterization data include supporting baseline human health and ecological risk assessments and proposals for closure, developing realistic remediation goals, and evaluating the success of remediation efforts. It is also important to identify any background concentrations that exceed risk-based regulatory limits so that these exceedences can be explained to the public and stakeholders. Table 8-1 compares the background screening values, which are based on the 95th UTLs, to the FWDA regulatory standards.

This page left intentionally blank.

9.0 References

Anderson O.J., C.H. Maxwell, and S.G. Lucas, 2003, *Geology of Fort Wingate Quadrangle, McKinley County, New Mexico*, Open-file Report 473, New Mexico Bureau of Geology and Mineral Resources, Socorro, NM, September.

Dinwiddie, R.S. (New Mexico Environment Department), September 1997, Letter to M.J. Zamorski (U.S. Department of Energy), *Request for Supplemental Information: Background Concentrations Report, SNL/KAFB*, September 24, 1997.

DOE, see U.S. Department of Energy.

DynCorp, see DynCorp Systems and Solutions, LLC.

DynCorp Systems and Solutions, LLC (DynCorp), 2002, *Field Operations and Records Management System II Lite (FORMS II Lite™) Software Version 5.1*, developed for the U.S. Environmental Protection Agency, Washington, D.C.

EPA, see U.S. Environmental Protection Agency.

Kaplan, E.L., P. Meier, 1958, "Nonparametric estimation from incomplete observations," *Journal of the American Statistical Association*, Vol. 53, pp. 457–481.

Kruskal, W.H., and W.A. Wallis, 1952, "Use of Ranks in One-Criterion Variance Analysis," *Journal of the American Statistical Association*, Vol. 47, No. 260, pp. 583–621.

Malcolm Pirnie, see Malcolm Pirnie, Inc.

Malcolm Pirnie, Inc. (Malcolm Pirnie), 2000, *Soil Background Concentration Report of Fort Wingate Depot Activity, New Mexico*, prepared for the U.S. Army Corps of Engineers, Fort Worth District by Malcolm Pirnie, Inc., Houston, Texas, September.

National Oceanographic and Atmospheric Administration (NOAA), 2008, National Weather Service, National Oceanographic and Atmospheric Administration, U.S. Department of Commerce, Washington, D.C. <http://www.nws.gov>

NOAA, see National Oceanographic and Atmospheric Administration.

Shaw, see Shaw Environmental, Inc.

Shaw Environmental, Inc. (Shaw), 2008, *Background Study Report, Former Walker Air Force Base, Roswell, New Mexico, FUDS Project ID No. K06NM005208*, Shaw Environmental, Inc., Albuquerque, New Mexico.

Shaw Environmental, Inc. (Shaw), 2009, *Work Plan, Background Study and Data Evaluation, Fort Wingate Depot Activity, Gallup, New Mexico, Contract No. W912BV-07-D-2004, Delivery Order DM01*, Shaw Environmental, Inc., Albuquerque, New Mexico.

U.S. Department of Energy (DOE), 1990, *Master Environmental Plan: Fort Wingate Depot Activity, Gallup, New Mexico*, ANL/EAIS/TM-37, U.S. Department of Energy, Washington, D.C., December.

U.S. Environmental Protection Agency (EPA), 1986, *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, SW-846, 3rd ed., U.S. Environmental Protection Agency, Washington, D.C.

U.S. Environmental Protection Agency (EPA), 1989, *Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Interim Final Guidance*, EPA/530/SW-89/026, Office of Solid Waste, Waste Management Division, U.S. Environmental Protection Agency, Washington, D.C.

U.S. Environmental Protection Agency (EPA), 1992, *Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Addendum to Interim Final Guidance*, EPA/530/R-93/003, Environmental Statistics and Information Division, Office of Policy, Planning, and Evaluation, U.S. Environmental Protection Agency, Washington, D.C.

U.S. Environmental Protection Agency (EPA), 1994, *Statistical Methods for Evaluating the Attainment of Cleanup Standards*, EPA/230/R-94/004, Environmental Statistics and Information Division, Office of Policy, Planning, and Evaluation, U.S. Environmental Protection Agency, Washington, D.C., June.

U.S. Environmental Protection Agency (EPA), 1995, *Determination of Background Concentrations of Inorganics in Soils and Sediments at Hazardous Waste Sites*, EPA/540/S-96/500, Office of Research and Development, U.S. Environmental Protection Agency, Washington, D.C., December.

U.S. Environmental Protection Agency (EPA), 1996, *Soil Screening Guidance: User's Guide*, Second Edition, Office of Solid Waste and Emergency Response, U.S. Environmental Protection Agency, Washington, D.C., July.

U.S. Environmental Protection Agency (EPA), 1997, *The Lognormal Distribution in Environmental Applications*, EPA/600/R-97/006, Technical Support Center Issue, U.S. Environmental Protection Agency, Washington, D.C., December.

U.S. Environmental Protection Agency (EPA), 2002a, *Guidance for Comparing Background and Chemical Concentrations in Soil for CERCLA Sites*, EPA 540-R-01-003-OSWER 9285.7-41, September, 2002.

U.S. Environmental Protection Agency (EPA), 2002b, *Calculating Upper Confidence Limits for Exposure Point concentrations at Hazardous Waste Sites*, OSWER 9285.6-10, December, 2002.

U.S. Environmental Protection Agency (EPA), 2006, *Data Quality Assessment: Statistical Methods for Practitioners, EPA QA/G-9S*, U.S. Environmental Protection Agency, Washington, D.C.

U.S. Environmental Protection Agency (EPA), 2009a, *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities: Unified Guidance*, EPA 530-R-09-007, U.S. Environmental Protection Agency, Washington, D.C.

U.S. Environmental Protection Agency (EPA), 2009b, *ProUCL Version 4.00.04, Technical Guide*, EPA/600/R-07/041, February, 2009.

Weisstein, E.W., 2008, "Bonferroni Correction," from *MathWorld--A Wolfram Web Resource*, http://mathworld.wolfram.com/BonferroniCorrection.html.

This page left intentionally blank.

Figures

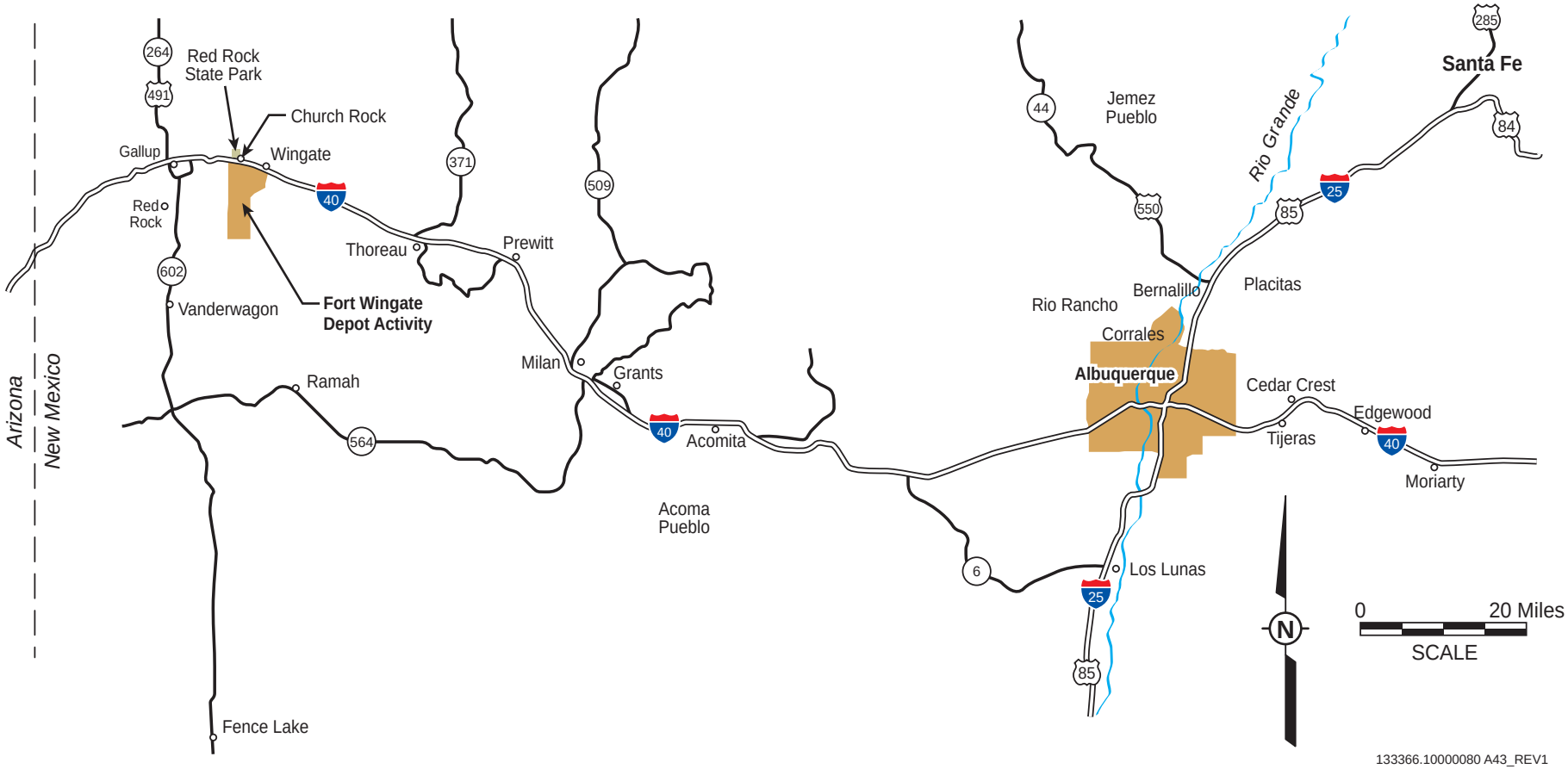


Figure 1-1
Site Location Map, Background Study and Data Evaluation
Fort Wingate Depot Activity
Gallup, New Mexico

714000
717000
720000
723000
3936000
3933000
3930000
3927000
3924000
3921000
3918000

RED ROCKS

Channel

South Fork Puerco River

Artificial

Sewage Treatment Plant

Deep Well

Leaching Plant

Knudsen Lake

Landfill

6600

6800

7000

7200

7400

7600

8000

8200

THE HOGBACK

Santa Fe Spring

Milk Ranch Canyon

ZUNIMTS

Bread Springs Wash

Mcferren Lake

Pine Tree Wash

Little Bear Spring

N

4,000 2,000 0 4,000 Feet

1,000 500 0 1,000 Meters

Universal Transverse Mercator
Zone 12 North GCS WGS 1984 Meters

Legend

- Fort Wingate Army Depot boundary
- Streams
- Water
- Contours
- Areas of Concern/Solid Waste Management Units
- Roads
- Southwestern-corner Drainage System
- Western Drainage System
- Eastern Drainage System

Figure 2-1
Site-Specific Hydrogeology
Soil Background Study
and Data Evaluation
Fort Wingate Depot Activity
Gallup, New Mexico

Shaw®
Shaw Environmental, Inc.

Generated By: TG Date: 10/06/10 File Path:H:\Ft_Wingate\GISDocuments\Project_Maps\FWDA_13_Fig2-1_bckgrnd_REV1.mxd

716000 718000 720000 722000 724000 726000

3934000 3932000 3930000 3928000 3926000 3924000 3922000 3920000

INSET MAP

AH-04
AH-03
AH-02
AH-01

PARCEL-25
PARCEL-10A
PARCEL-10B
PARCEL-12
PARCEL-09
PARCEL-07
PARCEL-11
PARCEL-14
PARCEL-24
PARCEL -08
PARCEL-21
PARCEL-13-18
PARCEL-15
PARCEL-06
PARCEL-16
PARCEL-23
PARCEL-22
PARCEL-05B
PARCEL -05A
PARCEL-04B
PARCEL -04A
PARCEL-19
PARCEL-17
PARCEL-02
PARCEL-20
PARCEL-03
PARCEL-01

SEE INSET MAP FOR PROPOSED SAMPLE LOCATIONS

BH-1
BH-2
BH-3
BH-4
BH-5
BH-6
BH-7
BH-8
BH-9
BH-10
BH-11
BH-12
BH-13
BH-14
BH-15
BH-16
BH-17
BH-18
BH-19
BH-20
BH-21
BH-22
BH-23
BH-24
BH-25
BH-26
BH-27
BH-28
BH-29
BH-30
BH-31
BH-32
BH-33
BH-34
BH-35
BH-36
BH-37
BH-38

N

0 250 500 1,000 1,500 2,000 Meters

0 750 1,500 3,000 4,500 6,000 Feet

Universal Transverse Mercator
Zone 12 North GCS WGS 1984 Meters
Source of Imagery: U.S. Department of Agriculture, Natural Resources Conservation Services 2007

Legend

- Sample Locations (Total depth equal to 10 ft. bgs)
- Sample Locations (Total depth less than 10 ft. bgs)
- Former Open Munitions Storage Locations
- Kickout boundary [275 ft. from known Munitions Debris (MD) and Munitions and Explosives of Concern (MEC)]
- Fort Wingate Army Depot boundary
- Fort Wingate Parcels
- Fort Wingate OBOD (Hazardous Waste Management Unit)
- Areas of Concern/Solid Waste Management Units
- Roads

Ecozones

- Desert Scrubland
- Desert Riparian
- Pinon-Juniper Woodland
- Ponderosa Woodland
- Rock Outcrop
- Seasonal Wetlands

bgs = below ground surface
ft. = foot (feet)

Figure 3-1
Soil Boring Locations
Soil Background Study and Data Evaluation
Fort Wingate Depot Activity
Gallup, New Mexico

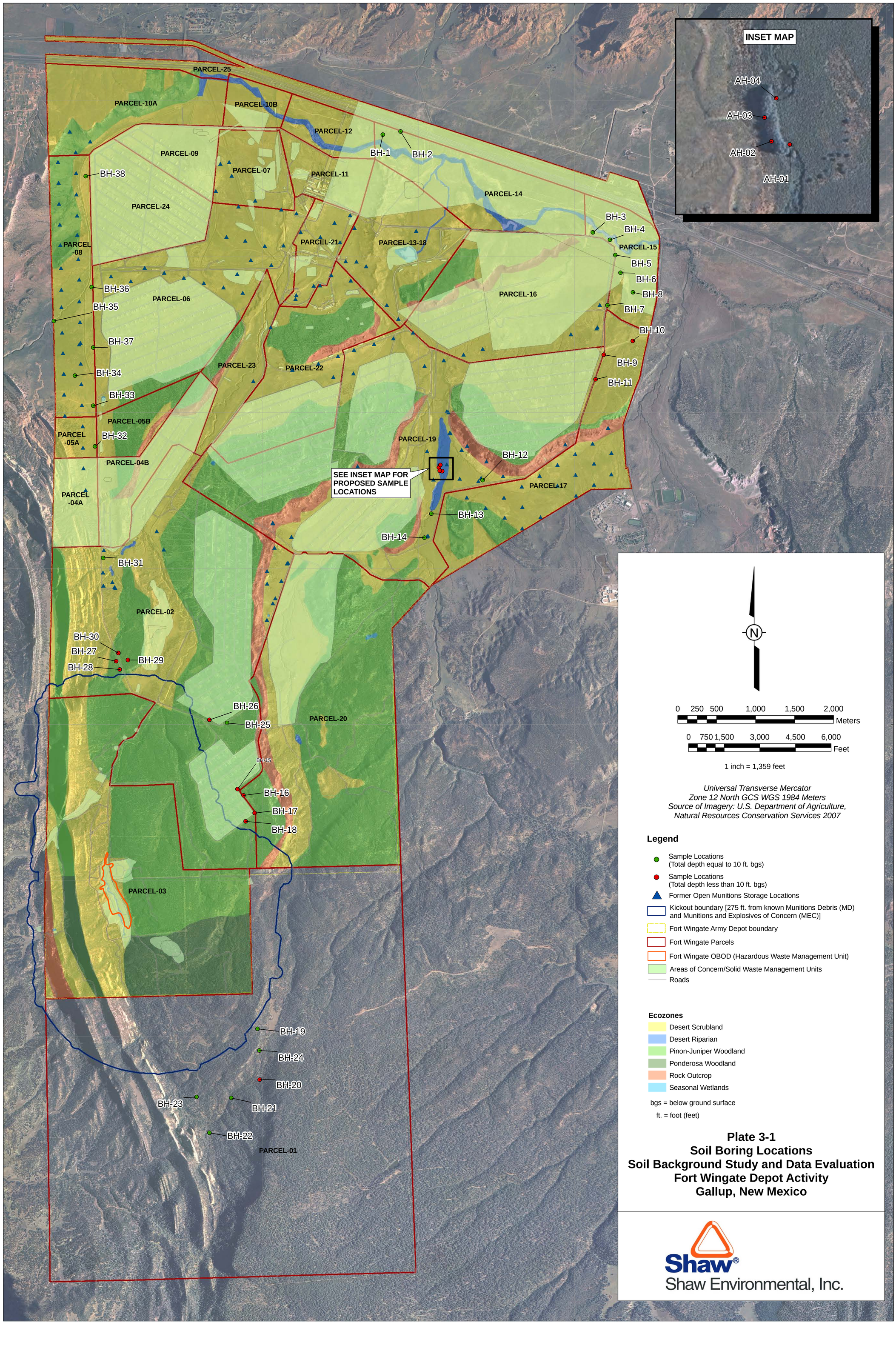
Shaw®
Shaw Environmental, Inc.

Generated By: TG Date: 10/06/10 File Path:H:\FL_Wingate\GISDocuments\Project_Maps\FWDA_12_Fig3-1_bckgrnd_REV1.mxd

Plate

716000 718000 720000 722000 724000 726000

3934000 3932000 3930000 3928000 3926000 3924000 3922000 3920000



N

0 250 500 1,000 1,500 2,000 Meters

0 750 1,500 3,000 4,500 6,000 Feet

1 inch = 1,359 feet

Universal Transverse Mercator
Zone 12 North GCS WGS 1984 Meters
Source of Imagery: U.S. Department of Agriculture, Natural Resources Conservation Services 2007

Legend

- Sample Locations (Total depth equal to 10 ft. bgs)
- Sample Locations (Total depth less than 10 ft. bgs)
- Former Open Munitions Storage Locations
- Kickout boundary [275 ft. from known Munitions Debris (MD) and Munitions and Explosives of Concern (MEC)]
- Fort Wingate Army Depot boundary
- Fort Wingate Parcels
- Fort Wingate OBOD (Hazardous Waste Management Unit)
- Areas of Concern/Solid Waste Management Units
- Roads

Ecozones

- Desert Scrubland
- Desert Riparian
- Pinon-Juniper Woodland
- Ponderosa Woodland
- Rock Outcrop
- Seasonal Wetlands

bgs = below ground surface

ft. = foot (feet)

Plate 3-1
Soil Boring Locations
Soil Background Study and Data Evaluation
Fort Wingate Depot Activity
Gallup, New Mexico

Shaw®
Shaw Environmental, Inc.

Generated By: TG Date: 10/07/10 File Path:H:\Ft_Wingate\GISDocuments\Project_Maps\FWDA_16_Plate_3-1_bckgrnd_REV-1.mxd

Tables

Table 3-1
Soil Boring Sample Summary
Soil Background Study and Data Evaluation, Fort Wingate Depot Activity
Gallup, New Mexico

Soil Boring	Universal Transverse Mercator Zone 12 North GCS WGS 1984 Meters		Sample Number	Sample Date	Sample Type	Total Borehole Depth (ft bgs)	Depth Interval	
	Easting	Northing					Min. Depth (ft bgs)	Max. Depth (ft bgs)
TAL Metals (EPA 6010B/6020/7471A)[a]								
AH01[b]	720304	3929248	19SW-AH01-SO-1	11/11/2009	Soil Boring	5	0	1.4
			19SW-AH01-SO-2				4	5
AH02[b]	720272.508	3929253.416	19SW-AH02-SO-1	11/11/2009	Soil Boring	5	0	1.5
			19SW-AH02-SO-2				4.5	5
			FDUP-09				4.5	5
AH03[b]	720260.695	3929294.139	19SW-AH03-SO-1	11/11/2009	Soil Boring	4.5	0	1
			19SW-AH03-SO-2				3.8	4.5
AH04[b]	720280.77	3929327.622	19SW-AH04-SO-1	11/11/2009	Soil Boring	5	0	1
			19SW-AH04-SO-2				4	5
BH01	719541.254	3933565.293	14DS-BH01-SO-1	11/5/2009	Soil Boring	10	0	2
			14DS-BH01-SO-2				4.5	5.5
			14DS-BH01-SO-3				9	10
BH02	719768.493	3933604.914	14DS-BH02-SO-1	11/9/2009	Soil Boring	10	0	2
			14DS-BH02-SO-2				4.5	5.5
			14DS-BH02-SO-3				9	10

Table 3-1 (Continued)
Soil Boring Sample Summary
Soil Background Study and Data Evaluation, Fort Wingate Depot Activity
Gallup, New Mexico

Soil Boring	Universal Transverse Mercator Zone 12 North GCS WGS 1984 Meters		Sample Number	Sample Date	Sample Type	Total Borehole Depth (ft bgs)	Depth Interval	
	Easting	Northing					Min. Depth (ft bgs)	Max. Depth (ft bgs)
TAL Metals (EPA 6010B/6020/7471A)[a] (Continued)								
BH03[b]	722236.898	3932311.505	15SW-BH03-SO-1	11/9/2009	Soil Boring	10	0	2
			15SW-BH03-SO-2				4.5	5.5
			15SW-BH03-SO-3				9	10
BH04[b]	722456.124	3932215.2	15SW-BH04-SO-1	11/9/2009	Soil Boring	10	0	2
			15SW-BH04-SO-2				4.5	5.5
			15SW-BH04-SO-3				9	10
BH05[b]	722525.102	3932021.504	15SW-BH05-SO-1	11/9/2009	Soil Boring	10	0	2
			FDUP-04				0	2
			15SW-BH05-SO-2				4.5	5.5
			FDUP-05				4.5	5.5
			15SW-BH05-SO-3				9	10
			FDUP-06				9	10
BH06[b]	722591.61	3931793.589	15SW-BH06-SO-1	11/9/2009	Soil Boring	10	0	2
			15SW-BH06-SO-2				4.5	5.5
			15SW-BH06-SO-3				9	10

Table 3-1 (Continued)
Soil Boring Sample Summary
Soil Background Study and Data Evaluation, Fort Wingate Depot Activity
Gallup, New Mexico

Soil Boring	Universal Transverse Mercator Zone 12 North GCS WGS 1984 Meters		Sample Number	Sample Date	Sample Type	Total Borehole Depth (ft bgs)	Depth Interval	
	Easting	Northing					Min. Depth (ft bgs)	Max. Depth (ft bgs)
TAL Metals (EPA 6010B/6020/7471A)[a] (Continued)								
BH07	722424.058	3931375.68	15DS-BH07-SO-1	11/9/2009	Soil Boring	10	0	2
			15DS-BH07-SO-2				4.5	5.5
			15DS-BH07-SO-3				9	10
BH08	722750.507	3931542.693	15DS-BH08-SO-1	11/9/2009	Soil Boring	10	0	2
			15DS-BH08-SO-2				4.5	5.5
			15DS-BH08-SO-3				9	10
BH09	722375.482	3930741.443	17DS-BH09-SO-1	11/11/2009	Soil Boring (Hand Auger)	2.5	0	1.3
			17DS-BH09-SO-2				1.3	2.5
BH10	722748.123	3930918.129	17DS-BH10-SO-1	11/9/2009	Soil Boring	8	0	2
			17DS-BH10-SO-2				4.5	5.5
			17DS-BH10-SO-3				7	8
BH11	722271.167	3930425.234	17DS-BH11-SO-1	11/11/2009	Soil Boring (Hand Auger)	2	0	1.1
			17DS-BH11-SO-2				1.1	2
BH12	720822.084	3929133.191	19DS-BH12-SO-1	11/11/2009	Soil Boring	10	0	2
			19DS-BH12-SO-2				4.5	5.5
			19DS-BH12-SO-3				9	10

Table 3-1 (Continued)
Soil Boring Sample Summary
Soil Background Study and Data Evaluation, Fort Wingate Depot Activity
Gallup, New Mexico

Soil Boring	Universal Transverse Mercator Zone 12 North GCS WGS 1984 Meters		Sample Number	Sample Date	Sample Type	Total Borehole Depth (ft bgs)	Depth Interval	
	Easting	Northing					Min. Depth (ft bgs)	Max. Depth (ft bgs)
TAL Metals (EPA 6010B/6020/7471A)[a] (Continued)								
BH13	720165.015	3928701.913	19DS-BH13-SO-1	11/11/2009	Soil Boring	10	0	2
			19DS-BH13-SO-2				4.5	5.5
			19DS-BH13-SO-3				9	10
BH14	720076.728	3928394.479	19DS-BH14-SO-1	11/11/2009	Soil Boring	10	0	2
			19DS-BH14-SO-2				4.5	5.5
			19DS-BH14-SO-3				9	10
BH15	717676.003	3925169.007	20PJ-BH15-SO-1	11/10/2009	Soil Boring	2.5	0	1.5
			20PJ-BH15-SO-2				1.5	2.5
BH16	717753.478	3925087.561	20PJ-BH16-SO-1	11/10/2009	Soil Boring	1.5	0	1.5
BH17	717896.579	3924862.299	20PJ-BH17-SO-1	11/10/2009	Soil Boring	5	0	2
			20PJ-BH17-SO-2				3	4
			20PJ-BH17-SO-3				4	5
BH18	717779.595	3924755.929	02PJ-BH18-SO-1	11/10/2009	Soil Boring	4	0	2
			FDUP-07				0	2
			02PJ-BH18-SO-2				2	4
			FDUP-08				2	4

Table 3-1 (Continued)
Soil Boring Sample Summary
Soil Background Study and Data Evaluation, Fort Wingate Depot Activity
Gallup, New Mexico

Soil Boring	Universal Transverse Mercator Zone 12 North GCS WGS 1984 Meters		Sample Number	Sample Date	Sample Type	Total Borehole Depth (ft bgs)	Depth Interval	
	Easting	Northing					Min. Depth (ft bgs)	Max. Depth (ft bgs)
TAL Metals (EPA 6010B/6020/7471A)[a] (Continued)								
BH19	717933.24	3922092.579	01PP-BH19-SO-1	11/4/2009	Soil Boring	10	0	2
			01PP-BH19-SO-2				3.5	4.5
			01PP-BH19-SO-3				9	10
BH20	717960.982	3921440.268	01PP-BH20-SO-1	11/5/2009	Soil Boring	7	0	2
			01PP-BH20-SO-2				4.5	5.5
			01PP-BH20-SO-3				6	7
BH21	717595.211	3921206.94	01PP-BH21-SO-1	11/5/2009	Soil Boring	10	0	2
			01PP-BH21-SO-2				4.5	5.5
			01PP-BH21-SO-3				9	10
BH22	717315.095	3920758.883	01PP-BH22-SO-1	11/5/2009	Soil Boring	10	0	2
			FDUP-01				0	2
			01PP-BH22-SO-2				4.5	5.5
			FDUP-02				4.5	5.5
			01PP-BH22-SO-3				9	10
			FDUP-03				9	10

Table 3-1 (Continued)
Soil Boring Sample Summary
Soil Background Study and Data Evaluation, Fort Wingate Depot Activity
Gallup, New Mexico

Soil Boring	Universal Transverse Mercator Zone 12 North GCS WGS 1984 Meters		Sample Number	Sample Date	Sample Type	Total Borehole Depth (ft bgs)	Depth Interval	
	Easting	Northing					Min. Depth (ft bgs)	Max. Depth (ft bgs)
TAL Metals (EPA 6010B/6020/7471A)[a] (Continued)								
BH23	717150.387	3921219.081	01PP-BH23-SO-1	11/5/2009	Soil Boring	10	0	2
			01PP-BH23-SO-2				4.5	5.5
			01PP-BH23-SO-3				9	10
BH24	717958.232	3921815.581	01PP-BH24-SO-1	11/5/2009	Soil Boring	10	0	2
			01PP-BH24-SO-2				4.5	5.5
			01PP-BH24-SO-3				9	10
BH25	717543.768	3926017.955	02PJ-BH25-SO-1	11/10/2009	Soil Boring	10	0	2
			02PJ-BH25-SO-2				4.5	5.5
			02PJ-BH25-SO-3				9	10
BH26	717315	3926057.007	02PJ-BH26-SO-1	11/10/2009	Soil Boring	5	0	2
			02PJ-BH26-SO-2				3	4
			02PJ-BH26-SO-3				4	5
BH27	716119.29	3926809.552	02PJ-BH27-SO-1	11/10/2009	Soil Boring	3.85	0	1.5
			02PJ-BH27-SO-2				1.5	3.85

Table 3-1 (Continued)
Soil Boring Sample Summary
Soil Background Study and Data Evaluation, Fort Wingate Depot Activity
Gallup, New Mexico

Soil Boring	Universal Transverse Mercator Zone 12 North GCS WGS 1984 Meters		Sample Number	Sample Date	Sample Type	Total Borehole Depth (ft bgs)	Depth Interval	
	Easting	Northing					Min. Depth (ft bgs)	Max. Depth (ft bgs)
TAL Metals (EPA 6010B/6020/7471A)[a] (Continued)								
BH28	716166.244	3926703.782	02PJ-BH28-SO-1	11/10/2009	Soil Boring	2.25	0	1.5
			02PJ-BH28-SO-2				1.5	2.25
BH29	716147.923	3926925.78	02PJ-BH29-SO-1	11/9/2009	Soil Boring	3	0	1.5
			02PJ-BH29-SO-2				1.5	3
BH30	716147.812	3926915.227	02PJ-BH30-SO-1	11/9/2009	Soil Boring	3	0	1.5
			02PJ-BH30-SO-2				1.5	3
BH31	715951.334	3928135.356	02DS-BH31-SO-1	11/6/2009	Soil Boring	10	0	2
			02DS-BH31-SO-2				4.5	5.5
			02DS-BH31-SO-3				9	10
BH32	715846.909	3929566.64	05ADS-BH32-SO-1	11/6/2009	Soil Boring	10	0	2
			05ADS-BH32-SO-2				4.5	5.5
			05ADS-BH32-SO-3				9	10

Table 3-1 (Continued)
Soil Boring Sample Summary
Soil Background Study and Data Evaluation, Fort Wingate Depot Activity
Gallup, New Mexico

Soil Boring	Universal Transverse Mercator Zone 12 North GCS WGS 1984 Meters		Sample Number	Sample Date	Sample Type	Total Borehole Depth (ft bgs)	Depth Interval	
	Easting	Northing					Min. Depth (ft bgs)	Max. Depth (ft bgs)
TAL Metals (EPA 6010B/6020/7471A)[a] (Continued)								
BH33	715824.763	3930087.911	08DS-BH33-SO-1	11/6/2009	Soil Boring	10	0	2
			FDUP-10				0	2
			08DS-BH33-SO-2				4.5	5.5
			FDUP-11				4.5	5.5
			08DS-BH33-SO-3				9	10
			FDUP-12				9	10
BH34	715590.237	3930474.113	08DS-BH34-SO-1	11/6/2009	Soil Boring	10	0	2
			08DS-BH34-SO-2				4.5	5.5
			08DS-BH34-SO-3				9	10
BH35	715319.946	3931176.158	08DS-BH35-SO-1	11/6/2009	Soil Boring	10	0	2
			08DS-BH35-SO-2				4.5	5.5
			08DS-BH35-SO-3				9	10
BH36	715805.512	3931609.473	08DS-BH36-SO-1	11/6/2009	Soil Boring	10	0	2
			08DS-BH36-SO-2				4.5	5.5
			08DS-BH36-SO-3				9	10

Table 3-1 (Continued)
Soil Boring Sample Summary
Soil Background Study and Data Evaluation, Fort Wingate Depot Activity
Gallup, New Mexico

Soil Boring	Universal Transverse Mercator Zone 12 North GCS WGS 1984 Meters		Sample Number	Sample Date	Sample Type	Total Borehole Depth (ft bgs)	Depth Interval	
	Easting	Northing					Min. Depth (ft bgs)	Max. Depth (ft bgs)
TAL Metals (EPA 6010B/6020/7471A)[a] (Continued)								
BH37	715824.623	3930834.23	08DS-BH37-SO-1	11/6/2009	Soil Boring	10	0	2
			08DS-BH37-SO-2				4.5	5.5
			08DS-BH37-SO-3				9	10
BH38	715728	3933032	08DS-BH38-SO-1	11/6/2009	Soil Boring	10	0	2
			08DS-BH38-SO-2				4.5	5.5
			08DS-BH38-SO-3				9	10

[a]U.S. Environmental Protection Agency, 1986, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," SW-846, 3rd ed., U.S. Environmental Protection Agency, Washington, D.C.

[b]Sample numbers indicate that the sample was collected in the seasonal wetlands Eco Zone. However, the samples were actually collected in the desert riparian Eco Zone.

AH = Hand-augered borehole.
bgs = Below ground surface.
BH = Borehole.
EPA = U.S. Environmental Protection Agency.
ft = Foot (feet).
GCS = Grid Coordinate System.
Max. = Maximum.
Min. = Minimum.
TAL = Target Analyte List.
WGS 1984 = World Coordinate System.

Table 3-2
Soil Sampling Locations and Rationale
Soil Background Study and Data Evaluation, Fort Wingate Depot Activity
Gallup, New Mexico

Parcel No.	Location Description	Eco Zone	Direct-Push Locations	Sample Number	Total Borehole Depth (ft bgs)	Depth Interval		Rationale	Total Number of Samples Collected at Location	Notes
						Min. Depth (ft bgs)	Max. Depth (ft bgs)			
1	South of Parcel 3 along Woodland Road No. 2; sampling locations were distributed along access road	Ponderosa Pine	BH19	01PP-BH19-SO-1	10	0	2	Location was selected as it is upgradient of the OB/OD area and is an area with a similar Eco Zone and similar lithology.	21	This location is in a Ponderosa Pine Eco Zone and was verified in the field. Sampling locations are located outside the "Kickout Boundary" and required OE clearance prior to drilling. BH20 reached refusal at 7 feet bgs due to bedrock. BH24 reached refusal at 2 feet bgs due to bedrock. Because of similar geology (mainly outcropping bedrock), BH24 was relocated and cleared by OE personnel prior to drilling. See Figure 3-1 for location.
				01PP-BH19-SO-2		3.5	4.5			
				01PP-BH19-SO-3		9	10			
			BH20	01PP-BH20-SO-1	7	0	2			
				01PP-BH20-SO-2		4.5	5.5			
				01PP-BH20-SO-3		6	7			
			BH21	01PP-BH21-SO-1	10	0	2			
				01PP-BH21-SO-2		4.5	5.5			
				01PP-BH21-SO-3		9	10			
			BH22	01PP-BH22-SO-1	10	0	2			
				FDUP-01		0	2			
				01PP-BH22-SO-2		4.5	5.5			
				FDUP-02		4.5	5.5			
				01PP-BH22-SO-3		9	10			
				FDUP-03		9	10			
			BH23	01PP-BH23-SO-1	10	0	2			
				01PP-BH23-SO-2		4.5	5.5			
				01PP-BH23-SO-3		9	10			
			BH24	01PP-BH24-SO-1	10	0	2			
				01PP-BH24-SO-2		4.5	5.5			
				01PP-BH24-SO-3		9	10			

Table 3-2 (Continued)
Soil Sampling Locations and Rationale
Soil Background Study and Data Evaluation, Fort Wingate Depot Activity
Gallup, New Mexico

Parcel No.	Location Description	Eco Zone	Direct-Push Locations	Sample Number	Total Borehole Depth (ft bgs)	Depth Interval		Rationale	Total Number of Samples Collected at Location	Notes
						Min. Depth (ft bgs)	Max. Depth (ft bgs)			
2	Along the northeastern corner of Parcel 3 near the "Danger Area Fire Zone" but outside of the “Kickout Boundary”	"Piñon/Pine" (transition from P/J to Ponderosa and scrub oak)	BH18	02PJ-BH18-SO-1	4	0	2	Area was selected because it has lithology and an Eco Zone similar to that of the majority of the OB/OD area.	21	These sample locations are located outside the “Kickout Boundary.” BH26 reached refusal at 5 ft bgs due to sandstone bedrock.
				FDUP-07		0	2			
				02PJ-BH18-SO-2		2	4			
				FDUP-08		2	4			
			BH25	02PJ-BH25-SO-1	10	0	2			
				02PJ-BH25-SO-2		4.5	5.5			
				02PJ-BH25-SO-3		9	10			
			BH26	02PJ-BH26-SO-1	5	0	2			
				02PJ-BH26-SO-2		3	4			
				02PJ-BH26-SO-3		4	5			
	Within Parcel 2; sample locations target the area between West Patrol Road, the arroyo, the fence line, and outside the “Kickout Boundary”	"Piñon/Pine" (transition from P/J to Ponderosa and scrub oak)	BH27	02PJ-BH27-SO-1	3.85	0	1.5	Area was selected because it provided background samples from an Eco Zone and lithology similar to the majority of the OB/OD area. No AOC is present upgradient of this area.		These boreholes are located outside the "Kickout Boundary" and required OE clearance prior to drilling. The locations for these four boreholes were in an area that had very shallow soils and dense vegetation. Much effort was made to find alternative borehole locations in this parcel for this Eco Zone. Because of the dense vegetation and few roads USACE representative approved these locations. Samples were collected at the top and bottom of the soil boring for statistical boundaries.
				02PJ-BH27-SO-2		1.5	3.85			
			BH28	02PJ-BH28-SO-1	2.25	0	1.5			
				02PJ-BH28-SO-2		1.5	2.25			
			BH29	02PJ-BH29-SO-1	3	0	1.5			
				02PJ-BH29-SO-2		1.5	3			
			BH30	02PJ-BH30-SO-1	3	0	1.5			
				02PJ-BH30-SO-2		1.5	3			
		Desert Scrubland	BH31	02DS-BH31-SO-1	10	0	2			
				02DS-BH31-SO-2		4.5	5.5			
				02DS-BH31-SO-3		9	10			

Table 3-2 (Continued)
Soil Sampling Locations and Rationale
Soil Background Study and Data Evaluation, Fort Wingate Depot Activity
Gallup, New Mexico

Parcel No.	Location Description	Eco Zone	Direct-Push Locations	Sample Number	Total Borehole Depth (ft bgs)	Depth Interval		Rationale	Total Number of Samples Collected at Location	Notes
						Min. Depth (ft bgs)	Max. Depth (ft bgs)			
5A	Parcels where vegetation was dominated by desert scrubland; sample locations target low-lying areas	Desert Scrubland	BH32	05ADS-BH32-SO-1	10	0	2	These two parcels were selected for background locations because no AOCs are located within or upgradient of the parcels. In addition, these parcels are within the desert scrubland Eco Zone.	3	
				05ADS-BH32-SO-2		4.5	5.5			
				05ADS-BH32-SO-3		9	10			
8		Desert Scrubland	BH33	08DS-BH33-SO-1	10	0	2		21	
				FDUP-10		0	2			
				08DS-BH33-SO-2		4.5	5.5			
				FDUP-11		4.5	5.5			
				08DS-BH33-SO-3		9	10			
				FDUP-12		9	10			
			BH34	08DS-BH34-SO-1	10	0	2			
				08DS-BH34-SO-2		4.5	5.5			
				08DS-BH34-SO-3		9	10			
			BH35	08DS-BH35-SO-1	10	0	2			
				08DS-BH35-SO-2		4.5	5.5			
				08DS-BH35-SO-3		9	10			
			BH36	08DS-BH36-SO-1	10	0	2			
				08DS-BH36-SO-2		4.5	5.5			
				08DS-BH36-SO-3		9	10			
			BH37	08DS-BH37-SO-1	10	0	2			
				08DS-BH37-SO-2		4.5	5.5			
				08DS-BH37-SO-3		9	10			
			BH38	08DS-BH38-SO-1	10	0	2			
				08DS-BH38-SO-2		4.5	5.5			
				08DS-BH38-SO-3		9	10			

Table 3-2 (Continued)
Soil Sampling Locations and Rationale
Soil Background Study and Data Evaluation, Fort Wingate Depot Activity
Gallup, New Mexico

Parcel No.	Location Description	Eco Zone	Direct-Push Locations	Sample Number	Total Borehole Depth (ft bgs)	Depth Interval		Rationale	Total Number of Samples Collected at Location	Notes
						Min. Depth (ft bgs)	Max. Depth (ft bgs)			
14	East of the main gate and north of the arroyo; east of the dumping area and AOC 43	Desert Scrubland	BH01	14DS-BH01-SO-1	10	0	2	This area was selected because the Eco Zone is in the desert scrubland and it was assumed that this area has not been impacted by activities.	6	
				14DS-BH01-SO-2		4.5	5.5			
				14DS-BH01-SO-3		9	10			
			BH02	14DS-BH02-SO-1	10	0	2			
				14DS-BH02-SO-2		4.5	5.5			
				14DS-BH02-SO-3		9	10			
15	Northeastern corner of Parcel 15 on the floodplains of the Puerco River	Desert Riparian	BH03	15SW-BH03-SO-1	10	0	2	This area was neither near nor downgradient of an AOC; in addition, the floodplains of the arroyo are assumed to be analogous to the seasonal wetland conditions at the site.	15	These samples were located as close as possible to the arroyo. The location can be accessed through the MDA gate; follow the road along the power line to the main road. These boreholes are considered desert riparian even though the site map indicates that this area is Desert Scrubland.
				15SW-BH03-SO-2		4.5	5.5			
				15SW-BH03-SO-3		9	10			
			BH04	15SW-BH04-SO-1	10	0	2			
				15SW-BH04-SO-2		4.5	5.5			
				15SW-BH04-SO-3		9	10			
			BH05	15SW-BH05-SO-1	10	0	2			
				FDUP-04		0	2			
				15SW-BH05-SO-2		4.5	5.5			
				FDUP-05		4.5	5.5			
				15SW-BH05-SO-3		9	10			
				FDUP-06		9	10			
			BH06	15SW-BH06-SO-1	10	0	2			
				15SW-BH06-SO-2		4.5	5.5			
				15SW-BH06-SO-3		9	10			
	Southern-bend area of Parcel 15	Desert Scrubland	BH07	15DS-BH07-SO-1	10	0	2	Samples were collected in fine-grained materials. Sample location were preferentially located near previously collected background samples.	6	Sample locations were determined using information from the USACE regarding access.
				15DS-BH07-SO-2		4.5	5.5			
				15DS-BH07-SO-3		9	10			
			BH08	15DS-BH08-SO-1	10	0	2			
				15DS-BH08-SO-2		4.5	5.5			
				15DS-BH08-SO-3		9	10			

Table 3-2 (Continued)
Soil Sampling Locations and Rationale
Soil Background Study and Data Evaluation, Fort Wingate Depot Activity
Gallup, New Mexico

Parcel No.	Location Description	Eco Zone	Direct-Push Locations	Sample Number	Total Borehole Depth (ft bgs)	Depth Interval		Rationale	Total Number of Samples Collected at Location	Notes
						Min. Depth (ft bgs)	Max. Depth (ft bgs)			
17	Sample locations were distributed in northern portion of Parcel 17	Desert Scrubland	BH09	17DS-BH09-SO-1	2.5	0	1.3	Samples were collected in fine-grained materials. Sampling locations were preferentially located near previously collected background samples.	7	Sampling locations were determined using information from the USACE regarding access. BH10 was originally located in an area with bedrock outcrops. New location still reached refusal at 8 feet bgs due to bedrock. Boreholes BH9 and BH11 were inaccessible to the drill rig due to dense sagebrush. The field team walked to these locations and used a hand auger to advance the boreholes and collect samples.
				17DS-BH09-SO-2		1.3	2.5			
			BH10	17DS-BH10-SO-1	8	0	2			
				17DS-BH10-SO-2		4.5	5.5			
				17DS-BH10-SO-3		7	8			
			BH11	17DS-BH11-SO-1	2	0	1.1			
				17DS-BH11-SO-2		1.1	2			
19	Channel bed near the stand of cottonwoods; sample locations will be focused in the channel center	Desert Riparian	AH01	19SW-AH01-SO-1	5	0	1.4	Area was neither near nor downgradient of an AOC; it was assumed that the channel bed materials are representative of seasonal wetlands located elsewhere on the site.	9	This area of the parcel was inaccessible to the drill rig. The field team walked to these locations and used a hand auger to advance the boreholes and collect samples. AH03 reached refusal at 4.5 feet bgs due to plant roots.
				19SW-AH01-SO-2		4	5			
			AH02	19SW-AH02-SO-1	5	0	1.5			
				19SW-AH02-SO-1		4.5	5			
				FDUP-09		4.5	5			
			AH03	19SW-AH03-SO-1	4.5	0	1			
				19SW-AH03-SO-2		3.8	4.5			
			AH04	19SW-AH04-SO-1	5	0	1			
				19SW-AH04-SO-2		4	5			
		Desert Scrubland	BH12	19DS-BH12-SO-1	10	0	2	These three locations were originally in Parcel 17 but were moved to Parcel 19 because of limited access to that area of Parcel 17; the locations are within target Eco Zone of Desert Scrubland.	9	These locations were close to the previous locations in Parcel 17.
				19DS-BH12-SO-2		4.5	5.5			
				19DS-BH12-SO-3		9	10			
			BH13	19DS-BH13-SO-1	10	0	2			
				19DS-BH13-SO-2		4.5	5.5			
				19DS-BH13-SO-3		9	10			
			BH14	19DS-BH14-SO-1	10	0	2			
				19DS-BH14-SO-2		4.5	5.5			
				19DS-BH14-SO-3		9	10			

Table 3-2 (Continued)
Soil Sampling Locations and Rationale
Soil Background Study and Data Evaluation, Fort Wingate Depot Activity
Gallup, New Mexico

Parcel No.	Location Description	Eco Zone	Direct-Push Locations	Sample Number	Total Borehole Depth (ft bgs)	Depth Interval		Rationale	Total Number of Samples Collected at Location	Notes
						Min. Depth (ft bgs)	Max. Depth (ft bgs)			
20	Southern end of Parcel 2; sample locations were distributed along the fence line of Parcel 20, located east of J Block	Piñon/Juniper	BH15	20PJ-BH15-SO-1	2.5	0	1.5	Area was selected because both the Eco Zone and lithology are similar to what is found in the OB/OD area.	6	These sampling locations are outside the "Kickout Boundary" and required OE clearance prior to drilling. The locations for these three boreholes were in an area with very shallow soil and dense vegetation. A concerted effort was made to find alternative borehole locations within this parcel for this Eco Zone. Because of the dense vegetation and only one road (along the fence line), the USACE representative approved these locations. BH16 was too shallow to collect more than one sample.
				20PJ-BH15-SO-2		1.5	2.5			
			BH16	20PJ-BH16-SO-1	1.5	0	1.5			
			BH17	20PJ-BH17-SO-1	5	0	2			
				20PJ-BH17-SO-2		3	4			
				20PJ-BH17-SO-3		4	5			

AH = *Hand-augered borehole.*
AOC = *Area of Concern.*
bgs = *Below ground surface.*
BH = *Borehole.*
Eco Zone = *Ecologic zone.*
ft = *Foot (feet).*
Max = *Maximum.*
MDA = *Missile Defense Area.*
Min. = *Minimum.*
OB/OD = *Open Burn/Open Detonation.*
OE = *Ordnance and explosives.*
P/J = *Piñon/Juniper.*
USACE = *U.S. Army Corps of Engineers.*

Table 6-1
Background Soil Summary Statistics
Soil Background Study and Data Evaluation, Fort Wingate Depot Activity
Gallup, New Mexico

	Sample Statistics								Sample Variance			Population Statistics		Regulatory Standard
Element	Number of Samples	Percent Nondetects	Distribution Type	Minimum Concentration (mg/kg)	Median Concentration (mg/kg)	Geometric Mean (mg/kg)	Arithmetic Mean (mg/kg)	Maximum Concentration (mg/kg)	Inter-Quartile Range	Standard Deviation	Coefficient of Variation	95th UCL of Mean	95th UTL	NMED[a] SSLs Residential (mg/kg)
Aluminum	112	0.89	Nonparametric	1,070	7,620	7,233	8,809	27,200	6,143	5,430	0.62	9,635	23,340	78,100
Antimony	112	100	Nonparametric	< 0.35	< 0.4	< 0.48	< 0.59	< 2.2	NA	NA	NA	< 0.59	< 2.2	31.3
Arsenic	112	0	Nonparametric	0.18	0.815	0.801	1.091	11.2	0.51	1.26	1.16	1.29	3.69	3.90
Barium	112	0	Nonparametric	25.9	166	146	180	662	151	111	0.62	197	482	15,600
Beryllium	112	0	Nonparametric	0.102	0.58	0.54	0.66	2.77	0.51	0.412	0.62	0.725	1.49	156
Cadmium	112	22.3	Nonparametric	< 0.0241	0.04355	0.052	0.069	0.727	0.050	0.082	1.20	0.09	0.224	77.9
Calcium	112	0	Lognormal	3,020	19,550	18,215	25,270	160,000	17,600	23,384	0.93	28,972	91,760	NE
Chromium[b]	112	0	Nonparametric	0.222	5.635	5.32	6.92	23.7	5.62	4.73	0.68	7.65	18.1	113,000
Cobalt	112	0	Nonparametric	0.407	3.025	2.84	3.36	16.5	2.30	2.03	0.61	3.69	6.82	23[c]
Copper	112	0	Lognormal	0.785	3.945	3.94	5.08	21.1	4.60	3.98	0.78	5.71	18.4	3,130
Iron	112	0	Nonparametric	2,240	10,030	9,418	10,792	27,600	7,228	5,369	0.50	11,632	22,660	54,800
Lead	112	0	Nonparametric	1.57	6.51	5.84	6.52	16.9	3.90	2.92	0.45	6.96	12.4	400
Magnesium	112	0	Lognormal	789	3,250	3,068	3,532	10,400	2,098	1,885	0.53	3,829	8,170	NE
Manganese	112	0	Nonparametric	37.7	348	324	392	2,240	235	290	0.74	440	1,058	10,700
Mercury	112	88.4	Nonparametric	< 0.0096	< 0.011	< 0.011	< 0.012	0.0348	NA	0.0049	0.40	< 0.014	0.03	7.71
Nickel	112	0	Lognormal	1.35	7.24	6.62	7.81	25.2	5.21	4.53	0.58	8.54	19.5	1,560
Potassium	112	0	Lognormal	130	1,135	1,015	1,385	6,830	1,411	1,105	0.80	1,558	3,950	NE
Selenium	112	13.4	Lognormal	0.0942	0.2185	0.219	0.238	0.809	0.108	0.111	0.47	0.252	0.513	391
Silver	112	81.3	Nonparametric	< 0.047	< 0.053	< 0.057	< 0.060	0.291	NA	0.028	0.47	< 0.066	0.13	391
Sodium	112	0	Nonparametric	12.7	82.5	146	477	3,300	526	755	1.58	602	2,526	NE
Thallium	112	7.1	Nonparametric	0.00964	0.04705	0.044	0.061	0.797	0.043	0.08	1.32	0.075	0.213	5.16
Vanadium	112	0	Lognormal	3.67	13.6	12.7	14.0	38.1	8.00	6.28	0.45	15.0	27.2	391
Zinc	112	0	Lognormal	1.49	12.2	12.4	15.7	85.3	9.41	12.6	0.80	17.7	49.2	23,500

[a]New Mexico Environment Department, 2009, "Technical Background Document for Development of Soil Screening Levels," Revision 5.0, Hazardous Waste Bureau, New Mexico Environment Department, Santa Fe, New Mexico. <http:/www.nmenv.state.nm/us/HWB/guidance.html>

[b]Chromium III is for the NMED SSL Residential Values. Chromium reported for the 95th UTL is Total Chromium.

[c]U.S. Environmental Protection Agency, 2009, "Region 6 Human Health Medium-Specific Screening Levels 2009 (Revised 05/19/09)," U.S. Environmental Protection Agency Region 6, Dallas, Texas, is used if NMED does not have a value for a TAL element.

EPA = U.S. Environmental Protection Agency.
mg/kg = Milligram(s) per kilogram.
NA = Not applicable.
NMED = New Mexico Environment Department.
SSL = Soil screening level.
TAL = Total Analyte List.
UCL = Upper confidence limit.
UTL = Upper tolerance limit.

Table 6-2
Kruskal-Wallis Test Results
Soil Background Study and Data Evaluation, Fort Wingate Depot Activity
Gallup, New Mexico

Element	Depth Interval p-Level[a]	Eco-Zone p-Level[a]	CV
Aluminum	0.3423	0.7925	0.616
Arsenic	0.6569	**0.0017**	1.156
Barium	0.0806	0.1964	0.617
Beryllium	0.8904	0.0386	0.624
Cadmium	0.0501	0.4718	1.199
Calcium	0.3763	0.1439	0.925
Chromium	0.4162	0.1010	0.684
Cobalt	0.9447	0.0211	0.605
Copper	0.3686	0.2643	0.782
Iron	0.7615	0.3018	0.497
Lead	0.7795	0.0788	0.447
Magnesium	0.7941	0.0122	0.534
Manganese	0.1280	0.0359	0.739
Mercury	0.6640	0.1549	0.404
Nickel	0.8855	**0.0022**	0.580
Potassium	0.1253	**0.0035**	0.798
Selenium	0.4603	0.3059	0.467
Silver	0.9786	0.0928	0.471
Sodium	**0.0003**	**0.0057**	1.582
Thallium	0.9897	0.4456	1.317
Vanadium	0.4256	0.2099	0.447
Zinc	0.4236	0.1836	0.803

[a]*Comparisons that failed at the 99-percent confidence level are shown in* ***bold****.*

CV = Coefficient of variation = standard deviation/mean.

Table 7-1
Relative Percent Differences for Field Duplicate Sample Results
Soil Background Study and Data Evaluation, Fort Wingate Depot Activity
Gallup, New Mexico

Primary Sample Number	Field Duplicate Sample Number	Analyte	Primary Sample Result	Field Duplicate Result	Units	Relative Percent Difference
EPA Methods 6010B/6020[a]						
01PP-BH22-SO-1	FDUP-01	Aluminum	6650	7730	mg/kg	15.0%
01PP-BH22-SO-3	FDUP-03	Aluminum	3020	14000	mg/kg	129.0%
15SW-BH05-SO-1	FDUP-04	Aluminum	11500	26400	mg/kg	78.6%
15SW-BH05-SO-2	FDUP-05	Aluminum	13000	18200	mg/kg	33.3%
15SW-BH05-SO-3	FDUP-06	Aluminum	7610	15200	mg/kg	66.5%
02PJ-BH18-SO-1	FDUP-07	Aluminum	5800	17400	mg/kg	100.0%
02PJ-BH18-SO-2	FDUP-08	Aluminum	7390	9510	mg/kg	25.1%
19SW-AH02-SO-2	FDUP-09	Aluminum	11200	6320	mg/kg	55.7%
08DS-BH33-SO-1	FDUP-10	Aluminum	17200	6330	mg/kg	92.4%
08DS-BH33-SO-2	FDUP-11	Aluminum	23400	12400	mg/kg	61.5%
08DS-BH33-SO-3	FDUP-12	Aluminum	15200	9800	mg/kg	43.2%
01PP-BH22-SO-1	FDUP-01	Arsenic	0.666	0.735	mg/kg	9.9%
01PP-BH22-SO-2	FDUP-02	Arsenic	0.418	0.499	mg/kg	17.7%
15SW-BH05-SO-1	FDUP-04	Arsenic	0.968	0.874	mg/kg	10.2%
15SW-BH05-SO-2	FDUP-05	Arsenic	0.847	0.749	mg/kg	12.3%
15SW-BH05-SO-3	FDUP-06	Arsenic	0.859	0.867	mg/kg	0.9%
02PJ-BH18-SO-1	FDUP-07	Arsenic	1.54	1.54	mg/kg	0.0%
02PJ-BH18-SO-2	FDUP-08	Arsenic	1.09	1.03	mg/kg	5.7%
08DS-BH33-SO-1	FDUP-10	Arsenic	0.642	0.724	mg/kg	12.0%
08DS-BH33-SO-2	FDUP-11	Arsenic	0.759	0.854	mg/kg	11.8%
08DS-BH33-SO-3	FDUP-12	Arsenic	0.813	1.06	mg/kg	26.4%
01PP-BH22-SO-1	FDUP-01	Barium	235	230	mg/kg	2.2%
01PP-BH22-SO-2	FDUP-02	Barium	91.2	95.1	mg/kg	4.2%
01PP-BH22-SO-3	FDUP-03	Barium	159	228	mg/kg	35.7%
15SW-BH05-SO-1	FDUP-04	Barium	234	286	mg/kg	20.0%
15SW-BH05-SO-2	FDUP-05	Barium	247	248	mg/kg	0.4%

Table 7-1 (Continued)
Relative Percent Differences for Field Duplicate Sample Results
Soil Background Study and Data Evaluation, Fort Wingate Depot Activity
Gallup, New Mexico

Primary Sample Number	Field Duplicate Sample Number	Analyte	Primary Sample Result	Field Duplicate Result	Units	Relative Percent Difference
EPA Methods 6010B/6020[a] (Continued)						
15SW-BH05-SO-3	FDUP-06	Barium	172	233	mg/kg	30.1%
02PJ-BH18-SO-1	FDUP-07	Barium	164	216	mg/kg	27.4%
02PJ-BH18-SO-2	FDUP-08	Barium	212	332	mg/kg	44.1%
19SW-AH02-SO-2	FDUP-09	Barium	153	136	mg/kg	11.8%
08DS-BH33-SO-1	FDUP-10	Barium	301	234	mg/kg	25.0%
08DS-BH33-SO-2	FDUP-11	Barium	298	303	mg/kg	1.7%
08DS-BH33-SO-3	FDUP-12	Barium	268	274	mg/kg	2.2%
01PP-BH22-SO-1	FDUP-01	Beryllium	0.544	0.548	mg/kg	0.7%
01PP-BH22-SO-2	FDUP-02	Beryllium	0.123	0.121	mg/kg	1.6%
01PP-BH22-SO-3	FDUP-03	Beryllium	0.143	0.328	mg/kg	78.6%
15SW-BH05-SO-1	FDUP-04	Beryllium	0.884	1.26	mg/kg	35.1%
15SW-BH05-SO-2	FDUP-05	Beryllium	1.05	1.15	mg/kg	9.1%
15SW-BH05-SO-3	FDUP-06	Beryllium	0.72	0.935	mg/kg	26.0%
02PJ-BH18-SO-1	FDUP-07	Beryllium	0.47	0.598	mg/kg	24.0%
02PJ-BH18-SO-2	FDUP-08	Beryllium	0.475	0.478	mg/kg	0.6%
08DS-BH33-SO-1	FDUP-10	Beryllium	0.661	0.447	mg/kg	38.6%
08DS-BH33-SO-2	FDUP-11	Beryllium	0.786	0.643	mg/kg	20.0%
08DS-BH33-SO-3	FDUP-12	Beryllium	0.598	0.511	mg/kg	15.7%
01PP-BH22-SO-1	FDUP-01	Calcium	7700	7820	mg/kg	1.5%
01PP-BH22-SO-2	FDUP-02	Calcium	15000	13800	mg/kg	8.3%
01PP-BH22-SO-3	FDUP-03	Calcium	71300	81700	mg/kg	13.6%
15SW-BH05-SO-1	FDUP-04	Calcium	27600	29500	mg/kg	6.7%
15SW-BH05-SO-2	FDUP-05	Calcium	22100	23700	mg/kg	7.0%
15SW-BH05-SO-3	FDUP-06	Calcium	44700	33200	mg/kg	29.5%
02PJ-BH18-SO-1	FDUP-07	Calcium	3410	4670	mg/kg	31.2%
02PJ-BH18-SO-2	FDUP-08	Calcium	5750	8600	mg/kg	39.7%

Table 7-1 (Continued)
Relative Percent Differences for Field Duplicate Sample Results
Soil Background Study and Data Evaluation, Fort Wingate Depot Activity
Gallup, New Mexico

Primary Sample Number	Field Duplicate Sample Number	Analyte	Primary Sample Result	Field Duplicate Result	Units	Relative Percent Difference
EPA Methods 6010B/6020[a] (Continued)						
19SW-AH02-SO-2	FDUP-09	Calcium	19700	20000	mg/kg	1.5%
08DS-BH33-SO-1	FDUP-10	Calcium	35000	44900	mg/kg	24.8%
08DS-BH33-SO-2	FDUP-11	Calcium	33000	45900	mg/kg	32.7%
08DS-BH33-SO-3	FDUP-12	Calcium	36500	49500	mg/kg	30.2%
01PP-BH22-SO-1	FDUP-01	Chromium	6.51	7.27	mg/kg	11.0%
01PP-BH22-SO-2	FDUP-02	Chromium	2.36	2.28	mg/kg	3.4%
01PP-BH22-SO-3	FDUP-03	Chromium	3.46	8.39	mg/kg	83.2%
15SW-BH05-SO-1	FDUP-04	Chromium	6.92	16.1	mg/kg	79.8%
15SW-BH05-SO-2	FDUP-05	Chromium	7.78	10.5	mg/kg	29.8%
15SW-BH05-SO-3	FDUP-06	Chromium	3.4	9.03	mg/kg	90.6%
02PJ-BH18-SO-1	FDUP-07	Chromium	5.15	13.3	mg/kg	88.3%
02PJ-BH18-SO-2	FDUP-08	Chromium	6.12	8.51	mg/kg	32.7%
08DS-BH33-SO-1	FDUP-10	Chromium	10.7	2.48	mg/kg	124.7%
08DS-BH33-SO-2	FDUP-11	Chromium	14.7	7.4	mg/kg	66.1%
01PP-BH22-SO-1	FDUP-01	Cobalt	2.7	2.92	mg/kg	7.8%
01PP-BH22-SO-2	FDUP-02	Cobalt	1.18	1.25	mg/kg	5.8%
01PP-BH22-SO-3	FDUP-03	Cobalt	1.79	3.26	mg/kg	58.2%
15SW-BH05-SO-1	FDUP-04	Cobalt	4.24	7.3	mg/kg	53.0%
15SW-BH05-SO-2	FDUP-05	Cobalt	4.49	5.43	mg/kg	19.0%
15SW-BH05-SO-3	FDUP-06	Cobalt	2.85	5.38	mg/kg	61.5%
02PJ-BH18-SO-1	FDUP-07	Cobalt	3.75	3.62	mg/kg	3.5%
02PJ-BH18-SO-2	FDUP-08	Cobalt	3.86	3.09	mg/kg	22.2%
19SW-AH02-SO-2	FDUP-09	Cobalt	4.02	3.52	mg/kg	13.3%
08DS-BH33-SO-1	FDUP-10	Cobalt	5.43	2.18	mg/kg	85.4%
08DS-BH33-SO-2	FDUP-11	Cobalt	6.23	4.74	mg/kg	27.2%
01PP-BH22-SO-1	FDUP-01	Copper	4.81	5.96	mg/kg	21.4%

Table 7-1 (Continued)
Relative Percent Differences for Field Duplicate Sample Results
Soil Background Study and Data Evaluation, Fort Wingate Depot Activity
Gallup, New Mexico

Primary Sample Number	Field Duplicate Sample Number	Analyte	Primary Sample Result	Field Duplicate Result	Units	Relative Percent Difference
EPA Methods 6010B/6020[a] (Continued)						
01PP-BH22-SO-2	FDUP-02	Copper	1.2	1.34	mg/kg	11.0%
15SW-BH05-SO-1	FDUP-04	Copper	5.67	5.37	mg/kg	5.4%
15SW-BH05-SO-2	FDUP-05	Copper	5.68	4.86	mg/kg	15.6%
15SW-BH05-SO-3	FDUP-06	Copper	3.27	4.28	mg/kg	26.8%
02PJ-BH18-SO-1	FDUP-07	Copper	7.02	6.7	mg/kg	4.7%
02PJ-BH18-SO-2	FDUP-08	Copper	4.8	4.57	mg/kg	4.9%
19SW-AH02-SO-2	FDUP-09	Copper	2.81	4.26	mg/kg	41.0%
08DS-BH33-SO-1	FDUP-10	Copper	1.75	2.54	mg/kg	36.8%
08DS-BH33-SO-2	FDUP-11	Copper	2.23	3.06	mg/kg	31.4%
08DS-BH33-SO-3	FDUP-12	Copper	2.79	2.78	mg/kg	0.4%
01PP-BH22-SO-1	FDUP-01	Iron	8370	8860	mg/kg	5.7%
01PP-BH22-SO-2	FDUP-02	Iron	2590	2820	mg/kg	8.5%
01PP-BH22-SO-3	FDUP-03	Iron	4970	10100	mg/kg	68.1%
15SW-BH05-SO-1	FDUP-04	Iron	12100	18400	mg/kg	41.3%
15SW-BH05-SO-2	FDUP-05	Iron	12400	14300	mg/kg	14.2%
15SW-BH05-SO-3	FDUP-06	Iron	7910	13500	mg/kg	52.2%
02PJ-BH18-SO-1	FDUP-07	Iron	7990	15000	mg/kg	61.0%
02PJ-BH18-SO-2	FDUP-08	Iron	8610	10200	mg/kg	16.9%
19SW-AH02-SO-2	FDUP-09	Iron	14600	13500	mg/kg	7.8%
08DS-BH33-SO-1	FDUP-10	Iron	16100	7330	mg/kg	74.9%
08DS-BH33-SO-2	FDUP-11	Iron	19400	12300	mg/kg	44.8%
08DS-BH33-SO-3	FDUP-12	Iron	14300	10700	mg/kg	28.8%
01PP-BH22-SO-1	FDUP-01	Lead	6.47	7.45	mg/kg	14.1%
01PP-BH22-SO-2	FDUP-02	Lead	1.79	4.58	mg/kg	87.6%
01PP-BH22-SO-3	FDUP-03	Lead	4.69	4.05	mg/kg	14.6%
15SW-BH05-SO-1	FDUP-04	Lead	11.4	11	mg/kg	3.6%

Table 7-1 (Continued)
Relative Percent Differences for Field Duplicate Sample Results
Soil Background Study and Data Evaluation, Fort Wingate Depot Activity
Gallup, New Mexico

Primary Sample Number	Field Duplicate Sample Number	Analyte	Primary Sample Result	Field Duplicate Result	Units	Relative Percent Difference
EPA Methods 6010B/6020[a] (Continued)						
15SW-BH05-SO-2	FDUP-05	Lead	10	9.64	mg/kg	3.7%
15SW-BH05-SO-3	FDUP-06	Lead	7.73	9.11	mg/kg	16.4%
02PJ-BH18-SO-1	FDUP-07	Lead	7.16	7.07	mg/kg	1.3%
02PJ-BH18-SO-2	FDUP-08	Lead	6.12	5.59	mg/kg	9.1%
19SW-AH02-SO-2	FDUP-09	Lead	5.05	6.01	mg/kg	17.4%
08DS-BH33-SO-1	FDUP-10	Lead	4.23	5.67	mg/kg	29.1%
08DS-BH33-SO-2	FDUP-11	Lead	5.24	6.38	mg/kg	19.6%
08DS-BH33-SO-3	FDUP-12	Lead	5.27	5.8	mg/kg	9.6%
01PP-BH22-SO-1	FDUP-01	Magnesium	2120	2640	mg/kg	21.8%
01PP-BH22-SO-2	FDUP-02	Magnesium	790	827	mg/kg	4.6%
01PP-BH22-SO-3	FDUP-03	Magnesium	2200	8240	mg/kg	115.7%
15SW-BH05-SO-1	FDUP-04	Magnesium	5710	11800	mg/kg	69.6%
15SW-BH05-SO-2	FDUP-05	Magnesium	5950	8260	mg/kg	32.5%
15SW-BH05-SO-3	FDUP-06	Magnesium	4310	8160	mg/kg	61.7%
02PJ-BH18-SO-1	FDUP-07	Magnesium	1760	2600	mg/kg	38.5%
02PJ-BH18-SO-2	FDUP-08	Magnesium	2240	2680	mg/kg	17.9%
19SW-AH02-SO-2	FDUP-09	Magnesium	4060	3430	mg/kg	16.8%
08DS-BH33-SO-1	FDUP-10	Magnesium	8050	4120	mg/kg	64.6%
08DS-BH33-SO-2	FDUP-11	Magnesium	10400	6120	mg/kg	51.8%
08DS-BH33-SO-3	FDUP-12	Magnesium	8350	6020	mg/kg	32.4%
01PP-BH22-SO-1	FDUP-01	Manganese	437	449	mg/kg	2.7%
01PP-BH22-SO-2	FDUP-02	Manganese	229	232	mg/kg	1.3%
01PP-BH22-SO-3	FDUP-03	Manganese	357	438	mg/kg	20.4%
15SW-BH05-SO-1	FDUP-04	Manganese	384	453	mg/kg	16.5%
15SW-BH05-SO-2	FDUP-05	Manganese	349	378	mg/kg	8.0%

Table 7-1 (Continued)
Relative Percent Differences for Field Duplicate Sample Results
Soil Background Study and Data Evaluation, Fort Wingate Depot Activity
Gallup, New Mexico

Primary Sample Number	Field Duplicate Sample Number	Analyte	Primary Sample Result	Field Duplicate Result	Units	Relative Percent Difference
EPA Methods 6010B/6020[a] (Continued)						
15SW-BH05-SO-3	FDUP-06	Manganese	443	453	mg/kg	2.2%
02PJ-BH18-SO-1	FDUP-07	Manganese	317	397	mg/kg	22.4%
02PJ-BH18-SO-2	FDUP-08	Manganese	300	315	mg/kg	4.9%
19SW-AH02-SO-2	FDUP-09	Manganese	361	394	mg/kg	8.7%
08DS-BH33-SO-1	FDUP-10	Manganese	435	446	mg/kg	2.5%
08DS-BH33-SO-2	FDUP-11	Manganese	437	451	mg/kg	3.2%
08DS-BH33-SO-3	FDUP-12	Manganese	417	476	mg/kg	13.2%
01PP-BH22-SO-1	FDUP-01	Nickel	5.64	8.68	mg/kg	42.5%
01PP-BH22-SO-2	FDUP-02	Nickel	2.28	2.51	mg/kg	9.6%
15SW-BH05-SO-1	FDUP-04	Nickel	14.8	13.2	mg/kg	11.4%
15SW-BH05-SO-2	FDUP-05	Nickel	10.5	8.56	mg/kg	20.4%
15SW-BH05-SO-3	FDUP-06	Nickel	7.33	11.6	mg/kg	45.1%
02PJ-BH18-SO-1	FDUP-07	Nickel	6.35	6.63	mg/kg	4.3%
02PJ-BH18-SO-2	FDUP-08	Nickel	5.77	5.02	mg/kg	13.9%
19SW-AH02-SO-2	FDUP-09	Nickel	5.37	7.05	mg/kg	27.1%
08DS-BH33-SO-1	FDUP-10	Nickel	4.41	9.25	mg/kg	70.9%
08DS-BH33-SO-2	FDUP-11	Nickel	7.77	10.6	mg/kg	30.8%
08DS-BH33-SO-3	FDUP-12	Nickel	8.61	10.1	mg/kg	15.9%
01PP-BH22-SO-1	FDUP-01	Potassium	1300	1500	mg/kg	14.3%
01PP-BH22-SO-2	FDUP-02	Potassium	292	288	mg/kg	1.4%
01PP-BH22-SO-3	FDUP-03	Potassium	645	3260	mg/kg	133.9%
15SW-BH05-SO-1	FDUP-04	Potassium	1890	4930	mg/kg	89.1%
15SW-BH05-SO-2	FDUP-05	Potassium	1950	2820	mg/kg	36.5%
15SW-BH05-SO-3	FDUP-06	Potassium	1070	2440	mg/kg	78.1%
02PJ-BH18-SO-1	FDUP-07	Potassium	822	2180	mg/kg	90.5%
02PJ-BH18-SO-2	FDUP-08	Potassium	993	1140	mg/kg	13.8%

Table 7-1 (Continued)
Relative Percent Differences for Field Duplicate Sample Results
Soil Background Study and Data Evaluation, Fort Wingate Depot Activity
Gallup, New Mexico

Primary Sample Number	Field Duplicate Sample Number	Analyte	Primary Sample Result	Field Duplicate Result	Units	Relative Percent Difference
EPA Methods 6010B/6020[a] (Continued)						
08DS-BH33-SO-1	FDUP-10	Potassium	3260	964	mg/kg	108.7%
08DS-BH33-SO-2	FDUP-11	Potassium	4890	2170	mg/kg	77.1%
15SW-BH05-SO-2	FDUP-05	Selenium	0.25	0.307	mg/kg	20.5%
02PJ-BH18-SO-1	FDUP-07	Selenium	0.264	0.309	mg/kg	15.7%
01PP-BH22-SO-1	FDUP-01	Sodium	47.1	42.9	mg/kg	9.3%
01PP-BH22-SO-3	FDUP-03	Sodium	151	197	mg/kg	26.4%
15SW-BH05-SO-1	FDUP-04	Sodium	649	800	mg/kg	20.8%
15SW-BH05-SO-2	FDUP-05	Sodium	1940	2020	mg/kg	4.0%
15SW-BH05-SO-3	FDUP-06	Sodium	2380	2360	mg/kg	0.8%
02PJ-BH18-SO-1	FDUP-07	Sodium	26	49.1	mg/kg	61.5%
02PJ-BH18-SO-2	FDUP-08	Sodium	31.5	37	mg/kg	16.1%
19SW-AH02-SO-2	FDUP-09	Sodium	64.7	44.5	mg/kg	37.0%
08DS-BH33-SO-1	FDUP-10	Sodium	1660	1630	mg/kg	1.8%
08DS-BH33-SO-2	FDUP-11	Sodium	2090	2260	mg/kg	7.8%
08DS-BH33-SO-3	FDUP-12	Sodium	2200	2460	mg/kg	11.2%
01PP-BH22-SO-1	FDUP-01	Thallium	0.0313	0.0676	mg/kg	73.4%
01PP-BH22-SO-3	FDUP-03	Thallium	0.0388	0.0433	mg/kg	11.0%
15SW-BH05-SO-1	FDUP-04	Thallium	0.0755	0.0682	mg/kg	10.2%
15SW-BH05-SO-2	FDUP-05	Thallium	0.0607	0.0472	mg/kg	25.0%
15SW-BH05-SO-3	FDUP-06	Thallium	0.0373	0.0607	mg/kg	47.8%
02PJ-BH18-SO-1	FDUP-07	Thallium	0.0612	0.0821	mg/kg	29.2%
02PJ-BH18-SO-2	FDUP-08	Thallium	0.0532	0.0601	mg/kg	12.2%
19SW-AH02-SO-2	FDUP-09	Thallium	0.0304	0.0411	mg/kg	29.9%
08DS-BH33-SO-1	FDUP-10	Thallium	0.025	0.0392	mg/kg	44.2%
08DS-BH33-SO-2	FDUP-11	Thallium	0.0465	0.0507	mg/kg	8.6%
08DS-BH33-SO-3	FDUP-12	Thallium	0.0511	0.0505	mg/kg	1.2%

Table 7-1 (Continued)
Relative Percent Differences for Field Duplicate Sample Results
Soil Background Study and Data Evaluation, Fort Wingate Depot Activity
Gallup, New Mexico

Primary Sample Number	Field Duplicate Sample Number	Analyte	Primary Sample Result	Field Duplicate Result	Units	Relative Percent Difference
EPA Methods 6010B/6020[a] (Continued)						
01PP-BH22-SO-1	FDUP-01	Vanadium	10.8	10.9	mg/kg	0.9%
01PP-BH22-SO-2	FDUP-02	Vanadium	4.74	4.76	mg/kg	0.4%
01PP-BH22-SO-3	FDUP-03	Vanadium	7.88	10.8	mg/kg	31.3%
15SW-BH05-SO-1	FDUP-04	Vanadium	15.6	22.1	mg/kg	34.5%
15SW-BH05-SO-2	FDUP-05	Vanadium	14.9	16.7	mg/kg	11.4%
15SW-BH05-SO-3	FDUP-06	Vanadium	14.6	17.3	mg/kg	16.9%
02PJ-BH18-SO-1	FDUP-07	Vanadium	13.7	23.3	mg/kg	51.9%
02PJ-BH18-SO-2	FDUP-08	Vanadium	14.1	14.9	mg/kg	5.5%
08DS-BH33-SO-1	FDUP-10	Vanadium	21.6	20.3	mg/kg	6.2%
08DS-BH33-SO-2	FDUP-11	Vanadium	24.5	21.4	mg/kg	13.5%
08DS-BH33-SO-3	FDUP-12	Vanadium	17.9	18.9	mg/kg	5.4%
01PP-BH22-SO-1	FDUP-01	Zinc	13.8	15.7	mg/kg	12.9%
01PP-BH22-SO-2	FDUP-02	Zinc	3.95	3.97	mg/kg	0.5%
01PP-BH22-SO-3	FDUP-03	Zinc	6.83	11.4	mg/kg	50.1%
15SW-BH05-SO-1	FDUP-04	Zinc	15.2	26.2	mg/kg	53.1%
15SW-BH05-SO-2	FDUP-05	Zinc	14.7	17.5	mg/kg	17.4%
15SW-BH05-SO-3	FDUP-06	Zinc	9.16	17.1	mg/kg	60.5%
02PJ-BH18-SO-1	FDUP-07	Zinc	15	25.5	mg/kg	51.9%
02PJ-BH18-SO-2	FDUP-08	Zinc	15.3	17.1	mg/kg	11.1%
19SW-AH02-SO-2	FDUP-09	Zinc	12.3	10.1	mg/kg	19.6%
08DS-BH33-SO-1	FDUP-10	Zinc	18.2	7.44	mg/kg	83.9%
08DS-BH33-SO-2	FDUP-11	Zinc	22.3	15.2	mg/kg	37.9%

[a]U.S. Environmental Protection Agency, 1986, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," SW-846, 3rd ed., U.S. Environmental Protection Agency, Washington, D.C.

EPA = U.S. Environmental Protection Agency.

mg/kg = Milligram(s) per kilogram.

Table 8-1
Background Screening Values Compared with Evaluation Criteria
Soil Background Study and Data Evaluation, Fort Wingate Depot Activity
Gallup, New Mexico

Analyte	CAS Number	Regulatory Standard		Advisory Evaluation Criteria	Background
		Soil			
		NMED SSL[a] Residential (mg/kg)	EPA Region 6[b] Residential SSL (mg/kg)	Soil (mg/kg)	95th UTL
TAL Metals (EPA 6010C/6020A/7470A/7471B)[c]					
Aluminum[d]	7429-90-5	78,100	NA	78,100	23,340
Antimony	7440-36-0	31.3	NA	31.3	< 2.2
Arsenic	7440-38-2	3.90	NA	3.90	3.69
Barium	7440-39-3	15,600	NA	15,600	482
Beryllium	7440-41-7	156	NA	156	1.49
Cadmium	7440-43-9	77.9	NA	77.9	0.224
Calcium	7440-70-2	NE	NE	NE	91,760
Chromium[e]	7440-47-3	113,000	NA	113,000	18.1
Cobalt	7440-48-4	NE	23	23	6.82
Copper	7440-50-8	3,130	NA	3,130	18.4
Iron	7439-89-6	54,800	NA	54,800	22,660
Lead	7439-92-1	400	NA	400	12.4
Magnesium	7439-95-4	NE	NE	NE	8,170
Manganese	7439-96-5	10,700	NA	10,700	1,058
Mercury (elemental)	7439-97-6	7.71	NA	7.71	0.03
Nickel	7440-02-0	1,560	NA	1,560	19.5
Potassium	7440-09-7	NE	NE	NE	3,950
Selenium	7782-49-2	391	NA	391	0.513
Silver	7440-22-4	391	NA	391	0.13
Sodium	7440-23-5	NE	NE	NE	2,526

Table 8-1 (Continued)
Background Screening Values Compared with Evaluation Criteria
Soil Background Study and Data Evaluation, Fort Wingate Depot Activity
Gallup, New Mexico

Analyte	CAS Number	Regulatory Standard		Advisory Evaluation Criteria	Background
		Soil			
		NMED SSL[a] Residential (mg/kg)	EPA Region 6[b] Residential SSL (mg/kg)	Soil (mg/kg)	95th UTL
Thallium	7440-28-0	5.16	NA	5.16	0.213
Vanadium	7440-62-2	391	NA	391	27.2
Zinc	7440-66-6	23,500	NA	23,500	49.2

[a]New Mexico Environment Department, 2009, "Technical Background Document for Development of Soil Screening Levels," Revision 5.0, Hazardous Waste Bureau, New Mexico Environment Department, Santa Fe, New Mexico. <http://www.nmenv.stte.nm.us/HWB/guidance.html>

[b]U.S. Environmental Protection Agency, 2009, "Region 6 Human Health Medium-Specific Screening Levels 2009 (Revised 05/19/09)," U.S. Environmental Protection Agency Region 6, Dallas, Texas.

[c]U.S. Environmental Protection Agency, 1986, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," SW-846, 3rd ed., U.S. Environmental Protection Agency, Washington, D.C.

[d]Aluminum is identified as an ecological COPC only for soils with a pH less than 5.5 (EPA, 2008), "Ecological Soil Screening Levels" (updated 05/21/08).<http://www.epa.gov/ecotox/ecossl>).

[e]Chromium III is for the NMED SSL Residential Values. Chromium reported for the 95th UTL is Total Chromium.

CAS = Chemical Abstracts Service.
COPC = Constituent of potential concern.
EPA = U.S. Environmental Protection Agency.
MCL = Maximum contaminant level.
mg/kg = Milligram(s) per kilogram.
NA = Not applicable.
NE = Not established.
NMED = New Mexico Environment Department.
SSL = Soil screening level.
TAL = Target Analyte List.
UTL = Upper tolerance limit.

Photos

133366.10000080 A44_REV1

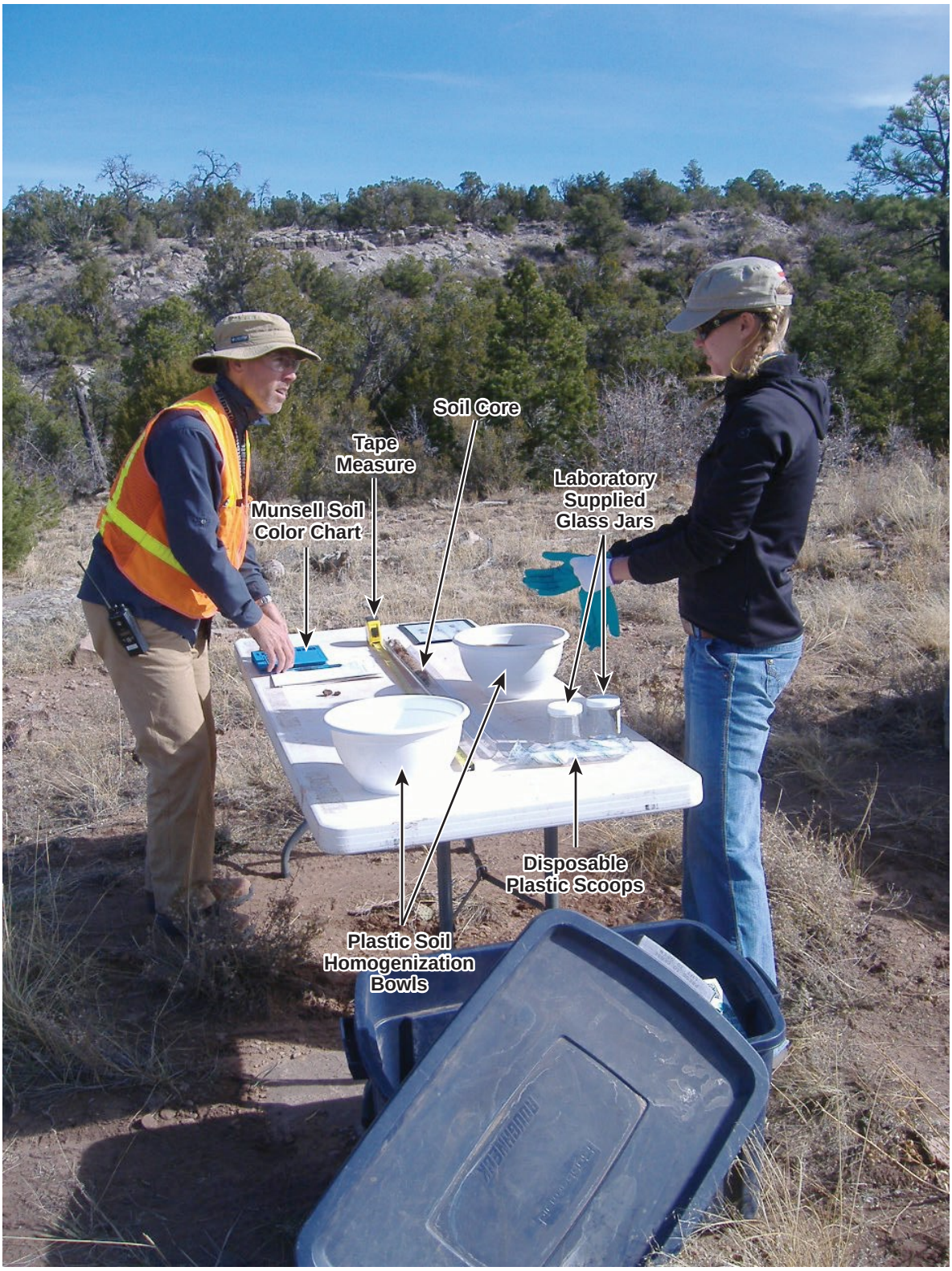
Photo 3-1
Truck-mounted Geoprobe®
Soil Background Study and Data Evaluation
Fort Wingate Depot Activity, Gallup, New Mexico

133366.10000080 A45_REV1

Photo 3-2
Hand Augering BH9
Soil Background Study and Data Evaluation
Fort Wingate Depot Activity, Gallup, New Mexico

133366.10000080 A42_REV1

Photo 3-3
Utilization of No.4 Sieve Before Soil Homogenization
Soil Background Study and Data Evaluation
Fort Wingate Depot Activity, Gallup, New Mexico



133366.10000080 A46_REV1

Photo 3-4
Sample Location Site Setup
Soil Background Study and Data Evaluation
Fort Wingate Depot Activity, Gallup, New Mexico

Appendix A
Regulatory Comments

BILL RICHARDSON
Governor

DIANE DENISH
Lieutenant Governor

NEW MEXICO ENVIRONMENT DEPARTMENT

Hazardous Waste Bureau

2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6303
Phone (505) 476-6000 Fax (505) 476-6030
www.nmenv.state.nm.us

RON CURRY
Secretary

SARAH COTTRELL
Deputy Secretary

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

August 27, 2010

Mark Patterson
Ravenna Army Ammunition Plant
Building 1037
8451 State Route 5
Ravenna, OH 44266

Steve Smith
CESWF-PER-DD
819 Taylor Street, Room 3A12
PO Box 17300
Fort Worth, TX 76102-0300

RE: NOTICE OF DISAPPROVAL
SOIL BACKGROUND STUDY AND
DATA EVALUATION REPORT
FORT WINGATE DEPOT ACTIVITY, NEW MEXICO
EPA ID# NM6213820974
FWDA-10-004

Dear Messrs. Patterson and Smith:

The New Mexico Environment Department (NMED) received the Department of the Army's (the Permittee) *Soil Background Study and Data Evaluation Report,* (Report) dated March 2010 submitted pursuant to Section VII.L of the Fort Wingate Hazardous Waste Facility Permit. Based on the information presented in the Report, NMED hereby issues this Notice of Disapproval (NOD). The Permittee must address the following comments:

COMMENT 1

Based on the data presented in Table 7-1 (Relative Percent Difference for Field Duplicate Sample Results), it appears that there is a large degree of variability between samples and duplicates, with relative percent differences ranging upwards of 134%. By definition, representative background is assumed to be based on homogenous soil and soils collected from non-impacted site activities. Due to the high degree of variability seen between the sample and the duplicates,

it appears that some sampling procedures and sample preparations may have a large impact on the sample results. The Permittee must ensure that sample collection, sample preparations (e.g., screening samples using same size sieve), and analytical procedures are consistent with the methods applied in this background study for all future activities. No revisions to the Report are necessary.

COMMENT 2

As shown in Table 8-1 (Background Screening Values Compared with Evaluation Criteria) the Permittee applied the EPA Region 6 data, carcinogenic screening levels of 1.0E-06 when developing the EPA Region 6 Human Health Medium Specific Soil Screening Levels (HHMSSLs) rather than applying NMEDs target risk level of 1.0E-05 for the soil screening levels (SSLs). The HHMSSLs must be modified to reflect the NMED target risk level of 1.0E-05. Although the overall impact on the assessment of the background data is not impacted by modifying the Region 6 HHMSSLs to reflect the appropriate risk level, the Permittee must revise the Report to incorporate this modification. The Permittee must also ensure that all regulatory data applied are based upon the appropriate NMED risk and/or hazard levels.

COMMENT 3

The Permittee "pooled" background data to represent the entire background population; based on this data for the shallow surface soil (0 to 2 feet) as well as for the Ponderosa woodland Eco Zone, there appears to be elevated levels of arsenic, cobalt, silver, and thallium when compared to the other soil subgroups and Eco Zones. In addition, cadmium concentrations appear to be skewed higher for the Ponderosa woodland zone compared to the other Eco Zones. The Permittee must clarify in the revised Report if any of the data from either the shallow surface soil or Ponderosa woodland zone were identified as outliers when all data were combined.

While there are some differences in the range of concentrations for some metals, especially for shallow surface soil and for the Ponderosa woodland Eco Zone, the culling of all data appears to be acceptable. However, a tiered approach may be warranted in the event that site data, and specifically arsenic, cobalt, silver, thallium, and/or cadmium in either shallow soil or the Ponderosa Eco Zone, exceeds background. Some suggestions include:

- Compare the maximum site concentration to the background reference value. If site maximum exceeds background, statistically compare the two data sets.
- If the results of the statistical comparison of site data to background indicate the site data to be above background, evaluate the data against the specific data for its Eco Zone and/or soil subgroup.
- If the site data are statistically different from specific background, retain the metal as a constituent of potential concern.

The Permittee must reevaluate the data and, if warranted, apply the tiered approach using the suggestions listed above. The appropriate changes must be included in the revised Report.

COMMENT 4

In Appendix D (Complete Soil Analytical Results), Table D-1 (Complete Soil Results), the Permittee includes a footnote that references groundwater standards provided in Appendix B. This appears to be a relic from another document and is not consistent with the document. The Permittee must correct Table D-1 to include the correct reference to the standard criteria used in the analysis. This change must be included in the revised Report.

COMMENT 5

The Permittee must note that for all risk evaluations, the most recent NMED SSLs (currently December 2009) must be applied. In the event that there is no NMED SSLs available, the most current Regional Screening Level (RSL) must be applied. If a carcinogenic RSL is applied, the Permittee must ensure that the datum is modified to reflect the appropriate target cancer level. No changes to the Report are necessary.

COMMENT 6

In Section 5.3 (Handling of Outliers), the Permittee states, "[f]or each element, the concentration data is rank-ordered and the maximum value is flagged if it is greater than five times the second-highest value (EPA, 1989). Samples flagged as outliers are further examined to determine whether there is an error in the recorded concentration. Statistical outliers will be eliminated from consideration only if there are additional reasons to suspect either errors in the data or site-related contamination in the sample. Results of the outlier testing are provided in Section 6.1." Based on the information provided in Section 6.1 (Results of Outlier Testing), it does not appear that any statistical evaluation of outliers was conducted given that none of the data were more than five times the second highest value. This methodology is outdated and must not be relied upon when evaluating data sets for outliers. Graphical analyses, including box plots provide a visual representation of the data and determine the presence of outliers or other anomalous data that might affect statistical results and interpretations. Based upon the histograms provided in Appendix B, it appears that there may potentially be outliers for arsenic, cadmium, and cobalt.

Datasets often contain outliers, so the fact that the Report's evaluation found no outliers lends more suspicion on the utility of the method used. Therefore, the Permittee must use more current guidance and conduct statistical testing of datasets to determine if there are any outliers (EPA 540-R-01-003, Background Comparison Guidance, September 2002; EPA QC/G-9, July 2000; ProUCL ver. 4.00.04 Technical Guide, July 2009, Section 4.2.1).

The Permittee must revise the Report to apply the changes listed above as well as update the methodology in Section 5.3 to reflect current methods for testing datasets for outliers. The Permittee must also revise the evaluation of the data using current guidance to ensure that no outliers were retained.

COMMENT 7

Table 8-1 (Background Screening Values Compared with Evaluation Criteria), the "Evaluation Criteria" for arsenic is listed as 0.39 mg/kg. This value is incorrect, the Permittee must revise the Report to include and apply the correct value for arsenic which is 3.90 mg/kg.

The Permittee must address all comments contained in this letter and submit a revised Report. The cover page must indicate that the submittal is a revision and was prepared for NMED. The revised Report must be accompanied with a response letter that details where all revisions have been made, cross-referencing NMED's numbered comments. The Permittee must also submit an electronic copy of the Revised Report with all edits and modifications shown in redline-strikeout format. The revised Report must be submitted to NMED no later than October 15, 2010.

If you have any questions regarding this letter, please contact Tammy Diaz-Martinez of at (505) 476-6056.

Sincerely,

James P. Bearzi
Chief
Hazardous Waste Bureau

cc: Tammy Diaz-Martinez, NMED HWB
Dave Cobrain, NMED HWB
John Kieling, NMED HWB
Laurie King, U.S EPA Region 6
Chuck Hendrickson, U.S. EPA Region 6
Sharlene Begay-Platero, Navajo Nation
Eugenia Quintana, Navajo Nation
Steve Beran, Zuni Pueblo
Edward Wemytewa, Zuni Pueblo
Clayton Seoutewa, Southwest Region BIA
Rose Duwyenie, Navajo BIA
Judith Wilson, BIA
Eldine Stevens, BIA
Ben Burshia, BIA

File: FWDA 2010 and Reading
FWDA-10-004

Annotation of Written Comments

Soil Background and Data Evaluation Report (Final)
Fort Wingate Depot Activity, Gallup, New Mexico, Contract No. W912BV-07-D02004
September 15, 2010

Comment No.	Reference	Reviewer/Comment	A-Concur; D-Do Not Concur; E-Exception	Comment Resolution
Comments – NMED August 27, 2010				
1	Table 7-1	Based on the data presented in Table 7-1 (Relative Percent Difference for Field Duplicate Sample Results), it appears that there is a large degree of variability between samples and duplicates, with relative percent differences ranging upwards of 134%. By definition, representative background is assumed to be based on homogenous soil and soils collected from non-impacted site activities. Due to the high degree of variability seen between the sample and the duplicates, it appears that some sampling procedures and sample preparations may have a large impact on the sample results. The Permittee must ensure that sample collection, sample preparations (e.g., screening samples using same size sieve), and analytical procedures are consistent with the methods applied in this background study for all future activities. No revisions to the Report are necessary.	A	Comment is acknowledged. The soil matrix has a naturally high variability. The acceptable recoveries for the laboratory control standards, matrix spikes, and matrix spike duplicates indicate that the observed differences in field duplicates are most likely due to real differences between the samples rather than sampling or analytical problems. No changes were made to the report in response to this comment.

Annotation of Written Comments

Soil Background and Data Evaluation Report (Final)
Fort Wingate Depot Activity, Gallup, New Mexico, Contract No. W912BV-07-D02004
September 15, 2010

Comment No.	Reference	Reviewer/Comment	A-Concur; D-Do Not Concur; E-Exception	Comment Resolution
2	Table 8-1	As shown in Table 8-1 (Background Screening Values Compared with Evaluation Criteria) the Permittee applied the EPA Region 6 data, carcinogenic screening levels of 1.0E-06 when developing the EPA Region 6 Human Health Medium Specific Soil Screening Levels (HHMSSLs) rather than applying NMEDs target risk level of 1.0E-05 for the soil screening levels (SSLs). The HHMSSLs must be modified to reflect the NMED target risk level of 1 .0E-05. Although the overall impact on the assessment of the background data is not impacted by modifying the Region 6 HHMSSLs to reflect the appropriate risk level, the Permittee must revise the Report to incorporate this modification. The Permittee must also ensure that all regulatory data applied are based upon the appropriate NMED risk and/or hazard levels.	A	Table 8-1, pages 1 through 2, will reflect the current December, 2009 NMED SSLs. Where no NMED SSLs exist, Table 8-1 will reflect the EPA Region 6 Residential SSLs.

Annotation of Written Comments

Soil Background and Data Evaluation Report (Final)
Fort Wingate Depot Activity, Gallup, New Mexico, Contract No. W912BV-07-D02004
September 15, 2010

Comment No.	Reference	Reviewer/Comment	A-Concur; D-Do Not Concur; E-Exception	Comment Resolution
3	Statistical Evaluation Methods	The Permittee "pooled" background data to represent the entire background population; based on this data for the shallow surface soil (0 to 2 feet) as well as for the Ponderosa woodland Eco Zone, there appears to be elevated levels of arsenic, cobalt, silver, and thallium when compared to the other soil subgroups and Eco Zones. In addition, cadmium concentrations appear to be skewed higher for the Ponderosa woodland zone compared to the other Eco Zones. The Permittee must clarify in the revised Report if any of the data from either the shallow surface soil or Ponderosa woodland zone were identified as outliers when all data were combined. While there are some differences in the range of concentrations for some metals, especially for shallow surface soil and for the Ponderosa woodland Eco Zone, the culling of all data appears to be acceptable. However, a tiered approach may be warranted in the event that site data, and specifically arsenic, cobalt, silver, thallium, and/or cadmium in either shallow soil or the Ponderosa Eco Zone, exceeds background. Some suggestions include:	E	If the recommendation were to be followed, separate background statistics would need to be defined for four different ecological (eco) zones and three different depth intervals, along with the combined data set, yielding a total of eight different definitions of background for each of the 23 elements at the facility. Each individual site sample would have three different background distributions (specific eco zone, specific depth interval, and facility-wide) to which it could be compared. The sizes of these data sets would vary from 18 to 112 samples. The report included a quantitative statistical comparison of the distributions of concentrations in the four eco zones and three depth intervals using the methodology described in Section 5.4. The comparison results, provided in Sections 6.2.1 and 6.2.2, concluded that the four eco zone and three depth subgroups appear to be drawn from the same underlying population, so it is statistically valid to combine the data rather than treat each subgroup separately.

Annotation of Written Comments

Soil Background and Data Evaluation Report (Final)
Fort Wingate Depot Activity, Gallup, New Mexico, Contract No. W912BV-07-D02004
September 15, 2010

Comment No.	Reference	Reviewer/Comment	A-Concur; D-Do Not Concur; E-Exception	Comment Resolution
3 (Cont'd)	Statistical Evaluation Methods	• Compare the maximum site concentration to the background reference value. If site maximum exceeds background, statistically compare the two data sets. • If the results of the statistical comparison of site data to background indicate the site data to be above background, evaluate the data against the specific data for its Eco Zone and/or soil subgroup. • If the site data are statistically different from specific background, retain the metal as a constituent of potential concern.	E	The advantage of pooling the data (when it is statistically valid to do so) is that the summary statistics are then based on a larger number of samples so they are more representative of the population.
		The Permittee must reevaluate the data and, if warranted, apply the tiered approach using the suggestions listed above. The appropriate changes must be included in the revised Report.		Increasing the sample size from the range of 18 to 52 (which would be the case if each Eco Zone were treated separately) to 112 provides a significant increase in the confidence that can be placed in the inferred properties of the sampled population. The multiple subgroup comparisons that were performed as part of the data evaluation concluded that the combined data set is the most representative of the true background population. Under these conditions, intentionally comparing site data to a subset of the background data will

Annotation of Written Comments

Soil Background and Data Evaluation Report (Final)
Fort Wingate Depot Activity, Gallup, New Mexico, Contract No. W912BV-07-D02004
September 15, 2010

Comment No.	Reference	Reviewer/Comment	A-Concur; D-Do Not Concur; E-Exception	Comment Resolution
3 (Cont'd)	Statistical Evaluation Methods		E	increase the false-positive and false-negative error rates relative to comparing site data to the much larger and more representative facility-wide data set. In addition, performing multiple comparison tests (site versus facility-wide, site versus eco zone subgroup, and site versus depth subgroup) as suggested, will further increase decision errors. The Army believes using the single large data set provides the most representative sample of site background conditions. No changes were made to the report in response to this comment.
4	Table D-1 Appendix D	In Appendix D (Complete Soil Analytical Results), Table D-1 (Complete Soil Results), the Permittee includes a footnote that references groundwater standards provided in Appendix B. This appears to be a relic from another document and is not consistent with the document. The Permittee must correct Table D-1 to include the correct reference to the standard criteria used in the analysis. This change must be included in the revised Report.	A	The footnote in Appendix D, Table D-1 (now Appendix E, Table E-1) that references groundwater will be removed. Table E-1, on compact disc, will also include the correct reference to the evaluation criteria used in the analysis. There is no page number associated with this change.

Annotation of Written Comments

Soil Background and Data Evaluation Report (Final)
Fort Wingate Depot Activity, Gallup, New Mexico, Contract No. W912BV-07-D02004
September 15, 2010

Comment No.	Reference	Reviewer/Comment	A-Concur; D-Do Not Concur; E-Exception	Comment Resolution
5	General	The Permittee must note that for all risk evaluations, the most recent NMED SSLs (currently December 2009) must be applied. In the event that there is no NMED SSLs available, the most current Regional Screening Level (RSL) must be applied. If a carcinogenic RSL is applied, the Permittee must ensure that the datum is modified to reflect the appropriate target cancer level. No changes to the Report are necessary.	A	All text and tables will reflect the most recent (December, 2009) NMED SSLs and/or EPA RSLs. Where no NMED SSLs exist, the tables will reflect the EPA Region 6 Residential SSLs: Table 6-1, page 1, Table 8-1, pages 1 through 2, and Appendix E, Table E-1 (there is no page number associated with this change).
6	Section 5.3	In Section 5.3 (Handling of Outliers), the Permittee states, "[for each element, the concentration data is rank-ordered and the maximum value is flagged if it is greater than five times the second highest value (EPA, 1989). Samples flagged as outliers are further examined to determine whether there is an error in the recorded concentration. Statistical outliers will be eliminated from consideration only if there are additional reasons to suspect either errors in the data or site related contamination in the sample. Results of the outlier testing are provided in Section 6.1 "Based on the information provided in Section 6.1 (Results of Outlier Testing), it does not appear that any statistical evaluation of outliers was conducted given that none of the data were more than five times the second highest value. This methodology is outdated and must not be relied upon when evaluating data sets for outliers. Graphical analyses, including box plots provide a visual	A	The EPA recommends many different outlier tests in their most recent "Unified Guidance" (EPA, 2009), including Dixon's test, Rosner's test, Filliben's or Pearson's probability plot correlation coefficients, and Tukey's interquartile range (IQR) approaches. Each of these tests are appropriate for distributions of different sizes, shapes, percentages of nondetects, and the number of outliers suspected. Dixon's test is only valid for smaller ($n \leq 25$) data sets than those evaluated here. Rosner's test and the two probability plot approaches all assume normality (or lognormality with log-transformed data), which is not a valid assumption for 15 of the 23 elements. There is also an assumption that the proportion of nondetects are low, which is not the case for five of the elements. Tukey's IQR test, although

Annotation of Written Comments

Soil Background and Data Evaluation Report (Final)
Fort Wingate Depot Activity, Gallup, New Mexico, Contract No. W912BV-07-D02004
September 15, 2010

Comment No.	Reference	Reviewer/Comment	A-Concur; D-Do Not Concur; E-Exception	Comment Resolution
6	Section 5.3	representation of the data and determine the presence of outliers or other anomalous data that might affect statistical results and interpretations. Based upon the histograms provided in Appendix B, it appears that there may potentially be outliers for arsenic, cadmium, and cobalt. Datasets often contain outliers, so the fact that the Report's evaluation found no outliers lends more suspicion on the utility of the method used. Therefore, the Permittee must use more current guidance and conduct statistical testing of datasets to determine if there are any outliers (EPA 540-R-01-003, Background Comparison Guidance, September 2002; EPA QCIG-9, July 2000; ProUCL ver. 4.00.04 Technical Guide, July 2009, Section 4.2.1). The Permittee must revise the Report to apply the changes listed above as well as update the methodology in Section 5.3 to reflect current methods for testing datasets for outliers. The Permittee must also revise the evaluation of the data using current guidance to ensure that no outliers were retained.	A	described as nonparametric, is still based on an assumption of symmetrical distributions, which is not a characteristic of any of the 23 distributions. EPA, 2009 states that: "Since no assumption of normality is needed, Tukey's procedure can be considered quasi-non-parametric. But note that rough symmetry of the underlying distribution is implicitly assumed." (page 12-6) Please note that the last paragraph of the 14-page chapter on outlier test in EPA, 2009 states that: "The guidance considers Dixon's and Rosner's outlier evaluation methods preferable for groundwater monitoring data situations, when assumptions of normality are reasonable and data are quantified. We did not include the older method found in the 1989 guidance based on ASTM paper E178-75, which can still be used as an alternative.

Annotation of Written Comments

Soil Background and Data Evaluation Report (Final)
Fort Wingate Depot Activity, Gallup, New Mexico, Contract No. W912BV-07-D02004
September 15, 2010

Comment No.	Reference	Reviewer/Comment	A-Concur; D-Do Not Concur; E-Exception	Comment Resolution
6 (Cont'd)	Section 5.3		A	Where data do not appear to be fit by a normal or transformably normal distribution, other robust outlier evaluation methods can be considered from the wider statistical literature. The literature will also need to be consulted when data contains non-detect values along with potential outliers." (page 12-14) The use of the 5X test recommended in EPA, 1989 is thus consistent with current EPA guidance when dealing with nonparametric, unsymmetrical distributions, especially those with high proportions of nondetects. In an effort to use an alternative outlier test as requested, we did apply Tukey's test to see if any outliers were identified. The lack of symmetry in most of the distributions was partially corrected for by performing Tukey's test on log-transformed data. This test, using a coefficient of 2.8 (within the recommended range of 1.5 to 3.0) resulted in one statistical outlier which was the maximum arsenic concentration of 11.2 mg/kg. This sample

Annotation of Written Comments

Soil Background and Data Evaluation Report (Final)
Fort Wingate Depot Activity, Gallup, New Mexico, Contract No. W912BV-07-D02004
September 15, 2010

Comment No.	Reference	Reviewer/Comment	A-Concur; D-Do Not Concur; E-Exception	Comment Resolution
6 (Cont'd)	Section 5.3		A	also has the highest iron concentration of 27,600 mg/kg. The well known natural association between arsenic and iron in soil suggests that the maximum arsenic concentration in this sample is expected and is probably natural. Results of Tukey's outlier test has been added to the revised report text. The EPA, 2000 (QA-G9) guidance on outliers states that: "If a data point is found to be an outlier, the analyst may either: 1) correct the data point; 2) discard the data point from analysis; or 3) use the data point in all analyses. This decision should be based on scientific reasoning in addition to the results of the statistical test. For instance, data points containing transcription errors should be corrected, whereas data points collected while an instrument was malfunctioning may be discarded. One should never discard an outlier based solely on a statistical test. Instead, the decision to discard an

Annotation of Written Comments

Soil Background and Data Evaluation Report (Final)
Fort Wingate Depot Activity, Gallup, New Mexico, Contract No. W912BV-07-D02004
September 15, 2010

Comment No.	Reference	Reviewer/Comment	A-Concur; D-Do Not Concur; E-Exception	Comment Resolution
6 (Cont'd)	Section 5.3		A	outlier should be based on some scientific or quality assurance basis. Discarding an outlier from a data set should be done with extreme caution, particularly for environmental data sets, which often contain legitimate extreme values. If an outlier is discarded from the data set, all statistical analysis of the data should be applied to both the full and truncated data set so that the effect of discarding observations may be assessed. If scientific reasoning does not explain the outlier, it should not be discarded from the data set." With this guidance in mind, we do not think that there is sufficient justification to remove the maximum arsenic concentration. <u>Section 5.3, pages 5-3 through 5-4, will read as follows:</u> Outliers are defined as data points with values that are anomalously high relative to the rest of the data set (EPA, 2009a). The following are possible reasons for outliers:

Annotation of Written Comments

Soil Background and Data Evaluation Report (Final)
Fort Wingate Depot Activity, Gallup, New Mexico, Contract No. W912BV-07-D02004
September 15, 2010

Comment No.	Reference	Reviewer/Comment	A-Concur; D-Do Not Concur; E-Exception	Comment Resolution
6 (Cont'd)	Section 5.3		A	• Improper sampling, analytical error, or laboratory contamination • Errors in transcription of data values, decimal points, or units • The presence of actual contamination in the sample • A natural background concentration that is unusually high The "5 X" outlier test and Tukey's outlier test were used. For the "5 X" test, the concentrations of each element are rank-ordered, and the maximum value is flagged as an outlier if it is greater than five times the second-highest value (EPA, 1989). Advantages of the 5 X test are that it is valid for any shape of distribution, and it can be performed on data sets with high proportions of nondetects. The Tukey test is recommended by the EPA (EPA, 2009a) for nonparametric distributions. This test calculates an upper limit of the expected range based on the interquartile range (difference between the 75^{th} and 25^{th} percentiles). An upper limit is defined as:

Annotation of Written Comments

Soil Background and Data Evaluation Report (Final)
Fort Wingate Depot Activity, Gallup, New Mexico, Contract No. W912BV-07-D02004
September 15, 2010

Comment No.	Reference	Reviewer/Comment	A-Concur; D-Do Not Concur; E-Exception	Comment Resolution
6 (Cont'd)	Section 5.3		A	Limit = 75^{th} percentile + (T • (75^{th} percentile – 25^{th} percentile)) where T can range from 1.5 to 3.0. Concentrations that exceed the limit are considered to be outliers. Because the test is nonparametric, the data need not conform to a specific distribution. There is however, an assumption of symmetry, which is not the case for these distributions which are all right-skewed to varying degrees. An additional concern is the presence of nondetects. The interquartile range is uncertain if the distribution has more than 25 percent nondetects, and cannot be defined if the distribution has more than 75 percent nondetects. Samples flagged as outliers are further examined to determine whether there is an error in the recorded concentration. Statistical outliers will be eliminated from consideration only if there are additional reasons to suspect either errors in the data or site-related contamination in the sample. Results of the outlier testing are provided in Section 6.1.

Annotation of Written Comments

Soil Background and Data Evaluation Report (Final)
Fort Wingate Depot Activity, Gallup, New Mexico, Contract No. W912BV-07-D02004
September 15, 2010

Comment No.	Reference	Reviewer/Comment	A-Concur; D-Do Not Concur; E-Exception	Comment Resolution
6 (Cont'd)	Section 5.3		A	Section 6.1, page 6-1, will read as follows: Two outlier tests, ("5 X" and Tukey's) described in Section 5.3, were performed for each element in the soil data set. No outliers were identified with the 5 X test. Tukey's outlier test (EPA, 2009a) was also applied to all the elements. The lack of symmetry in the distributions was partially corrected for by performing the test on log-transformed data. This test, using a *T* coefficient of 2.8 (within the recommended range of 1.5 to 3.0) resulted in one statistical outlier which was the maximum arsenic concentration of 11.2 mg/kg. This sample also has the highest iron concentration of 27,600 mg/kg. Arsenic has a well known affinity to adsorb on the surfaces of iron oxides, so samples high in iron are expected to have naturally higher arsenic concentrations. These observations suggest that the maximum arsenic concentration in this sample is expected, and is probably natural. The EPA, 2000 guidance on outliers states that:

Annotation of Written Comments

Soil Background and Data Evaluation Report (Final)
Fort Wingate Depot Activity, Gallup, New Mexico, Contract No. W912BV-07-D02004
September 15, 2010

Comment No.	Reference	Reviewer/Comment	A-Concur; D-Do Not Concur; E-Exception	Comment Resolution
6 (Cont'd)	Section 5.3		A	"If a data point is found to be an outlier, the analyst may either: 1) correct the data point; 2) discard the data point from analysis; or 3) use the data point in all analyses. This decision should be based on scientific reasoning in addition to the results of the statistical test. For instance, data points containing transcription errors should be corrected, whereas data points collected while an instrument was malfunctioning may be discarded. One should never discard an outlier based solely on a statistical test. Instead, the decision to discard an outlier should be based on some scientific or quality assurance basis. Discarding an outlier from a data set should be done with extreme caution, particularly for environmental data sets, which often contain legitimate extreme values. If an outlier is discarded from the data set, all statistical analysis of the data should be applied to both the full and truncated data set so that the effect of discarding observations may be

Annotation of Written Comments

Soil Background and Data Evaluation Report (Final)
Fort Wingate Depot Activity, Gallup, New Mexico, Contract No. W912BV-07-D02004
September 15, 2010

Comment No.	Reference	Reviewer/Comment	A-Concur; D-Do Not Concur; E-Exception	Comment Resolution
6 (Cont'd)	Section 5.3		A	assessed. If scientific reasoning does not explain the outlier, it should not be discarded from the data set." Based on this guidance, there is insufficient justification to remove the maximum arsenic concentration.
7	Table 8-1	Table 8-1 (Background Screening Values Compared with Evaluation Criteria), the "Evaluation Criteria" for arsenic is listed as 0.39 mg/kg. This value is incorrect, the Permittee must revise the Report to include and apply the correct value for arsenic which is 3.90 mg/kg. The Permittee must address all comments contained in this letter and submit a revised Report. The cover page must indicate that the submittal is a revision and was prepared for NMED. The revised Report must be accompanied with a response letter that details where all revisions have been made, cross-referencing NMED's numbered comments. The Permittee must also submit an electronic copy of the Revised Report with all edits and modifications shown in redline-strikeout format. The revised Report must be submitted to NMED no later than October 15,201 0.	A	The evaluation criteria will be rechecked throughout the report for accuracy and updated in the final report. Table 6-1, page 1, Table 8-1, pages 1 through 2, and Appendix E, Table E-1 (there is no page number associated with this change) will reflect the current December, 2009 NMED SSLs. Where no NMED SSLs exist, the tables will reflect the EPA Region 6 Residential SSLs.

Appendix B
Field Documentation

Appendix B1
Field Activity Daily Logs

Shaw® Shaw Environmental, Inc.

FIELD ACTIVITY DAILY LOG

DAILY LOG	DATE	11	11	09
	NO.			
	SHEET 1	OF 3		

PROJECT NAME: Fort Wingate Depot Activity Background Metals | PROJECT NO.: 133366

FIELD ACTIVITY SUBJECT: Soil boring & soil sampling

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

0645	Perform vehicle inspection on shaw truck 101421
0655	Depart For FWDA
0705	Arrive at FWDA. Load trucks. Conduct tail gate safety brief and drill rig inspection. Shaw met with D. Henry & Matt Masteson and Formed a plan for the day & start with BH 14, 13, 12 then 11, 9. IF time remains at the end of the day, shaw will begin hand augering, IF not shaw will hand auger Thursday.
0735	Depart For BH 14
0755	Arrive at BH 14. Begin setup.
0805	0-4 ft extracted, 0-2ft collected,
0810	4-8ft extracted, 4.9-5.5 collected
0815	8-10ft extracted, 9.0-10.0 collected
0825	BH-14 Abandoned ~~as~~ ES by placing borehole cuttings back into hole. Top 4ft filled w/ bentonite and top one ft of cuttings thin spread around site. Load up gear, Enter ~~Corrosion~~ Chain of custody. Depart BH-14
0839	Arrive @ BH-B, unload gear
0845	0-4ft extracted, 0-2ft collected
0850	4-8ft extracted, 4.5-5.5 collected
0855	8-10ft extracted, 9.0-10.0 collected
0910	BH-13 Abandoned using previously mentioned methods. Load up gear, Enter chain of custody. Depart BH-13
0929	Arrive @ BH-12, Unload gear
0935	0-4ft extracted, 0-2.0ft collected

VISITORS ON SITE: David Henry, Matt Masteson

CHANGES FROM PLANS AND SPECIFICATIONS, AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS: Hand auger BH-09 + BH-11

WEATHER CONDITIONS:
A.M. Overcast, calm, 38°F
P.M. Overcast, calm, 58°F

IMPORTANT TELEPHONE CALLS: Called M. Goodrich to get direction on BH-09 + BH-11

SHAW E&I PERSONNEL ON SITE: R. Skalski, P. Ostrye

SIGNATURE: Patrick W. Ostrye DATE: 11/11/09

327C-12-98

Shaw® Shaw Environmental, Inc.

FIELD ACTIVITY DAILY LOG CONTINUATION SHEET

DAILY LOG	DATE	11	11	09
	NO.			
	SHEET 2 OF 3			

PROJECT NAME: Fort Wingate Depot Activity Background Metals | PROJECT NO.: 133366

FIELD ACTIVITY SUBJECT: Soil boring + Soil sampling

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

0940 4-8ft extracted, 4.5-5.5ft collected
0945 8-10ft extracted, 9.0-10.0ft collected
0955 Abandoned BH-12 using previously mentioned methods. RS Load up gear, Enter chain of custody, Depart BH-12
1005 Drillers rig was stuck in 4wheel drive, working on fixing that
1020 Headed to BH-9, 11 with driller
1035 Arrive @ Admin area and discussing how to manouver to BH-9+11
1055 Opened and closed gates RS that gain access to FWDA from HW400. As well as the gate that gains access to parcel 17.
1120 RS Drove along Power line until we were ⊥ w/ BH-11, walked toward BH-11 (west) ~100 yr; same exposed shallow bedrock. Called D. Agnew discussed options. Called M. Goodrich- he suggested going back to BH-10s new location and walking west of BH-10 and finding new suitable locations for BHs 9, 11.
1130 Depart to BH-10's new location.
1150 New location for BH-9 determined, walked out see note @ end of FADL
1155 0-2ft @ hand augered and collected
1200 1.3-2.5 RS hand augered and collected Refusal at 2.5 bgs
1210 BH-9 Abandoned using previously RS mentioned methods
1220 RS Arrive @ new location of BH-11
1230 0-1.1ft RS hand augered and collected
1235 1.1-2ft hand augered and collected. Refusal at 2.0 bgs
1240 BH-11 Abandoned using previously mentioned methods. Load up gear, walk back to trucks, Enter chain of custody. BH-11 was shifted to location where hand augering could be achieved. See sample collection logs for RS location.
1300 Departing to Admin area to get supplies off JR drilling trailer and see Drillers off. RS
1315 Arrive @ Drillers trailer, see Drillers off
1325 Matt Escorting JR drilling off site, Shaw picking up H_2O for hydration of Bentonite For Hand auger boreholes.

Shaw® Shaw Environmental, Inc.

FIELD ACTIVITY DAILY LOG CONTINUATION SHEET

DAILY LOG	DATE	11	11	09
	NO.			
	SHEET 3 OF 3			

PROJECT NAME: Ft. Wingate DA Background Metals | PROJECT NO.: 133366

FIELD ACTIVITY SUBJECT: Soil boring + Soil sampling

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

1340	M. Goodrich called and informed Shaw to take pictures of Hand augering area documenting vegetation.
1400	Load up sampling gear and walk out to Hand auger area.
1415	Arrive @ AH01, Hand auger to 0-1.4ft collected, FDUP-04 collected
1420	4.0-5.0 collected, FDUP-05 collected
1430	AH01 abandoned using previously mentioned methods, depart AH01
1435	Arrive @ AH02 moved slightly due to veg.
1450	0-1.5 collected, FDUP-06 collected
1455	4.5-5.0 collected, FDUP-09 collected
1510	Abandon AH02 using previously mentioned methods, Depart AH02
1520	Arrive @ AH03, moved slightly due to embankment
1530	Hand auger 0-1ft collected
1535	3.8-4.5ft collected refusal at ~4.5ft, due to roots
1549	Abandon AH03 using previously mentioned methods, Depart AH03
1555	Arrive @ AH04, set up sampling gear
1605	0-1ft hand augered and collected
1610	4.0-5ft hand augered and collected
1620	AH04 Abandoned using previously mentioned methods
1630	Pack up supplies and walk back to truck
1635	Arrive at truck + enter Chain of Custody
1645	depart for Admin Area.
1700	Depart Admin Area for Hotel
1710	Arrive @ hotel, unload gear
	End of Day

Note From 1150: ~~BH~~ GPS shows BH9 in Parcel 15, map shows BH9 in Parcel 17. P. Ostrye advanced BH9 in Parcel 17. and noted location on Sample Collection log.

Shaw® Shaw Environmental, Inc.

FIELD ACTIVITY DAILY LOG

DAILY LOG	DATE	11	10	02
	NO.			
	SHEET	1	OF	2

PROJECT NAME: Ft Wingate Background Metals | PROJECT NO.:

FIELD ACTIVITY SUBJECT: GPS - site location for background locations

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

0645 depart hotel
0700 arrive @ Ft Wingate Depot
0705 Tailgate safety
0710 Justin Reale, David Henry, Steve C. discus daily plans - decide Magdalena can ride in govt vehicle - will go South, then work to NE
0745 depart depot for outside area
0805 split from Patrick + Roxy; MSD w/ Justin + David
0810 locate BH26B @ 12S YE 17315, 26057 } ON DIRT ROAD, OPP SIDE FR. ORIGINAL BH26,25
0825 locate BH25B @ 12S YE 17544, 26018 }
0854 Meet Martin to go to 4 southern location boreholes.
Martin gone after Weeds @ whit Sands
Richard (?) should have keys to all but J block.
Combination locks, comb. "1200"
Hogan @ ~ BH-11, 10 area *keep lookout*
Gate 208 aka Martins inner gate to BHs 15-18, combo is 0352
Martin's phone # = 575-649-0352
drive through gate, go along eastern side of fence on "dirt road"/fenceline
0912 locate BH18B @ 12S YE 17779, 24756
0918 locate BH 17B @ 12S YE 17897, 24862
0924 locate BH 16B @ 12S YE 17753, 25088
0931 locate BH16B @ 12S YE 17676, 25169 * located pretty far from orig (but is on a cliff)

VISITORS ON SITE:
Justin Reale
David Henry
Steve

CHANGES FROM PLANS AND SPECIFICATIONS, AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS:

WEATHER CONDITIONS:
25°
Sunny

IMPORTANT TELEPHONE CALLS:
Mike Goodrich x2

SHAW E&I PERSONNEL ON SITE: Drillers, Patricko, Roxy S., Magdalena S-D

SIGNATURE: [signature] DATE: 11-10-09

Shaw® Shaw Environmental, Inc.

FIELD ACTIVITY DAILY LOG CONTINUATION SHEET

DAILY LOG			
DATE	11	10	09
NO.			
SHEET 2 OF 2			

PROJECT NAME: Ft Wingate Background Metals

PROJECT NO.:

FIELD ACTIVITY SUBJECT:

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

09	49	leave upper area - lock both gates
10	00	meet up w/ Pat, Roxy + drillers
10	20	call Mike @ ALB. OFFICE
10	40	set up on BH-15B, photos.
11	15	set up on BH-16B
13	20	depart for depot hqx w/ Justin
13	45	Magdalena depart depot
15	50	Magdalena in Alb.

Magdalena [signature] 11-10-09

032B-12-98

Shaw® Shaw Environmental, Inc.

FIELD ACTIVITY DAILY LOG

DAILY LOG		
DATE	11 10 09	
NO.		
SHEET	1	OF ~~2~~ ~~3~~ 4

PROJECT NAME: Fort Wingate Background Metals | PROJECT NO.: 133366

FIELD ACTIVITY SUBJECT: Soil Boring Soil sampling

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

0650 Depart Hotel for FWDA admin area
0703 Arrive @ FWDA, meet JR drilling and J. Reale (Army Corp)
0710 Tailgate and Drill rig Inspection
0720 USACE + Shaw make plans for Magdalena D. to Flag locations For drilling crew. USACE getting radios and contacting Martin Eastridge at MDA.
0735 M. Lyon contacts P. Ostiye to check up on sample numbers.
0745 Depart For Field. Drill team will be escorted to BH 27 + BH 28.
0806 Steve C. Opens gate to OB/OD area. Shaw is unescorted in OB/OD area. M. Sandoval, J. Reale, and Steve C. depart to ground truth BH 15, 16, 17, 18, 25 + 26 J-block/MDA area. Shaw needs to inform Steve C. when ready to depart OB/OD area.
0810 Arrive at BH-27, unload gear
0825 Hit refusal due to bed rock @ 3ft 10', 0-3ft extracted, 0-1.5 collected
0830 1.5-3 ~~ft~~ collected RS
0840 BH-27 Abandoned ~~[illegible]~~ RS by placing BH cuttings back into Hole. Top one ft of BH filled w/ Bentonite and remaining cutting thin spread around site. Gear loaded and chain of custody entered.
0845 Depart BH-27, Mob to BH-28
0850 Arrive at BH-28, Had to cut ~~around~~ two 11/10/09 5 branches to get drill rig in to site.
0900 Hit refusal due to bed rock @ ~~[illegible]~~ RS 2.25ft, 0-2.25 extracted 0-1.5 collected
0905 1.5-2.25 collected

VISITORS ON SITE: Justin Reale (Army Corp), David Henry, Steve Cole } USACE

CHANGES FROM PLANS AND SPECIFICATIONS, AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS: NMED gave USACE Permission to advance boreholes BH 27 + 28 to ~~to~~ PWO shallower depths, but must remain in same parcel. Boreholes BH 15, 16, 17, 18 were advanced to shallowed depths due to shallow bedrock

WEATHER CONDITIONS: AM sunny, calm ~35°; PM sunny, breezy ~62°

IMPORTANT TELEPHONE CALLS: None

SHAW E&I PERSONNEL ON SITE: R. Stalsk; P. Ostrye, M. Sandoval

SIGNATURE: Patrick W. O[illegible] | DATE: 11/10/09

327C-12-98

Shaw® Shaw Environmental, Inc.

FIELD ACTIVITY DAILY LOG CONTINUATION SHEET

DAILY LOG				
	DATE	11	~~09~~	09
	NO.		10 AS	pw
	SHEET 2 OF ~~3~~ 4			

Gate Combo: Martin Miner (208) = 0352

PROJECT NAME: Fort Wingate Background Metals	PROJECT NO.: 133366
FIELD ACTIVITY SUBJECT: Soil Boring soil sampling	

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

0915	BH-~~28~~ 28 (RS) Abandoned using previously mentioned methods. Load up gear, enter chain of custody.
0926	Patrick contacted J. Reale. Shaw is leaving OB/OD area. Shaw instructed to wait @ gate 209 until USACE escort arrives. Depart B-28.
0935	Arrive @ Gate 209 and wait for USACE
1000	J. Reale and M. Sandoval arrive at gate 209.
1010	Depart gate 209, headed BH ~~26 + 25~~ 11/10/09 15
1020	Arrive @ gate entrance, J. Reale informs shaw that the gate needs locked behind, due to Cattle. J. Reale locks gate behind Shaw. J. Reale escorts (RS) shaw to BH-15.
1022	Heading for BH-~~9~~ 15 (RS)
1030	Arrive @ BH-15, unload gear
1040 (RS)	0-2.5 ft extracted, Hit refusal @ 2.5ft, 0-1.5ft collected
1045	1.5-2.5ft collected
1053	BH-15 Abandoned using previously used methods, load up gear enter chain of custody, Depart BH-15
1105	Arrive @ BH-16, unload gear
1115	Hit refusal @ 1.5ft due to bedrock, only one sample taken 0-1.5ft collected
1125	BH-16 Abandoned using previously used methods, load up gear, enter Chain of custody, Depart BH-16
1136	Arrive @ BH-17
1145	0-4 ft extracted, 0-2 ft collected
1150	3-4 ft collected
1155	4-5 ft extracted, 4-5 ft collected
1200	BH-17 Abandoned using previously mentioned methods, load up gear, enter chain of custody, Depart BH-17
1212	Arrive @ BH-18, unload gear
~~1225~~	~~BH-17 Abandoned using previously mentioned methods, load up gear, enter chain of custody, Depart BH-17~~ (RS)
1220	(RS) 0-4ft extracted, ~~20~~ 20 (RS) 0-2ft collected Hit refusal @ 4ft
1225	2-4ft Collected
1235	BH-18 Abandoned using previously mentioned methods

Shaw® Shaw Environmental, Inc.

FIELD ACTIVITY DAILY LOG CONTINUATION SHEET

DAILY LOG	DATE	11	10	09
	NO.			pwc
	SHEET 3 OF 34			

PROJECT NAME: Fort Wingate Background Metals | PROJECT NO.: 133366

FIELD ACTIVITY SUBJECT: Soil Boring sampling

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

1240 Load up, Enter chain of custody, and Depart BH-18
1310 Arrive @ BH-26, J. Reale + M. Sandoval depart site. Shaw instructed to inform J. Reale when Shaw is through Sampling ~~area~~. pwc 11/10/09 Boreholes 25 + 26
1315 0-4ft extracted, 0-2ft collected From BH 26
1320 Refusal @ 5ft, 3-4Ft collected From BH 26
1329 4-5ft collected
1340 Abandoned BH-26 using previously mentioned methods. Load up gear, enter chain of custody.
1349 Depart BH-26
1353 Arrive @ BH-25
1400 0-4Ft extracted, 0-2Ft collected
1405 4-8Ft extracted, 4.5-5.5ft collected
1410 8-10ft extracted, 9.0-10.0ft collected Refusal @ 10Ft.
1420 BH-~~26~~ 25 RS Abandoned using previously used methods. load up gear, enter chain of custody
1435 Depart BH-~~26~~ 25, J. Reale stopped by site. He will go lock a gate. Shaw is headed to parcel 17 to try to gain access to BHs 9+11. But waiting for J. Reale
1451 Justin Reale meets shaw and escorts to parcel 17
1530 Recon ~~BH~~ RS BH 13 and 14 to determine weather Driller can reach sites or not
1545 Driller is comfortable reaching sites 13+14. Justin Reale is escorting Shaw to an alternative access to ~~parcel~~ parcel 17 in Northern section. P. Ostrye will confirm with Shaw office this evening to see if it acceptable to move BHs 9 and 11.
11/10/09 pwc ~~1557~~ ~~1557~~ 1557 Shaw and J. Reale find out that we and they don't have access to ~~BH~~ RS Northern part of parcel 17. Therefore we will have to drive access country to get to BH 9 and 11. tomorrow Driller has given ok to drive trough dense vegetation in order to reach these BHs. Depart site for FWDA admin area.
1615 Arrive @ Admin area, unload gear, Depart Admin area
1630 Arrive @ Hotel EOD RJS

see note page 4

032B-12-98

Shaw® Shaw Environmental, Inc.

FIELD ACTIVITY DAILY LOG CONTINUATION SHEET

DAILY LOG	DATE	11	10	09
	NO.			
	SHEET 4 OF 4			

PROJECT NAME: Fort Wingate Depot Activity Background Metals | PROJECT NO.: 133366

FIELD ACTIVITY SUBJECT: Soil Boring & Sampling

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

Note: From 1451 to 1557 Shaw had much discussion with USACE about gaining a different access point to Parcel 17 and boreholes BH-9 and BH-11. P. Ostrye was concerned For vehicle safety of Shaw's & JR Drilling's Vehicle. The east side of Parcel 17, north of the outcrop, is exposed bedrock. The West side of Parcel 17, north of the outcrop, has much more exposed soil. However, between the east and west side is well eroded, and not passable, and Full of dense vegitation.

After driving the western fence line of Parcel 17 it was realized that there was only on enterence point For the northern section of Parcel 17. P. Ostrye & J. Reale Then looked For an enterence point For the ~~x~~ southern section of Parcel 17. Gate 204 offered an access point to the southern portion of Parcel 17. But when J. Reale called For permission to access Parcel 17 at gate 204, he was informed that the USACE does not have authorization to access that Portion of Parcel 17.

Upon learning of our access problems, J. R. Drilling agreed to drive his vehicle cross country through the dense vegitation as long as Shaw lead the way, using their vehicle to break down some of the vegitation. P. Ostrye's only concern For this hour was to Find a safe, passage to the two remaining boreholes in Parcel 17. ~~Tomorrow~~ PWO 11/10/09 P. Ostrye is confident that they can get the two remaining boreholes safely. It will just take much more time than any of the other boreholes.

IF Shaw Finds an a acceptable location within the deserst scrub land ecozone OFF of the bedrock, a soil borring will be advanced in that location in lue of driving cross country.

Shaw® Shaw Environmental, Inc.

FIELD ACTIVITY DAILY LOG

DAILY LOG	DATE	11	09	09
	NO.			
	SHEET	1	OF	4

PROJECT NAME: Fort Wingate Background Metals | PROJECT NO.: 133366

FIELD ACTIVITY SUBJECT: Soil boring sample collection

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

0450 Depart office for Ft. Wingate Admin Area
0650 Arrive @ Admin Area and wait for D. Henry and JR drilling
0710 D. Henry and JR drilling show up, load up gear from trailer and discuss BHs left to sample
0725 D Henry called Martin Eastridge to meet shaw on Northeast corner of FWDA @ 8am
0728 Depart Admin area for NE corner of FWDA
0743 Arrive @ gate and wait for M. Eastridge
0813 Met M. Eastridge, advised RS ~~us~~ shaw that shaw could cut locks on gates if needed - he also gave shaw the combination that works on several locks in the area access to
0815 Mobilized into gate perimeter ~~into~~ NE corner of FWDA RS
0830 D. Henry + P. Ostrye scout out path through tall shrub land
0839 Mobilize to clearing to BH-4 and BH-3
Hour and a half of standby for JR drilling - called Dale F. and Mike G. aquired 4 hours of standby last week
0850 Arrive at BH-3, unload gear
0855 0-4ft extracted, 0-2ft collected
0900 4-8ft extracted, 4.5-5.5ft collected
0905 8-10ft extracted, 9.0-10.0ft collected
0915 Abandoned BH-3 by placing drill cuttings into hole. Top cutting thin spread around site. Remaining 1ft of hole filled w/ bentonite chips. Gear loaded up., Enter chain of Custody
0925 Depart BH-3

VISITORS ON SITE: D. Henry, M. Eastridge

CHANGES FROM PLANS AND SPECIFICATIONS, AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS:
BH-29 + 30 encountered bedrock e 3 Ft. Only collected 2 samples each: 0-1.5 ft 1.5-3.0 USACE + NMED approved.

WEATHER CONDITIONS:
Sunny
Calm 50°-62°

IMPORTANT TELEPHONE CALLS:
None

SHAW E&I PERSONNEL ON SITE: R. Skolski, P. Ostrye

SIGNATURE: Roxane Skolski DATE: 11/09/09

327C-12-98

Shaw® Shaw Environmental, Inc.

FIELD ACTIVITY DAILY LOG CONTINUATION SHEET

DAILY LOG	DATE	11	09	09
	NO.			
	SHEET 2 OF 4			

PROJECT NAME: Ft. Wingate Background Metals | PROJECT NO.: 133366

FIELD ACTIVITY SUBJECT: Soil boring sample collection

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

0930 Arrive @ BH-4, Unload gear
0935 0-4ft extracted, 0-2ft collected
0940 4-8ft extracted, 4.5-5.5 collected
0945 8-10ft extracted, 9.0-10.0 collected
0955 BH-4 Abandoned using previously mentioned methods. Load up gear, enter chain of custody
1000 Depart BH-4, Arrive @ BH-5
New waypoint created for BH-5 due to tall brush in Area (moved 20ft out of dense vegetation)
1005 Unload gear
1005 0-4ft extracted, 0-2ft collected field dup collected FDUP-04
1010 4-8ft extracted, 4.5-5.5 collected, FDUP-05
1015 8-10ft extracted, 9.0-10.0 collected, FDUP-06
1035 BH5 abandoned using previously mentioned methods. Load gear, enter chain of custody
1045 Depart For BH-6
1048 Vegitation was too dense to get to BH-6, New waypoint created for BH-6
1050 Unload gear
1055 0-4ft extracted, 0-2ft collected
1100 4-8ft extracted, 4.5-5.5 Collected
1105 8-10ft extracted, 9.0-10.0 collected
1115 BH-6 Abandoned using previously mentioned methods. Load gear, enter chain of custody
1129 Depart BH-6
1130 Large Hill where BH-7 originally located, New waypoint created for BH-7
1132 Unload gear
1135 0-4ft extracted, 0-2ft collected
1140 4-8ft extracted, 4.5-5.5 collected
1145 8-10ft extracted, 9.0-10.0 collected
1153 BH-7 Abandoned using previously mentioned methods. Load up gear and enter chain of custody.
1159 Depart BH-7

Shaw® Shaw Environmental, Inc.

FIELD ACTIVITY DAILY LOG CONTINUATION SHEET

DAILY LOG	DATE	11	9	09
	NO.			
	SHEET 3 OF 4			

PROJECT NAME: Ft. Wingate RS Background Metals | PROJECT NO.: 133366

FIELD ACTIVITY SUBJECT: Soil boring sample collection

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

1215 Arrive new location For BH-8 old location located in dense brush, unable reach. Unload gear

1210 D. Henry requested that Shaw contact him before moving to Boreholes 9, 10, 11

1230 0-4ft extracted, 0-2ft collected

1235 4-8ft extracted, 4.5-5.5ft collected

1240 8-10ft extracted 9.0-10.0ft collected

1250 BH-8 Abandoned using previously mentioned methods. Load up gear, enter chain of custody. Contacted D. Henry

1255 Depart BH-8

1310 D. Henry contacts Shaw, informed that he will not be meeting us. Told Shaw to go into area and do BHs 9, 10, 11

1312 Shaw + JR Drilling proceed into gate where BH 9, 10, 11

1322 Shaw observes large outcroping of sandstone where BH-10 is located. Shaw contacts D. Henry. D. Henry gives approval to move BH-10 closer to gate entrance.

1325 Arrive at new location of BH-10, unload gear

1335 0-4ft extracted, 0-2ft collected

1340 4-8ft extracted, 4.5-5.5ft collected

~~1345 8-10ft extracted 9.0-10.0 collected~~ RS

1345 Refusal @ 8ft, 7.0-8.0ft collected

1352 BH-10 Abandoned using previously metioned methods. Load up gear, enter into Chain of custody.

1400 Depart to BH 9, 11

1406 Contacted D. Henry, informed him that we are unable to reach area where BH 9, 11 in parcel 17. D. Henry suggested we leave those BH alone for now and that we should go to BH 2. He will meet Shaw at the gate for BH 2.

1417 Arrive @ gate into BH-2 (parcel 14 RS), Contacted D. Henry, informed him Shaw is waiting for access into gate

1425 D. Henry unlocks gate RS

Location of BH-2 moved due to RS access (adjusted on 11/2/09)

½ hour ~~loss~~ standby for Rob Hilton

1430 Arrive @ BH-2, unload gear

Shaw® Shaw Environmental, Inc.

FIELD ACTIVITY DAILY LOG CONTINUATION SHEET

DAILY LOG	DATE	11	09	09
	NO.			
	SHEET 4 OF 4			

PROJECT NAME: Ft. Wingate Background Metals | PROJECT NO.: 133366

FIELD ACTIVITY SUBJECT: Soil boring sample collection

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

1435 0-4ft extracted, 0-2ft collected
1440 4-8ft extracted, 4.5-5.5 collected
1445 8-10ft extracted, 9.0-10.0 collected
1452 BH-2 Abandoned using previously mentioned methods. Load up gear. Enter Chain of custody.
1500 Depart BH-2, Contact D. Henry to inform him we are heading to BH-~~12~~ 30. D. Henry will meet Shaw at Building 1
1533 RS
~~1535~~ Arrive @ BH30, unload gear
1540 0-~~4~~ft extracted, Hit refusal @ 3ft, 0-1.5ft collected
1545 1.5-3ft collected, ht refusal due to bed rock
1550 Move BH-29 so 10ft away from BH-30. Entire area has sandstone out crops. This area is the best + accessable
1550 0-3ft extracted, Hit refusal @ 3ft, 0-1.5ft Collected
1555 Hit refusal due to bedrock, 1.5-3ft collected
1605 BH-30 + BH-29 abandoned. Drill cuttings placed inside hole. One Foot bentonite pellets placed in hole
1615. Shaw Contacts D. Henry to inform him that we are ready to leave. Shaw is to meet D. Henry at gate.
1635 Arrive @ FWOA admin area
~~1650 Arrive @ Hotel, Dinner break~~ RS
~~1720 Packing Coolers for Shipment and printing Chain of custody~~ RS
1700 Depart FWOA admin area, Dinner break
1800 30 Packing Coolers, Packing Ice, Printing Chain of custody
2130 RS Finish Packing Coolers and printing Chain of custody
End of day

Patrick W. Daly
11/9/09

032B-12-98

Shaw® Shaw Environmental, Inc.

FIELD ACTIVITY DAILY LOG

DAILY LOG	DATE	11	6	09
	NO.			
	SHEET	1	OF	4

PROJECT NAME: Fort Wingate Depot Activity Background Metals | PROJECT NO.: 133366

FIELD ACTIVITY SUBJECT: Soil boring and soil sample collection

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

0650 Depart hotel for Ft. Wingate Admin area
0705 Load up supplies and conduct tailgate safety brief
Drill rig inspection not conducted because it was conducted EOD 11/05/09
Will conduct inspection ~~later~~ RS later in afternoon 11/06/09
0716 Waiting for Dave Henry to unlock gate - allowing access into area South of FWDA admin area
0728 Heading for BH-31 w/ D. Henry escorting us
0750 Arrive @ BH-31
0755 Unload gear, ~~begin drilling~~ RS
0758 Hand auger to 18 in, hit refusal due to roots
0805 0-4Ft extracted, 0-2Ft collected
0810 4-8ft extracted, 4.5-5.5ft collected
0815 8-10ft extracted, 9.0-10.0ft collected
0825 ~~Pull~~ Abandonment of BH-31 by placing drill cutting back into hole and placing ~1 Ft bentonite pellets into hole and then spred remaining cutting on ground
Begin decon and site breakdown.
0835 Entering Sample Collection onto Chain of Custody
0840 Load up gear and depart BH-31, heading to BH-30
0841 D. Henry wants us to meet Jim Hug @ OBOD gate - Not going to BH-30
0845 Arrive @ OBOD gate - waiting for J. Hug
0900 J. Hug arrived and escorting us to BH-27
0905 Arrive @ BH-27, set up sample gear
0910 Hand auger - hit refusal at 4in

VISITORS ON SITE:
Jim Hug
David Henry

CHANGES FROM PLANS AND SPECIFICATIONS, AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS:
Unable to reach total depth on BH-27. See time 1530

WEATHER CONDITIONS:
Sunny calm 65°

IMPORTANT TELEPHONE CALLS:
Time 0948
0923 1550

SHAW E&I PERSONNEL ON SITE: R. Skalski and P. Ostrye

SIGNATURE: Roxane Skalski Patrick W. Ostrye DATE: 11/06/09

Shaw® Shaw Environmental, Inc.

FIELD ACTIVITY DAILY LOG CONTINUATION SHEET

DAILY LOG	DATE	11	6	09
	NO.			
	SHEET 2 OF 4			

PROJECT NAME: Ft. Wingate Depot Activity Background Metals | PROJECT NO.: 133366

FIELD ACTIVITY SUBJECT: Soil boring and soil sample collection

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

0917 At 2Ft hit bed rock-refusal, bedrock probibly at 1ft
0923 load up gear, departing Parcel 2, heading parcels 8 and 5A
P. Ostrye tried to contact M. Goodrich, D. Agnew, and D. Flores
No one could be reached, So moving to above mentioned
parcels since we know there is recovery to the sample depth.
P. Ostrye will suggest moving BH-27 through BH-30 to
different area and keeping in same ecozone
0930 Heading for BH-32 P. Ostrye contacts D. Agnew
0948 Arrive @ BH-32, unload gear
P. Ostrye ends conversation w/ D. Agnew. D. Agnew requests
P. Ostrye contact D. Henry, with USACE, and ask for permission
to relocate Boreholes BH-27, 28, 29, and 30 From Parcel-02
to Parcel-05B. ~~Bedrock~~ Bedrock is too shallow ~~to~~ in Parcel-02
to obtain any samples.
0953 Hand auger to 2 Feet bgs. Refusal at 2 Feet bgs.
0954 Begin borehole BH-32 advancement.
0955 0-4ft RS extracted, 0-2ft sample collected
1000 4-8ft extracted, 4.5-5.5ft sample collected
RS 1009 8-10ft extracted, 9-10ft sample collected
0930 J. Hug gave OE clearance For parcels 05A and 08.
Shaw + JR Drilling are escorted, ~~with~~ D. Henry
is aware.
1015 Abandonment of BH-32 by placing drill cutting back into
hole and placing ~1ft bentonite pellets into hole
and thin spread remaining cutting on ground.
1017 Begin decon and site breakdown, Entering chain of
custody
1020 Load up gear and head to BH-33
1025 Arrive at BH-33, set up gear
1030 Hand auger to 1ft, hit refusal
RS 1033 Begin BH-33
1035 0-4ft extracted, 0-2ft collected and Field duplicate
1040 4-8 Ft extracted, 4.5-5.5 Ft collected and Field duplicate
1045 8-10 Ft extracted, 9-10 Ft collected and Field duplicate

Shaw® Shaw Environmental, Inc.

FIELD ACTIVITY DAILY LOG CONTINUATION SHEET

DAILY LOG	DATE	11	6	09
	NO.			
	SHEET 3 OF 4			

PROJECT NAME: Fort Wingate Depot Activity Background metals | PROJECT NO.: 133366

FIELD ACTIVITY SUBJECT: Soil boring and soil Sample Collection

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

1100 Borehole BH-33 abandoned by Fill hole w/ drill cuttings, Top 1 Foot was Filled w/ bentonite pellets. Remaining drill cuttings were thin spread across the site, Begin decon and site clean up
1115 Depart to BH-34
1120 Arrive at BH-34, unload gear, Hand Auger to 15in - Hit refusal
1125 0-4ft extracted, 0-2.0ft collected
1130 4-8ft extracted, 4.5-5.5ft collected
1135 8-10ft extracted, 9.0-10.0ft collected
1145 Borehole BH-34 abandoned by Fill hole w/ drill cuttings. Top 1 ft was filled w/ bentonite pellets. Remaining drill cutting were thin spread across the site. Begin decon, site cleanup and Chain of custody entry
1150 Depart BH-34, headed for BH-35
1200 Arrive at BH-35, unload gear, Hand Auger to ~1ft refusal due to roots
1209 0-4ft extracted, 0-2ft collected
1210 4-8ft extracted, 4.5-5.5 collected
1215 8-10ft extracted, 9.0-10.0 collected
1220 BH-35 Abandoned using previously mentioned methods. RS Begin Decon and site clean-up, Chain of custody entry
1230 Depart BH-35, heading for BH-36
1238 Arrive at BH-36, RS unload gear
1250 Conduct Drilling inspection
1252 Hand Auger to 15in - reached refusal due to roots
1255 0-4ft extracted, 0-2ft collected
1300 4-8ft extracted, 4.5-5.5ft collected
1305 8-10ft extracted, 9.0-10.0ft collected
1315 BH-36 abandoned using previously mentioned methods. Begin Decon and loading up gear
1317 Chain of custody entry
1320 Depart BH-36, headed for BH-38
1330 Arrive at BH-38, Unload gear
1333 Hand Auger to ~18in hit refusal due to roots
1340 0-4ft extracted, 0-2ft collected

Shaw® Shaw Environmental, Inc.

FIELD ACTIVITY DAILY LOG CONTINUATION SHEET

DAILY LOG	DATE	11	6	09
	NO.			
	SHEET 4 OF 4			

PROJECT NAME: Ft. Wingate Depot Activity Background metals | PROJECT NO.: 133366

FIELD ACTIVITY SUBJECT: Soil boring and soil sample collection

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

1345	4-8ft extracted, 4.5-5.5ft collected
1350	8-10ft extracted, 9.0-10.0ft collected
1358	BH-38 Abandoned using previously mentioned methods
1400	Begin Decon and loading up gear
1403	Chain of custody entry
1410	Depart BH-38, heading for BH-37
1420	Arrive @ BH-37, unload gear
1423	Hand auger to ~12in, refusal due to roots
1425	0-4ft extracted, 0-2ft collected
1430	4-8ft extracted, 4.5-5.5 collected
1435	8-10ft " , 9.0-10.0 collected
1445	BH-37 Abandoned using previously mentioned methods
1448	Begin Decon and loading gear, Chain of custody entry
1450	Depart BH-37, closed gate 210, informed D. Henry that we closed it and needs locking. D. Henry informed shaw he would get over to lock it. D. Henry informed Shaw to contact him when we arrive at gate 51.
1510	Arrive @ gate 51, contacted D. Henry, informed that Shaw was @ gate 51
1511	D. Henry opens gate 51, and asks shaw for summary of BH sampled. Arrive at JR drilling trailer and organize sample gear.
1530	D. Henry spoke with Shaw (P. Ostrye) and suggested not moving BH-27, 28, 29, 30 Out OF Parcel 2 into 53. D. Henry will contact D. Agnew & M. Goodrich OF Shaw monday 11/9/09 and discuss possible alternative locations the boreholes. D. Henry informed the Shaw Field team that a representative from Martin will be on site monday 11/9/09 to let Shaw in to the North east Section OF FWDA.
1550	P. Ostrye Contacted D. Agnew and explained to her what D. Henery told P. Ostrye
	Depart For Albuquerque
1800	Arrive at Shaw office. End of day

Shaw™ Shaw E & I, Inc.

FIELD ACTIVITY DAILY LOG

DAILY LOG	DATE	11	5	09
	NO.			
	SHEET	1 OF 2		

PROJECT NAME: FWDA BACKGROUND STUDY & GEOCHEMICAL | PROJECT NO.: 133366

FIELD ACTIVITY SUBJECT: INITIAL PHASE / PROJECT SAFETY INSPECTIONS

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

0633 MEET W/ PATRICK OSTRYE AND ROXANNE SKALSKI AT BEST WESTERN. DISCUSS THE FIELD PLAN FOR THE DAY.

0700 AT ARMY DEPOT STAGING AREA / MEET WITH ROB HELTON WITH JR DRILLING

0716 PATRICK OSTRYE CONDUCTS TAILGATE SAFETY MEETING. ~~FORM.~~ DEPART ADMIN AREA FOR BH-20 IN PARCEL 1

0820 ARRIVE AT BH-20, HAND AUGURED TO 18-INCHES AND ENCOUNTERED REFUSAL

0850 ADVANCED BH-20 TO 7 FEET BGS AND ENCOUNTERED REFUSAL. COLLECTED SURFACE (0-2), 5 FEET, AND 6 TO 7 Feet BGS. SAMPLES

0909 COMPLETE BH-20. REFUSAL DOCUMENTED W/ CLIENT REP.

0920 START ADVANCEMENT AT BH-21

1010 FINISH BH-21 BOREHOLE ADVANCED TO 10 FEET ALL SAMPLES (0-2) 5 AND 10) COLLECTED.

1034 SET UP AT BH-22

1113 FINISH SAMPLING AT BH-22. SAMPLES COLLECTED AT 0-2, 5) AND 10) ALSO COLLECTED DUPLICATE FDUP-0,2,3.

1125 SETTING UP AT BH-23. PERFORM PROJECT SAFETY INSPECTION.

1215 COMPLETE SOIL SAMPLING AT BH-23. BOREHOLE ADVANCED TO 10 FEET BGS AND ALL SAMPLES COLLECTED.

1223 ARRIVE AT BOREHOLE 24.

1230 ENCOUNTERED REFUSAL AT 2 FEET BGS. BOREHOLE LOCATION WILL BE MOVED CLOSER TO BH-19. ONSITE REP PHONED STEVE CAMPBELL (UXO PERSON) TO CLEAR NEW LOCATION.

1331 WAITING ON UXO PERSON TO CLEAR NEW BH LOCATION.

VISITORS ON SITE:
ROB Helton
Zack Bonnell > JR DRILLING
JUSTIN REALE — USACE ALB. DISTRICT

CHANGES FROM PLANS AND SPECIFICATIONS, AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS:
BH-20 Refusal @ 7 feet.

WEATHER CONDITIONS:
CLEAR COLD — 30's AM

IMPORTANT TELEPHONE CALLS:
NONE

SHAW E & I PERSONNEL ON SITE: PATRICK OSTRYE, ROXANNE SKALSKI, DALE FLORES

SIGNATURE: Dale J. Flores DATE: 11/5/09

327D-6-02

Shaw® Shaw Environmental, Inc.

FIELD ACTIVITY DAILY LOG CONTINUATION SHEET

DAILY LOG	DATE	11	5	09
	NO.			
	SHEET 2 OF 2			

PROJECT NAME: FWDA BACKGROUND STUDY & GEOCHEMICAL | PROJECT NO.: 633366

FIELD ACTIVITY SUBJECT: GED PROBE SOIL SAMPLING / INSPECTIONS

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

1350 STEVE CARPENTER ONSITE TO CLEAR AREA.

1405 SETTING UP AT NEW LOCATION BH-24 (WAY POINT NO. 20)
N 35°24'57.3 W 108°35'58.1

1448 COMPLETE SAMPLING AT BH-24. COLLECTED SAMPLES AT 0-2, 5, AND 10 FEET BGS. COMPLETE BHs FW PARCEL 1 → DEPART AREA.

1335 ARRIVE AT BH-1 SETTING UP ONSITE. HAND AUGER REFUSAL AT 1 FOOT

1609 COMPLETE BOREHOLE ADVANCEMENT TO 10 FEET BGS AT BH-1. SOIL SAMPLES COLLECTED AT 0-2, 5, AND 10 FEET BGS.

1620 DEPART SITE FOR ADMIN AREA.

1637 DAVE NEWMAN ONSITE CONDUCTED DEBRIEF. DAVE DEPARTS SITE.

Shaw® Shaw Environmental, Inc.

INITIAL PHASE INSPECTION CHECKLIST

Contract Number: W912BV-07-D-2004	**Date**: 11/5/09 **Location**: Ft. Wingate Depot Activity, Gallup, NM
Scope of Work: Background Study and Geochemical Evaluation	**Project Number**: 133366 **Delivery Order** DM01
Definable Features of Work: Features #1 and 2 – Geoprobe soil boring and soil sample collection, handling, and shipment	**Specification References**: Work Plan (Background Study and Geochemical Evaluation, Ft. Wingate Depot Activity) Revision 1 and Statement of Work for Drilling Services.
Notifications: USACE	

I. Personnel Present

Name	*Position*	*Affiliation*
Rob Helton	Driller	JR Drilling
Zach Bonnell	Driller's Helper	JR Drilling
Patrick Ostrye	Project Geologist	Shaw
Roxane Skalski	Field Technician	Shaw
Dale Flores	CQC Representative	Shaw
Justin Reale	USACE REPRES'	USACE

Shaw® Shaw Environmental, Inc.

INITIAL PHASE INSPECTION CHECKLIST

II. Preparatory Inspection

√ Verify full compliance with procedures identified at preparatory inspection. Coordinate plans, specifications, and submittals, if applicable

Copy of Work Plan/Procedures on site? YES

Soil boring to 10 feet bgs? BH-20 NO, REFUSAL AT 7 FEET BGS → STRATUM BEDROCK.

Soil samples collected at surface, 5 ft bgs, and 10 ft bgs? ~~YES~~ NO SURFACE CO-2 FEET BGS) 5 FEET, AND 6.5 TO 7.0 FEET BGS AT BH-20 / YES BH-21 ADVANCED TO 10 FEET BGS

Borehole logged per Section 3.1.1 of Work Plan? YES IN ACCORDANCE SEE NOTE (2) WITH ASTM D2487

Soil samples properly composited and homogenized? YES, PASSED THRU #6.4 SIEVE AND HOMOGENIZED.

Sampling equipment and Geoprobe properly decontaminated prior to sample collection per Section 4.1.3.2? YES, DECON STATION SET UP W/ALCONOX WASH AND DISTILLED H2O RINSE

Soil borings properly abandoned per Section 3.2 of Work Plan? YES, BACK FILLED W/SOIL TO 1 FOOT BGS AND 1 FOOT SURFACE PLUG TO SURFACE.

Samples are packaged and shipped per Section 4.1.5 of Work Plan? YES COLLECTED IN 8OZ JARS SEE NOTE 1 under comments

Are identified QC samples collected? YES DUPLICATED SOIL SAMPLE COLLECTED AT BH-22 (FDUP 01, 02-03)

Comments: MICRO CORE WITH 1½-INCH ID ACETATE SLEEVE

(1) BOREHOLE SAMPLES BH-19 AND BH-20 WERE GIVEN SAME TIME FOR ALL SAMPLES. FIELD CREW TOLD TO PUT SEPARATE TIMES FOR EACH SAMPLE.

NOTES

(2) BH-22 ADVANCED TO 10 FEET

BH-23

Shaw® Shaw Environmental, Inc.

INITIAL PHASE INSPECTION CHECKLIST

III. Preliminary Work

√ Is all preliminary work (work which must be completed before beginning definable features of work) complete and correct?

YES

(1) Tailgate

(2) Daily overview

√ Has safety meeting been held?

YES @ 0716 SEE TAILGATE

√ Demonstrate equipment calibrations in accordance with scope of work accuracy and precision requirements before surveying activities.

NO CALIBRATIONS PERFORMED AIR MONITOR NOT NEEDED

√ Other preliminary work:

Comments: GOOD

IV. Materials/Material Storage

√ All materials needed for Geoprobe sampling on site?

YES

√ Inventory of Materials:

10 - 50 lb BAROID GRANULAR BENSEAL

180 - 4 FOOT 1-1/2 - inch Acetate Liners

√ Are Materials stored properly (to avoid being damaged by weather and protected from animals)?

YES

Comments:

Shaw® Shaw Environmental, Inc.

INITIAL PHASE INSPECTION CHECKLIST

V. Level of Workmanship

√ All workmanship completed in a professional manner.

Geoprobe soil boring? YES

Sample collection/storage? GOOD JARS STORED IN BUBBLE WRAP AND SECONDARY ZIPLOCK.

Borehole logging? YES PER ASTM D-2487

VI. Discrepancies

√ Are there any discrepancies between planned events and actual conditions and/or practices? Disposal

YES SHALLOW BEDROCK ENCOUNTERED AT BH-20 UNABLE TO GET 10 FOOT SAMPLE, THICK SAMPLE COLLECTED AT 7 FEET

√ Have these discrepancies been noted; what actions were taken as a result of such conditions?

YES STEVE SMITH NOTIFIED BY JUSTIN REALE (USACE ONSITE REP) SHAW INFORMED TO NOTE IN FADL.

√ Are there any discrepancies, nonconforming conditions, or other deficiencies encountered with site activities, which require correction before continuing drilling activities?

NO, SEE COMMENTS

Comments: NOTE: NOT ALL BOREHOLES WILL BE ADVANCED TO 10 FEET DUE TO SHALLOW BEDROCK. ADJUSTMENTS WILL BE TAKEN IN ORDER TO COLLECT 3 SAMPLES FROM EACH BH.

Shaw® Shaw Environmental, Inc.

INITIAL PHASE INSPECTION CHECKLIST

VII. Safety

√ Review prevailing job conditions against governing safety documents and expected conditions before proceeding with initial site demonstrations and work.

Work Performed in Accordance with Standard Industry practices.

√ Verify appropriate PPE and safety monitoring equipment is available and operational.

LEVEL D FOR DRILLERS HARD HAT, SAFETY GLASSES, HEARING PROTECTION, AND STEEL TOE BOOTS

Comments:

VIII. Client Comments/Direction

Client Directed Shaw to note Boreholes were Refusal was encountered on FAOL

CQC Representative Signature / Date: Dale J Hoke / 11/5/09

Shaw® Shaw Environmental, Inc.

FIELD ACTIVITY DAILY LOG

DAILY LOG	DATE	11	05	09
	NO.			
	SHEET 1	OF 3		

PROJECT NAME: Ft. Wingate Army Depot Background Metals PROJECT NO.: 133366

FIELD ACTIVITY SUBJECT: Heavy Metal Analysis - Soil Boring sampling

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

0650 Left Hotel for FWDA Admin Area
0700 Arrived at FWDA, loaded truck with supplies
0715 Conducted tailgate safety brief
0725 Depart from FWDA, headed to BH-20
0810 Arrive at BH-20, set up sampling gear + Drilling rig
0820 Hand auger - Hit refusal @ 18 in
0830 BH-20 0-4ft extracted + collected 0-2.0ft — see D. Flores FATAL
0833 BH-20, 4-7ft, 4.5-5.5Ft sample collected
0835 Driller reached refusal at 7 Feet bgs. → 6.0-7.0ft collected
0908 Depart BH-20, heading for BH-21
0915 Arrive @ BH-21, set up sample supplies + drilling rig
0920 Hand auger reach refusal at 10 inches bgs.
0925 BH-21 0-4ft extracted and sampled 0-2ft
0930 4-8ft extracted and sampled 4.5-5.5ft
0935 8-10ft extracted and sampled 9.0-10.0ft
1010 Depart BH-21, pack up supplies + Equipment
1020 Arrive at BH-22, set up sample gear
1030 0-4ft of BH22 extracted and 0-2.0ft sampled
1035 4-8ft extracted and 4.5-5.5ft sampled
1040 8-10ft extracted and 9-10ft sampled
1110 Load up gear and Heading for BH-23
1125 Arrive at BH-23 + set up sample gear
1130 Begin Drilling
1135 BH-23 0-4.0ft extracted, 0-2.0ft sample collected
1140 BH-23 4-8ft extracted, 4.5-5.5ft collected
1145 BH-23 8-10ft extracted, 9.0-10.0ft collected

VISITORS ON SITE:

None

CHANGES FROM PLANS AND SPECIFICATIONS, AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS:
BH-20 Encountered Refusal at 7 Feet BGS. Client concurred and notified.

WEATHER CONDITIONS:
Sunny calm 70°

IMPORTANT TELEPHONE CALLS:
D. Agnew Called informed us we needed more detail - got ahold of her: 1300

SHAW E&I PERSONNEL ON SITE: D. Flores, R. Skalski, P. Ostryre

SIGNATURE: Roxanne Skalski DATE: 11/05/09

327C-12-98

Shaw® Shaw Environmental, Inc.

FIELD ACTIVITY DAILY LOG CONTINUATION SHEET

DAILY LOG	DATE	11	05	09
	NO.			
	SHEET 2 OF 3			

PROJECT NAME: Ft. Wingate Army Depot Background Metals | PROJECT NO.: 133365

FIELD ACTIVITY SUBJECT: Soil Boring sampling

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

1215 Pack up supplies and Depart to BH-24
1224 Arrive at BH-24, unpack sample gear
1230 Driller Hit Refusal @ 2ft
1235 Justin Reale called Jim (OE guy) to find out if we can move BH location
1245 Finding new BH location closer to Entrance of parcel 1 to meet OE Left original location of BH-24 → Justin Reale will approve guy of new location based on Eco-zone and OE will clear location with magnitometer.
1315 Waiting for ~~OE~~ OE guy at proposed new BH-24 location
1350 RJS ~~OE guy~~, J. Reale, and Shaw find new BH-24 location (OE guy = Steve Carpenter Carpenter)
1402 New BH-24 = waypoint #20 see SSCL for coordinates
1405 Began drilling, 0-4ft extracted, 0-2.0ft collected
1410 RJS 4-8ft extracted, 4.5-5.5ft collected
1440 RJS 8-10ft extracted, 9-10 ft collected
1450 Load up gear, heading to FWDA admin area - drop off D. Flores at his POV
1535 Arrive at BH-1, set up sample gear. D. Flores stays w/sample team
1540 Hand Auger reached refusal due to roots - 2 Feet bgs
1543 BH-1, 0-2.0ft collected, 0-4ft extracted
1548 BH-1, 4-8ft extracted, 4.5-5.5ft collected
1554 BH-1, 8-10ft extracted, 9.0-10ft collected
1605 Shaw conducts Drilling Inspection
1610 Load up sample gear
1620 Depart BH-1 for FWDA admin area
1630 Unload sample gear into JR drilling trailer. D. Flores departs site
1700 Spoke with David Henry about what we've done and doing he will meet with us @ 7am tomorrow - 11/6/09
1645 JR drilling left site
1701 Depart site for hotel
1712 Arrive @ Hotel

Note: See sheet 3 of 3

EOD RJS

Shaw® Shaw Environmental, Inc.

FIELD ACTIVITY DAILY LOG CONTINUATION SHEET

DAILY LOG	DATE	11	05	09
	NO.			
	SHEET 3 OF 3			

PROJECT NAME: Ft. Wingate Army Depot Background Metals | PROJECT NO.: 133366

FIELD ACTIVITY SUBJECT: Soil Boring Sampling

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

Note: All boreholes were abandoned by placing soil cuttings back into the hole. The remaining 1 foot bgs was thin spread around the site. The top 1 foot of the borehole was filled with bentonite pellets.

11/5/09

Shaw® Shaw Environmental, Inc.

FIELD ACTIVITY DAILY LOG

DAILY LOG	DATE	11	4	09
	NO.			
	SHEET 1 OF 2			

PROJECT NAME: Fort Wingate Depot Activity Background Metals | PROJECT NO.: 133366

FIELD ACTIVITY SUBJECT: Mob to Site & Soil boring

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

This FADL amends the previous FADL For the same day by giving a more detailed account of the day's activities.

0800 Gathered Field Supplies, loaded truck, and performed Vehicle Inspection.

0940 Fueled truck and adjusted tire pressure

1000 Depart Albuquerque, NM For Fort Wingate Depot Activity (FWDA) New Mexico

1155 Arrive at FWDA. On site are Rob Helton & Zack Bonnell (of JR Drilling) and Mike Skolville (of USACE).

1220 Recieved instructions from M. Skolville For operating and navigation procedures and Cultural significanse in and around FWDA. Parked JR Drilling trailer in secure area.

1225 Inventoried JR Drilling Supplies
(1) 100 Feet 6 mil plastic sheeting
(2) boxes 66 each Acitate sleeves
(10) bentonite bags
(1) macro core sampling systems
(1) Geoprobe 540 UD
(3) Macro Core barrels
64 Feet Sampling rods

1230 Depart FWDA admin area For BH-19 in parcel 1

1320 Arrive at BH-19. P. Ostrye conducts Tail Gate Safety Meeting. Begin site set up

1335 Hand auger to One Foot bgs. Refusel from roots and rocks

see page 2

VISITORS ON SITE: None

CHANGES FROM PLANS AND SPECIFICATIONS, AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS: Missing #4 Sieve

WEATHER CONDITIONS: Sunny, calm, 75

IMPORTANT TELEPHONE CALLS: P. Ostrye called O. Flores to bring #4 Sieve on 11/5/09

SHAW E&I PERSONNEL ON SITE: R. Skalski, P. Ostrye

SIGNATURE: Patrick W. Ostrye DATE: 11/4/09

Shaw® Shaw Environmental, Inc.

FIELD ACTIVITY DAILY LOG CONTINUATION SHEET

DAILY LOG	DATE	11	4	09
	NO.			
	SHEET 2 OF 2			

PROJECT NAME: Fort Wingate Depot Activity Background Metals | PROJECT NO.: 133366

FIELD ACTIVITY SUBJECT: mob to site + soil boring

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

1350 BH-19 0-4 Feet extracted. Collected sample From 0-2 Feet

☆ Sieve was missing. Samples were screened by hand; removing organic matter gravel larger than 1/2 inch in size. ~~Soil with~~ PWS Hard soil was broken down by using the plastic handle of an impact mallet. Homogenization Followed the work Plan.

1355 BH-19 4-8 Feet extracted. Collected sample From 3.5-4.5 Feet using the method For 1350 hrs.

1400 BH19 8-10 Feet extracted. Collected Sample From 9-10 Feet using the method For 1350hrs.

1430 P. Ostrye contacted D. Flores, of shaw, and requested that D. Flores bring sieve when P. Ostrye meets D. Flores at 11/5/09 at 0700 at FWDA

JR Drilling abandoned BH-19 by returning borehole coring into BH-19 and Filling the top 1 Foot with bentonite pellets and thin spreading the remaining core material across the site.

1451 Depart BH-19 For FWDA admin area. P. Ostrye contacts M. Skolville OF departure.

1500 Opened, passed through, and locked secure gate For parcel 1

1535 Arrive at FWDA Admin area. Place sample gear in JR Drilling trailer. M. Skolville inForms shaw that Justin Reale will be providing over sight on 11/5/09.

1550 Depart FWDA For Hotel

1600 Arrive at Hotel, check in, unload vehicle.

End of day

Patrick W. Ostrye

032B-12-98

Shaw® Shaw Environmental, Inc.

FIELD ACTIVITY DAILY LOG

DAILY LOG	DATE	11	2	09
	NO.			
	SHEET	1	OF	2

PROJECT NAME: Fort Wingate Activity Depot Background Metals | PROJECT NO.: 133366

FIELD ACTIVITY SUBJECT: Borehole locating

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

0550 Depart P. Ostrye house For FWDA
0750 Arrive at FWDA
0810 Recieve tailgate from Mike Scoville and Jim Hug (usACE)
0830 Depart For Parce 1
0925 Mark BH-19 OFF of road. Depart for BH-20
0945 mark BH-20 OFFOF road
1003 Mark BH-21 OFF of road
1015 mark BH-22 OFF of road ☆ stay Clear of Ant Pile Cultural Significance.
1030 Mark BH-23 Slightly off road.
1036 mark BH-24 north of original. Depart For main gate
1135 Arrive at main Building
1209 Depart For BH-1
1215 Mark BH 1
1220 mark BH-2 New location. Original location unaccessable by vehicle.
1250 mark BH 33
1300 BH-32 moved South, Original location in PJ/ Scrubland transition. Mark BH-32 in scrubland zone
1320 Mark BH-34
1330 Mark BH-35 closer to road. Inaccessable by Vehicle
1400 Mark BH 38
1415 Mark New location For BH-37. Old location inaccessable because of arroyo
1420 See page 2

VISITORS ON SITE:
None

CHANGES FROM PLANS AND SPECIFICATIONS, AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS:
None

WEATHER CONDITIONS:
Clear, calm, 65°F

IMPORTANT TELEPHONE CALLS:
None

SHAW E&I PERSONNEL ON SITE: P. Ostrye

SIGNATURE: Patrick W. Ostrye DATE: 11/2/2009

Shaw® Shaw Environmental, Inc.

FIELD ACTIVITY DAILY LOG CONTINUATION SHEET

DAILY LOG	DATE	11	2	09
	NO.			
	SHEET 2 OF 2			

PROJECT NAME: Fort Wingate Depot Activity Background Metals | PROJECT NO.: 133366

FIELD ACTIVITY SUBJECT: Borehole locating

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

1420 Mark new location For BH-36. Original location inaccessable because of arroyo.

1435 Mark BH-31

1520 Mark BH-30 OFF road

1535 ~~1545~~ mark BH-27 Cleared by OE Personnel

1545 Mark BH-28 Cleared by OE Personnel

1613 Mark BH-14. PWO ~~Mark~~ Mike S. Wants Shaw + USACE to ~~Verify~~ PWO verify that this area is not a ~~pere~~ PWO previous open storage Area.

1634 Did not mark BH-13. Want JR Drilling input. May have to hand auger. Vegetation is very dense.

1645 Before Marking BH-12 USACE is going to locate the Open storage area around BH-12, 13, & 14.

Going Back to Building 1

1700 Arrive Building 1

PWO ~~1735~~ PWO Mike ~~Mark~~ S. verified that some locations (soil Borings) are close to or on the edge of past Open Storage Units.

1735 Depart For Albuquerque

1945 Arrive at P. Ostiye house

End of day

Patrick W. Quigley
11/2/2009

032B-12-98

Shaw® Shaw Environmental, Inc.

RECORD OF TELECON

Project Name: Ft Wingate background geochemsitry project
Project Number: 133366
Date and Time: 09 Nov 2009, 0805
Call From: Mike Goodrich and Diane Agnew
Name: David Henry
Company Name: USACE, Albuquerque District
Telephone Number: 505-238-7012 (cell)
Address:
Participants: Goodrich, Agnew, Henry

Subject: Call to discuss borehole locations at FWDA

Summary of Discussion: Field geoprobe team got refusal at about 2 ft below ground surface (bgs) on boreholes BH-27, BH-28, BH-29, and BH-30 (bedrock was encountered). There was some discussion about moving those holes further north, but still in the same (pinon-juniper) eco-zone. After some thought and further discussion, it was decided to leave the boreholes in their original locations and to collect whatever samples could be had before encountering refusal with the rig. Soil from even 2 ft bgs will be representative of background conditions at this site.

Required Action: Call Patrick Ostrye, Shaw field team leader, to let him know to return to these 4 boreholes, drill as deep as possible, and collect soil samples as achievable.

Prepared by: Mike Goodrich

11/9/09

cc:
Central Files

Shaw® Shaw Environmental, Inc.

FIELD ACTIVITY DAILY LOG

DAILY LOG				
	DATE	11	12	PWO 09
	NO.			09
	SHEET 1 OF 1			

PROJECT NAME: Fort Wingate Depot Activity Background Metals | PROJECT NO.: 133366

FIELD ACTIVITY SUBJECT: Sample ship + demob

DESCRIPTION OF DAILY ACTIVITIES AND EVENTS:

0800	Begin sample prep.
0930	Load samples
1000	Check out of ~~hotel~~ PWO hotel. Depart to Fed-X
1025	Arrive at Fed-X. Unload samples
1040	Depart Fed-X For Albuquerque
1101	Drop-off Radio ~~to~~ PWO with USACE
1110	Depart For Albuquerque
1315	Arrive at Shaw office. Unload supplies.
1430	End of day

Patrick W. Ostrye

VISITORS ON SITE: None

CHANGES FROM PLANS AND SPECIFICATIONS, AND OTHER SPECIAL ORDERS AND IMPORTANT DECISIONS:
None

WEATHER CONDITIONS:
Cloudy 57°F

IMPORTANT TELEPHONE CALLS:
None

SHAW E&I PERSONNEL ON SITE: R. Skalski, P. Ostrye

SIGNATURE: Patrick W. Ostrye DATE: 11/12/09

327C-12-98

Appendix B2
Soil Sample Collection Logs

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 19 AH-01 **Job Number** 133366

Sample Number 19SW-AH01-SO-1 **Collection Date** 11/11/09

Sample Interval (ft bgs) Fr: 0 To: 1.4 **Collection Time** 1415

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland____ Pinon/Juniper Woodland____ Ponderosa Pine Woodland____

Seasonal Wetlands ✓

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger ✓ Other_____

QC Sample Associations ~~FDUP-04~~ RWO 11/11/09

Chain of Custody Number 6–245797214– 111209 – 0003

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
\	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° ~~[illegible]~~ RS 28' ~~55.6"~~ 56.5 MLE 11-17-09
W 108° ~~[illegible]~~ 34' 18.0"
Moved from original location due to debris and vegetation

Sampling Team Members RS + PO

Logged By / Date: RS 11/11/09 *Reviewed By /Date:* [signature] 11/13/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 19 AH01 **Job Number** 133366

Sample Number 195W-AH01-SO-2 **Collection Date** 11/11/09

Sample Interval (ft bgs) Fr: 4.0 To: 5.0 **Collection Time** 1420

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland____ Pinon/Juniper Woodland____ Ponderosa Pine Woodland____

Seasonal Wetlands ✓

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger ✓ Other_____

QC Sample Associations ~~FQA-05 R00~~ 11/11/09

Chain of Custody Number 6-245797214- 111209 -0003

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° ~~00' 00"~~ 28' 55.6"
W 108° ~~00' 00"~~ 34' 15.0"
Moved from original location due to veg.

Sampling Team Members RS + PO

Logged By / Date: RS 11/11/09 ***Reviewed By /Date:*** Patrick W. Ostby 11/13/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 19 AH-02 **Job Number** 133366

Sample Number 19SW-AH02-SO-1 **Collection Date** 11/11/09

Sample Interval (ft bgs) Fr: 0 To: ~~1.0~~ 1.5 RS **Collection Time** 1450

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland____ Pinon/Juniper Woodland____ Ponderosa Pine Woodland____

Seasonal Wetlands ✓

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger ✓ Other_____

QC Sample Associations ~~FD19-06~~ PW0 11/11/09

Chain of Custody Number 6-245797214-111209 - 0003

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 28 56.7" W 108° 34' 19.2"
Moved slightly due to veg.

Sampling Team Members RS + PO

Logged By / Date: RS 11/11/09 ***Reviewed By /Date:*** Patrick W Ealy 11/13/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 19 ~~BB~~ AH02 RS **Job Number** 133366

Sample Number 19SW-AH02-50-2 **Collection Date** 11/11/09

Sample Interval (ft bgs) Fr: 4.~~0~~5 RS To: 5.0 **Collection Time** 1455

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland____ Pinon/Juniper Woodland____ Ponderosa Pine Woodland____

Seasonal Wetlands ✓

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger ✓ Other_____

QC Sample Associations FDUP-09

Chain of Custody Number 6–245797214– ~~11~~ PO 111209 – 0003

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4ºC	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 28' 56.7"
W 108° 34' 19.2"
moved slightly due to veg

Sampling Team Members RS + PO

Logged By / Date: RS 11/11/09 ***Reviewed By /Date:*** [signature] 11/13/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 19 AH-02 **Job Number** 133366

Sample Number FDUP-09 **Collection Date** 11/11/09

Sample Interval (ft bgs) Fr: ~~4.0~~ 4.5 es To: 5.0 **Collection Time** 1455

Sample Type

Soil Boring ✓ Surface Soil ____ Field Duplicate ✓ USACE QA ____

Sample Location

Desert Scrubland ____ Pinon/Juniper Woodland ____ Ponderosa Pine Woodland ____

Seasonal Wetlands ✓

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger ✓ Other ____

QC Sample Associations 19SW-AH02-50-2

Chain of Custody Number 6-245797214- 111209 -0003

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
\	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 28' 56.7" W 108° 34' 19.2"

Moved slightly due to veg.

Sampling Team Members RS + PO

Logged By / Date: RS 11/11/09 ***Reviewed By /Date:*** Patrick W. Eddy 11/13/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 19 AH03 **Job Number** 133366

Sample Number 19SW-AH03-SO-1 **Collection Date** 11/11/09

Sample Interval (ft bgs) Fr: 0 To: 1.0 **Collection Time** 1530

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland____ Pinon/Juniper Woodland____ Ponderosa Pine Woodland____

Seasonal Wetlands ✓

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger ✓ Other_____

QC Sample Associations ———

Chain of Custody Number 6-245797214-111209-0003

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 28' 58.0"
W 108° 34' 19.6"
Moved slightly due to embankment Refusal @ 4.5ft due to roots

Sampling Team Members RS + PO

Logged By / Date: RS 11/11/09 ***Reviewed By /Date:*** Patrick W. Daly 11/13/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 19 AH-03 **Job Number** 133366

Sample Number 19SW-AH03-SO-2 **Collection Date** 11/11/09

Sample Interval (ft bgs) Fr: 3.9 To: 4.5 **Collection Time** 1535

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland____ Pinon/Juniper Woodland____ Ponderosa Pine Woodland____

Seasonal Wetlands ✓

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger ✓ Other_____

QC Sample Associations —

Chain of Custody Number 6-245797214-111209-0003

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 28' 58.0" W 108° 34' 19.6" slightly moved due to embankment Refusal @ 4.5ft due to roots

Sampling Team Members RS + PO

Logged By / Date: RS 11/11/09 ***Reviewed By /Date*** [illegible] 11/13/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 19 AH-04 **Job Number** 133366

Sample Number 195W-AH04-SO-1 **Collection Date** 11/11/09

Sample Interval (ft bgs) Fr: 0 To: 1.0 **Collection Time** 1605 RS

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland_____ Pinon/Juniper Woodland_____ Ponderosa Pine Woodland_____

Seasonal Wetlands ✓

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger ✓ Other_____

QC Sample Associations ———

Chain of Custody Number 6-245797214- 111209 -0003

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 28' 59.1" W 108° 34' 18.8"

Sampling Team Members RS + PO

Logged By / Date: RS 11/11/09 ***Reviewed By /Date:*** Patrick W. Ogden 11/13/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 19 AH-04 **Job Number** 133366

Sample Number 19 SW-AH04-S0-2 **Collection Date** 11/11/09

Sample Interval (ft bgs) Fr: 4.0 To: 5.0 **Collection Time** ~~1000~~ 1610 RS

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland_____ Pinon/Juniper Woodland_____ Ponderosa Pine Woodland_____

Seasonal Wetlands ✓

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger ✓ Other_____

QC Sample Associations —

Chain of Custody Number 6-245797214- 111209 - 0003

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 28' 59.1"
W 108° 34' 18.8"

Sampling Team Members RS + PO

Logged By / Date: RS 11/11/09 ***Reviewed By /Date:*** 11/13/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 14 & BH-1 **Job Number** 133366

Sample Number 1405-BH01-SO-1 **Collection Date** 11/05/09

Sample Interval (ft bgs) Fr: 0 To: 2.0 **Collection Time** 1543

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland ✓ Pinon/Juniper Woodland____ Ponderosa Pine Woodland____

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations None

Chain of Custody Number 6-245797214- 111209 -0002

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: Location ~~N 35° 31' 17.2"~~ PWO N 35° 31' 17.1"
~~W 108° 34' 43.9"~~ PWO W 108° 34' 44.0"

Sampling Team Members RS + PO

Logged By / Date: RS 11/05/09 ***Reviewed By /Date:*** Patrick W. Quigley 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 14 & BH-1 **Job Number** 133366

Sample Number 14DS-BH01-SO-2 **Collection Date** 11/05/09

Sample Interval (ft bgs) Fr: 4.5 To: 5.5 **Collection Time** 1548

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland ✓ Pinon/Juniper Woodland____ Ponderosa Pine Woodland____

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations none

Chain of Custody Number 6-245797214-111209-0002

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: Location N35° 31' 17.1" W 108° 34' 44.0"

Sampling Team Members RS + PO

Logged By / Date: RS 11/05/09 ***Reviewed By /Date:*** Patrick W. Duffy 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 14 & BH-1 **Job Number** 133366

Sample Number 14DS-BH01-00-3 **Collection Date** 11/05/09

Sample Interval (ft bgs) Fr: 9.0 To: 10.0 **Collection Time** 1554

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland ✓ Pinon/Juniper Woodland____ Ponderosa Pine Woodland____

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations None

Chain of Custody Number 6-245797214- 111209 - 0002

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: Location N 35° 31' 17.1"
W 108° 34' 44.0"

Sampling Team Members RS + PO

Logged By / Date: RS 11/5/09 ***Reviewed By /Date:*** Patrick W. Daly 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 14+ BH-2 **Job Number** 133366

Sample Number 14DS-BH02-SO-1 **Collection Date** 11/09/09

Sample Interval (ft bgs) Fr: 0 To: 2.0 **Collection Time** 1435

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland ✓ Pinon/Juniper Woodland____ Ponderosa Pine Woodland____

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations none

Chain of Custody Number 6-245797214- 111209 - 0002

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 31' 18.2" W 108° 34' 34.9"

Sampling Team Members RS + PO

Logged By / Date: RS 11/09/09 ***Reviewed By /Date:*** W. Daly 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 14+ BH-2 **Job Number** 133366

Sample Number 1405-BH02-SO-2 **Collection Date** 11/09/09

Sample Interval (ft bgs) Fr: 4.5 To: 5.5 **Collection Time** 1440

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland ✓ Pinon/Juniper Woodland____ Ponderosa Pine Woodland____

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations None

Chain of Custody Number 6-245797214-111209-0002

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 31' 18.2"
W 108° 34' 34.9"

Sampling Team Members RS + PO

Logged By / Date: RS 11/09/09 ***Reviewed By /Date:*** Patrick W. Daly 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 14+ BH-2 **Job Number** 133366

Sample Number 14DS-BH02-SO-3 **Collection Date** 11/09/09

Sample Interval (ft bgs) Fr: 9.0 To: 10.0 **Collection Time** 1445

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland ✓ Pinon/Juniper Woodland____ Ponderosa Pine Woodland____

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations none

Chain of Custody Number 6-245797214-111209-0002

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 31' 18.2"
W 108° 34' 34.9"

Sampling Team Members RS + PO

Logged By / Date: RS 11/09/09 ***Reviewed By /Date:*** Patrick W. Daly 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 15+ BH-3 **Job Number** 133366

Sample Number 15SW-BH03-50-1 **Collection Date** 11/09/09

Sample Interval (ft bgs) Fr: 0 To: 2.0 **Collection Time** 0855

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland ✓ RWP 11/12/09 Pinon/Juniper Woodland____ Ponderosa Pine Woodland____

Seasonal Wetlands ✓

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations ———

Chain of Custody Number 6-245797214- 111209 - 0002

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location: N 35° 30' 34.3"
W 108° 32' 58.3"

Sampling Team Members RS + PO

Logged By / Date: RS 11/09/09 ***Reviewed By /Date:*** Patrick W. Daly 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 15+ BH03 RS **Job Number** 133366

Sample Number 15SW-BH03-50-02 RS **Collection Date** 11/09/09

Sample Interval (ft bgs) Fr: 4.5 To: 5.5 **Collection Time** 0900

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland ✓ PO 11/12/09 Pinon/Juniper Woodland____ Ponderosa Pine Woodland____

Seasonal Wetlands ✓

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations ——

Chain of Custody Number 6-245797214-111209-0007

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 30' 34.3" W 108° 32' 58.3"

Sampling Team Members RS + PO

Logged By / Date: RS 11/09/09 ***Reviewed By /Date:*** 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 15+ BH-3 **Job Number** 133366

Sample Number 155W-BH03-SO-3 **Collection Date** 11/09/09

Sample Interval (ft bgs) Fr: 9.0 To: 10.0 **Collection Time** 0905

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland ✓ PWO 11/12/09 Pinon/Juniper Woodland____ Ponderosa Pine Woodland____

Seasonal Wetlands ✓

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations —

Chain of Custody Number 6-245797214- 111209 - 0002

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 30' 34.3"
W 108° 32' 58.3"

Sampling Team Members RS + PO

Logged By / Date: RS 11/09/09 ***Reviewed By /Date:*** 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 15+ BH-4 **Job Number** 133366

Sample Number 15SW-BH04-SOI **Collection Date** 11/09/09

Sample Interval (ft bgs) Fr: 0 To: 2.0 **Collection Time** ~~0945~~ 0935 RS

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland ✓ GWO 11/12/09 Pinon/Juniper Woodland____ Ponderosa Pine Woodland____

Seasonal Wetlands ✓

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations —

Chain of Custody Number 6-245797214-110909-0003

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: N 35° 30' 31.0" – location
W 108° 32' 49.7"

Sampling Team Members R. Skalski + P. Ostrye

Logged By / Date: RS 11/09/09 ***Reviewed By /Date:*** Patricia M. Quinn 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 15+ BH-4 **Job Number** 133366

Sample Number 15SW-BH04-SO-2 **Collection Date** 11/09/09

Sample Interval (ft bgs) Fr: 4.5 To: 5.5 **Collection Time** 0940

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland ✓ Prep 11/12/09 Pinon/Juniper Woodland____ Ponderosa Pine Woodland____

Seasonal Wetlands ✓

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations /

Chain of Custody Number 6-245797214-110909-0003

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
✓	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 30' 31.0" W 108° 32' 49.7"

Sampling Team Members RS + PO

Logged By / Date: RS 11/09/09 ***Reviewed By /Date:*** Patrick W. Quigley 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 15+ BH-4 **Job Number** 133366

Sample Number 15SW-BH04-50-3 **Collection Date** 11/09/09

Sample Interval (ft bgs) Fr: 9.0 To: 10.0 **Collection Time** 0945

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland ✓ PKD 11/12/09 Pinon/Juniper Woodland____ Ponderosa Pine Woodland____

Seasonal Wetlands ✓

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations ———

Chain of Custody Number 6-245797214- 110909 - 0003

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 30' 31.0" W 108° 32' 49.7"

Sampling Team Members RS + PO

Logged By / Date: RS 11/09/09 ***Reviewed By /Date:*** PKD 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 15a BH-5 **Job Number** 133366

Sample Number 155W-BH0550-1 **Collection Date** 11/09/09

Sample Interval (ft bgs) Fr: 0 To: 2.0 **Collection Time** 1005

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland ✓ 0809 11/12/09 Pinon/Juniper Woodland____ Ponderosa Pine Woodland____

Seasonal Wetlands ✓

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations FDUP-04

Chain of Custody Number 6-245797214- 110909 -0003

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 30' 24.7" W 108° 32' 47.2"

Sampling Team Members RS + PO

Logged By / Date: RS 11/09/09 ***Reviewed By /Date:*** 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 15x BH-5 **Job Number** 133366

Sample Number RS 15SW-BH05-50-2 **Collection Date** 11/09/09

Sample Interval (ft bgs) Fr: 45 To: 55 **Collection Time** 1010

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland ✓ Plot 11/12/09 Pinon/Juniper Woodland____ Ponderosa Pine Woodland____

Seasonal Wetlands ✓

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations FDUP-05

Chain of Custody Number 6-245797214-110909 - 0003

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 30' 24.7" W 108° 32' 47.2"

Sampling Team Members RS+PO

Logged By / Date: RS 11/09/09 ***Reviewed By /Date:*** Patrick W. Quigley 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 15a BH-5 **Job Number** 133366

Sample Number 15SW-BH05-50-3 **Collection Date** 11/09/09

Sample Interval (ft bgs) Fr: 9.0 To: 10.0 **Collection Time** 1015

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland ✓ QWO 11/12/09 Pinon/Juniper Woodland____ Ponderosa Pine Woodland____

Seasonal Wetlands ✓

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations FDUP-06

Chain of Custody Number 6-245797214-110909-0003

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 30' 24.7"
W 108° 32' 47.2"

Sampling Team Members RS + PO

Logged By / Date: RS 11/09/09 ***Reviewed By /Date:*** [signature] 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 15x BH-5 **Job Number** 133366

Sample Number FDUP-04 **Collection Date** 11/09/09

Sample Interval (ft bgs) Fr: 0 To: 2.0 **Collection Time** 1005

Sample Type

Soil Boring ✓ Surface Soil ____ Field Duplicate ✓ USACE QA ____

Sample Location

Desert Scrubland ✓ PWD 11/12/09 Pinon/Juniper Woodland ____ Ponderosa Pine Woodland ____

Seasonal Wetlands ✓

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger ____ Other ____

QC Sample Associations 15SW-BH05-50-1

Chain of Custody Number 6-245797214-110909-0003

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 30' 24.7"
W 108° 32' 47.2"

Sampling Team Members RS + PO

Logged By / Date: RS 11/09/09 ***Reviewed By /Date:*** Patrick W. Duffy 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 15 & BH-5 **Job Number** 133366

Sample Number FDUP-05 **Collection Date** 11/09/09

Sample Interval (ft bgs) Fr: 4.5 To: 5.5 **Collection Time** 1010

Sample Type

Soil Boring ✓ Surface Soil ____ Field Duplicate ✓ USACE QA ____

Sample Location

Desert Scrubland ✓ PWD 11/12/09 Pinon/Juniper Woodland ____ Ponderosa Pine Woodland ____

Seasonal Wetlands ✓

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger ____ Other ____

QC Sample Associations 15SW-BH05-50-2

Chain of Custody Number 6-245797214-110909-0003

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 30' 24.7" W 108° 32' 47.2

Sampling Team Members RS+PO

Logged By / Date: RS 11/09/09 ***Reviewed By /Date:*** Patrick W. Duffy 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 15x BH-5 **Job Number** 133366

Sample Number FDUP-06 **Collection Date** 11/09/09

Sample Interval (ft bgs) Fr: 9.0 To: 10.0 **Collection Time** 1015

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate ✓ USACE QA_____

Sample Location

Desert Scrubland ✓ PRO 11/12/09 Pinon/Juniper Woodland____ Ponderosa Pine Woodland____

Seasonal Wetlands ✓

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations 155W-BH05-50-3

Chain of Custody Number 6-245797214- 110909 -0003

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 30' RS 024.7" W 108° 32' 47.2"

Sampling Team Members RS+PO

Logged By / Date: RS 11/09/09 ***Reviewed By /Date:*** Patrick W. Quigley 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 15 & BH6 **Job Number** 133366

Sample Number 15SW-BH06-SO-1 **Collection Date** 11/09/09

Sample Interval (ft bgs) Fr: 0 To: 2.0 **Collection Time** 10:55

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland ✓ PWD 11/12/09 Pinon/Juniper Woodland____ Ponderosa Pine Woodland____

Seasonal Wetlands ✓

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations ———

Chain of Custody Number 6-245797214- 110909 -0003

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 30' 17.2"
W 108° 32' 44.7"

Sampling Team Members RS+PO

Logged By / Date: RS 11/09/09 ***Reviewed By /Date:*** Patricia W. Dietz 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 15& BH-6 **Job Number** 133366

Sample Number 15SW-BH06-50-2 **Collection Date** 11/09/09

Sample Interval (ft bgs) Fr: 4.5 To: 5.5 **Collection Time** 1100

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland ✓ PWD 11/12/09 Pinon/Juniper Woodland____ Ponderosa Pine Woodland____

Seasonal Wetlands ✓

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations _____

Chain of Custody Number 6-245797214- 110909 -0003

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 30' 17.2" W 108° 32' 44.7"

Sampling Team Members RS+PO

Logged By / Date: RS 11/09/09 ***Reviewed By /Date:*** 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 15a BH-6 **Job Number** 133366

Sample Number 15SW-BH06-SO-3 **Collection Date** 11/09/09

Sample Interval (ft bgs) Fr: 9.0 To: 10.0 **Collection Time** 1105

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland ✓ PWO 11/12/09 Pinon/Juniper Woodland____ Ponderosa Pine Woodland____

Seasonal Wetlands ✓

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations _____

Chain of Custody Number 6-245797214- 110909 - 0003

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 30' 17.2" W 108° 32' 44.7"

Sampling Team Members RS + PO

Logged By / Date: RS 11/09/09 ***Reviewed By /Date:*** Gabriel W. Ordaz 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 15 & BH-7 **Job Number** 133366

Sample Number 15DS-BH07-SO-1 **Collection Date** 11/09/09

Sample Interval (ft bgs) Fr: 0.0 To: 2.0 **Collection Time** 1135

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location Stet ✓ PWO 11/12/09

Desert Scrubland ✓ Pinon/Juniper Woodland____ Ponderosa Pine Woodland____

Seasonal Wetlands ✗ PWO 11/12/09

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations ———

Chain of Custody Number 6-245797214-110909-0003

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: located N 35° 30' 03.8" W 108° 32' 51.8"

Sampling Team Members RS + PO

Logged By / Date: RS 11/09/09 ***Reviewed By /Date:*** Patrick W Ostby 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 15 BH-7 **Job Number** 133366

Sample Number 1505-BH07-SO-2 **Collection Date** 11/09/09

Sample Interval (ft bgs) Fr: 4.5 To: 5.5 **Collection Time** 1140

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland ✓ Pinon/Juniper Woodland____ Ponderosa Pine Woodland____

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations ———

Chain of Custody Number 6-245797214- 110909 - 0003

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: located N 35° 30' 03.8" W 108° 32' 51.8"

Sampling Team Members RS + PO

Logged By / Date: RS 11/09/09 ***Reviewed By /Date:*** Patrick W. Day 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 15x BH-7 **Job Number** 133366

Sample Number 1505-BH07-SO-3 **Collection Date** 11/09/09

Sample Interval (ft bgs) Fr: 9.0 To: 10.0 **Collection Time** 1145

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland ✓ Pinon/Juniper Woodland____ Ponderosa Pine Woodland____

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations /

Chain of Custody Number 6-245797214- 110909 - 0003

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 30' 03.8" W 108° 32' 51.8"

Sampling Team Members RS + PO

Logged By / Date: RS 11/09/09 ***Reviewed By /Date:*** Patrick W. Judge 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 15 & BH-8 **Job Number** 133366

Sample Number 15DS-BH08-SO-1 **Collection Date** 11/09/09

Sample Interval (ft bgs) Fr: 0 To: 2.0 **Collection Time** 1230

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland ✓ Pinon/Juniper Woodland____ Ponderosa Pine Woodland____

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations ———

Chain of Custody Number 6-245797214-110909-0003

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 30' 09.0" W 108° 32' 38.7"

Sampling Team Members RS + PO

Logged By / Date: RS 11/09/09 ***Reviewed By /Date:*** [signature] 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 15 & BH-8 **Job Number** 133366

Sample Number 15DS-BH08-50-2 **Collection Date** 11/09/09

Sample Interval (ft bgs) Fr: 4.5 To: 5.5 **Collection Time** 1235

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland ✓ Pinon/Juniper Woodland____ Ponderosa Pine Woodland____

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations —

Chain of Custody Number 6-245797214-110909-0003

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 30' 09.0" W 108° 32' 38.7"

Sampling Team Members RS + PO

Logged By / Date RS 11/09/09 ***Reviewed By /Date*** [signature] 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 15 & BH-08 **Job Number** 133366

Sample Number 15DS-BH08-50-3 **Collection Date** 11/09/09

Sample Interval (ft bgs) Fr: 9.0 To: 10.0 **Collection Time** 1240

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland ✓ Pinon/Juniper Woodland____ Ponderosa Pine Woodland____

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations ———

Chain of Custody Number 6-245797214- 110909 - 0003

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 30' 09.0" W 108° 32' 38.7"

Sampling Team Members RS + PO

Logged By / Date: RS 11/09/09 ***Reviewed By /Date:*** Patrick W. Duffy 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 17 BH-9 **Job Number** 133366

Sample Number 17DS-BH9-SO-1 **Collection Date** 11/11/09

Sample Interval (ft bgs) Fr: 0 To: ~~2.0~~ 1.3 RS **Collection Time** 1155

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland ✓ Pinon/Juniper Woodland____ Ponderosa Pine Woodland____

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger ✓ Other_____

QC Sample Associations —

Chain of Custody Number 6-245797214-111209-0001

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 29' 43.3" W 108° 32' 54.4"

Sampling Team Members RS + PB

Logged By / Date: RS 11/11/09 ***Reviewed By /Date:*** Robert W. Ely 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 17 BH-9 **Job Number** 133366

Sample Number 17DS-BH09-SO-2 **Collection Date** 11/11/09

Sample Interval (ft bgs) Fr: 1.3 To: 2.5 **Collection Time** 1200

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland ✓ Pinon/Juniper Woodland_____ Ponderosa Pine Woodland_____

Seasonal Wetlands_____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger ✓ Other_____

QC Sample Associations —

Chain of Custody Number 6-245797214-111209-0001

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 29' 43.3"
W 108° 32' 54.4"

Sampling Team Members RS + PO

Logged By / Date: RS 11/11/09 ***Reviewed By /Date:*** [signature] 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 17a BH-10 **Job Number** 133366

Sample Number ~~FWDP~~ RS 1705-BH10-SO-1 **Collection Date** 11/09/09

Sample Interval (ft bgs) Fr: 0 To: 2.0 **Collection Time** 1335

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland ✓ Pinon/Juniper Woodland____ Ponderosa Pine Woodland____

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations /

Chain of Custody Number 6-245797214- 110909 - 0003

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 29' 48.7"
W 108° 32' 39.4"

Sampling Team Members RS + PO

Logged By / Date: RS 11/09/09 ***Reviewed By /Date:*** Patrick W. Culp 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 17α BH-10 **Job Number** 133366

Sample Number 17DS-BH10-SO-2 **Collection Date** 11/09/09

Sample Interval (ft bgs) Fr: 4.5 To: 5.5 **Collection Time** 1340

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland ✓ Pinon/Juniper Woodland____ Ponderosa Pine Woodland____

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations /

Chain of Custody Number 6-245797214-110909-0003

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 29' 48.7"
W 108° 32' 39.4"

Sampling Team Members RS + PO

Logged By / Date: RS 11/09/09 ***Reviewed By /Date:*** [signature] 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 17α BH-10 **Job Number** 133366

Sample Number 17OS-BH10-SO-3 **Collection Date** 11/09/09

Sample Interval (ft bgs) Fr: ~~9.0~~ RS 7.0 To: ~~10.0~~ 8.0 **Collection Time** 1345

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland ✓ Pinon/Juniper Woodland____ Ponderosa Pine Woodland____

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations _____

Chain of Custody Number 6-245797214- 110909 - 0003

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 29' 48.7" W 108° 32' 39.4" Refusal @ 8.0ft

Sampling Team Members RS + PO

Logged By / Date: RS 11/09/09 ***Reviewed By /Date:*** Patrick W. Duffy 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 17 BH-11 **Job Number** 133366

Sample Number 170S-BH11-SO-1 **Collection Date** 11/11/09

Sample Interval (ft bgs) Fr: 0 To: 1.1 **Collection Time** 1230

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland ✓ Pinon/Juniper Woodland____ Ponderosa Pine Woodland____

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger ✓ Other_____

QC Sample Associations /

Chain of Custody Number 6-245797214- 111209 - 0001

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: shifted BH-11 to position where hand augering could be achieved. location N 35° 29' 33.1" W 108° 32' 58.8"

Sampling Team Members RS+PO

Logged By / Date: RS 11/11/09 ***Reviewed By /Date:*** 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 17 BH-11 **Job Number** 133366

Sample Number 17DS-BH11-SO-2 **Collection Date** 11/11/09

Sample Interval (ft bgs) Fr: 1.1 To: 2.0 **Collection Time** 1235

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland ✓ Pinon/Juniper Woodland____ Ponderosa Pine Woodland____

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger ✓ Other_____

QC Sample Associations ———

Chain of Custody Number 6-245797214- 111209 -0001

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 29' 33.1" W 108° 32' 55.8"

Sampling Team Members RS + PO

Logged By / Date: RS 11/11/09 ***Reviewed By /Date:*** 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 19 BH-12 **Job Number** 133366

Sample Number 19DS-BH12-50-1 **Collection Date** 11/11/09

Sample Interval (ft bgs) Fr: 0 To: 2.0 **Collection Time** 0935

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland ✓ Pinon/Juniper Woodland____ Ponderosa Pine Woodland____

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations ———

Chain of Custody Number 6-245797214-111209-0001

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 28' 52.4" W 108° 33' 57.5"

Sampling Team Members RS + PO

Logged By / Date: RS 11/11/09 ***Reviewed By /Date:*** Patrick W. Ostby 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 19 BH-12 **Job Number** 133366

Sample Number 19DS-BH12-SO-2 **Collection Date** 11/11/09

Sample Interval (ft bgs) Fr: 4.5 To: 5.5 **Collection Time** 0940

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland ✓ Pinon/Juniper Woodland____ Ponderosa Pine Woodland____

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations —

Chain of Custody Number 6-245797214- 111209 - 0001

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
\	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 28' 52.4"
W 108° 33' 57.5"

Sampling Team Members RS + PO

Logged By / Date: RS 11/11/09 *Reviewed By /Date:* 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 19 BH-12 **Job Number** 133366

Sample Number 19 OS-BH12-SO-3 **Collection Date** 11/11/09

Sample Interval (ft bgs) Fr: 9.0 To: 10.0 **Collection Time** 0945

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland ✓ Pinon/Juniper Woodland____ Ponderosa Pine Woodland____

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations —

Chain of Custody Number 6-245797214-111209-0001

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 28' 52.4"
W 108° 33' 57.5"

Sampling Team Members RS + PO

Logged By / Date: RS 11/11/09 ***Reviewed By /Date:*** Patrick W. Daly 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 19 BH-13 **Job Number** 133366

Sample Number 1905-BH13-SO-1 **Collection Date** 11/11/09

Sample Interval (ft bgs) Fr: 0 To: 2.0 **Collection Time** 0845

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland ✓ Pinon/Juniper Woodland____ Ponderosa Pine Woodland____

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations ———

Chain of Custody Number 6-245797214- 111209 - 0001

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 28' 38.9"
W 108° 34' 24.0"

Sampling Team Members RS+PO

Logged By / Date: RS 11/11/09 ***Reviewed By /Date:*** 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 19 BH-13 **Job Number** 133366

Sample Number 19DS-BH13-SO-2 **Collection Date** 11/11/09

Sample Interval (ft bgs) Fr: 4.5 To: 5.5 **Collection Time** 0850

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland ✓ Pinon/Juniper Woodland____ Ponderosa Pine Woodland____

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations ———

Chain of Custody Number 6-245797214- 111209 - 0001

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 26' 38.9"
W 108° 34' 24.0"

Sampling Team Members RS+PO

Logged By / Date: RS 11/11/09 ***Reviewed By /Date:*** Patricia W. Doty 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 19 BH-13 **Job Number** 133366

Sample Number 19DS-BH13-50-3 **Collection Date** 11/11/09

Sample Interval (ft bgs) Fr: 9.0 To: 10.0 **Collection Time** 0855

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland ✓ Pinon/Juniper Woodland____ Ponderosa Pine Woodland____

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations /

Chain of Custody Number 6-245797214- 111209 - 0001

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 28' 38.9"
W 108° 34' 24.0"

Sampling Team Members RS + PO

Logged By / Date: RS 11/11/09 ***Reviewed By /Date:*** Patrick W. Dalgo 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID ARS BH-14 **Job Number** 133366

Sample Number 1905-BH14-S0-1 **Collection Date** 11/11/09

Sample Interval (ft bgs) Fr: 0 To: 2.0 **Collection Time** 0805

Sample Type

Soil Boring ✓ Surface Soil ____ Field Duplicate ____ USACE QA ____

Sample Location

Desert Scrubland ✓ Pinon/Juniper Woodland ____ Ponderosa Pine Woodland ____

Seasonal Wetlands ____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger ____ Other ____

QC Sample Associations ____

Chain of Custody Number 6-245797214- 111209 - 0001

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
\	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments:
N 35°28'29.0"
W 108°34'27.8"

Sampling Team Members RS+PO

Logged By / Date: RS 11/11/09 ***Reviewed By /Date:*** Patrick W. Dudyk 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID RS 19 ~~SB~~ B H-14 **Job Number** 133366

Sample Number 1905-BH14-SO-2 **Collection Date** 11/11/09

Sample Interval (ft bgs) Fr: 4.5 To: 5.5 **Collection Time** 0810

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland ✓ Pinon/Juniper Woodland____ Ponderosa Pine Woodland____

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations ——————

Chain of Custody Number 6-245797214- 111209 - 0001

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments:
N 35° 28' 29.0"
W 108° 34' 37.8"

Sampling Team Members RS + PO

Logged By / Date: RS 11/11/09 ***Reviewed By /Date:*** Patrick W. Daly 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID ~~BH 14~~ RS 19 BH 14 **Job Number** 133366

Sample Number 19DS-BHH-SO-3 **Collection Date** 11/11/09

Sample Interval (ft bgs) Fr: 9.0 To: 10.0 **Collection Time** 0815

Sample Type

Soil Boring ✓ Surface Soil ____ Field Duplicate ____ USACE QA ____

Sample Location

Desert Scrubland ✓ Pinon/Juniper Woodland ____ Ponderosa Pine Woodland ____

Seasonal Wetlands ____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger ____ Other ____

QC Sample Associations ——

Chain of Custody Number 6-245797214- 111209 - 0001

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments:
N 35° 28' 29.0"
W 108° 34' 27.8"

Sampling Team Members RS + PO

Logged By / Date: RS 11/11/09 ***Reviewed By /Date:*** 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 20x BH-15 **Job Number** 133366

Sample Number 20PS-BH15-SO-1 **Collection Date** 11/10/09

Sample Interval (ft bgs) Fr: 0 To: 1.5 **Collection Time** 1040

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland_____ Pinon/Juniper Woodland ✓ Ponderosa Pine Woodland_____

Seasonal Wetlands_____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations —

Chain of Custody Number 6-245797214- 111209 -0001

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: ~~BH~~ Bh-15B in other GPS (other coordinate system)
Hit refusal @ 2.5ft due to bedrock Location N 35° 26' 46.3"
W 108° 36' 06.1"

Sampling Team Members RS + PO

Logged By / Date: RS 11/10/09 ***Reviewed By /Date:*** Patricia W. Duffy 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 20α BH-15 **Job Number** 133366

Sample Number 20PJ-BH15-SO-2 **Collection Date** 11/10/09

Sample Interval (ft bgs) Fr: 1.5 To: 2.5 **Collection Time** 1045

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland_____ Pinon/Juniper Woodland ✓ Ponderosa Pine Woodland_____

Seasonal Wetlands_____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations —

Chain of Custody Number 6-245797214- 111209 - 0001

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: Bh-15B in other bps Location N 35° 26' 46.3" W 108° 36' 06.1"
Hit refusal @ 2.5ft due to bedrock

Sampling Team Members RS+PO

Logged By / Date: RS 11/10/09 ***Reviewed By /Date:*** [signature] 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 20+ BH-16 **Job Number** 133366

Sample Number 20PJ-BH16-50-1 **Collection Date** 11/10/09

Sample Interval (ft bgs) Fr: 0 To: 1.5 **Collection Time** 1115

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland_____ Pinon/Juniper Woodland ✓ Ponderosa Pine Woodland_____

Seasonal Wetlands_____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations ~~_____~~

Chain of Custody Number 6-245797214- 111209 - 0001

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: RS BH-16B ; no other GPS. Just one sample taken due to refusal @ 1.5ft due to bedrock Location N 35° 26' 43.6" W 108° 36' 03.1"

Sampling Team Members RS + PO

Logged By / Date: RS 11/10/09 ***Reviewed By /Date:*** Patrick W. Daly 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 20+ BH-17 **Job Number** 133366

Sample Number 20PJ-BH17-SO-1 **Collection Date** 11/10/09

Sample Interval (ft bgs) Fr: 0 To: 2.0 **Collection Time** 1145

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland____ Pinon/Juniper Woodland ✓ Ponderosa Pine Woodland____

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations ———

Chain of Custody Number 6-245797214- 111209 - 0001

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: BH-17B in other GPS Hit refusal @ 5ft
Location N35° 26' 36.2"
W 108° 35' 57.6"

Sampling Team Members RS + PO

Logged By / Date: RS 11/10/09 ***Reviewed By /Date:*** [signature] 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 20 × BH-17 **Job Number** 133366

Sample Number 20PJ-BH17-SO-2 **Collection Date** 11/10/09

Sample Interval (ft bgs) Fr: 3.0 To: 4.0 **Collection Time** 1150

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland____ Pinon/Juniper Woodland ✓ Ponderosa Pine Woodland____

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations —

Chain of Custody Number 6-245797214-111209-0001

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: BH-17B in other GPS. Hit Refusal @ 5 ft
Location N 35° 26' 36.2"
W 108° 35' 57.6"

Sampling Team Members RS + PO

Logged By / Date: RS 11/10/09 ***Reviewed By /Date:*** Patrick W Ogden 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 20+ BH-17 **Job Number** 133366

Sample Number 20PS-BH17-50-3 **Collection Date** 11/10/09

Sample Interval (ft bgs) Fr: 4.0 To: 5.0 **Collection Time** 1155

Sample Type

Soil Boring V Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland_____ Pinon/Juniper Woodland V Ponderosa Pine Woodland_____

Seasonal Wetlands_____

Sampling Method

Disposable Scoop/Plastic Bowl V #4 Sieve V Hand Auger_____ Other_____

QC Sample Associations —

Chain of Custody Number 6-245797214- 111209 - 0001

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: BH 17B in other gps. Hit Refusal at 5ft
Location N 35° 26' 36.2"
W 108° 35' 57.6"

Sampling Team Members RS + PO

Logged By / Date: RS 11/10/09 ***Reviewed By /Date:*** Patrick W. Quigley 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 02 & BH-18 **Job Number** 133366

Sample Number 02PJ-BH18-SO-1 **Collection Date** RS 11/10/09

Sample Interval (ft bgs) Fr: 0 To: 2.0 **Collection Time** 1220

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland_____ Pinon/Juniper Woodland ✓ Ponderosa Pine Woodland_____

Seasonal Wetlands_____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations FDUP-07

Chain of Custody Number 6-245797214-111209-0001

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: Bh-18B in other GPS. Hit refusal @ 4ft
2 samples taked due to refusals @ 4ft
Location N 35° 26' 32.8"
W 108° 36' 02.4"

Sampling Team Members RS + PO

Logged By / Date: RS 11/10/09 ***Reviewed By /Date:*** Patricia W. Ortiz 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 02 & BH-18 **Job Number** 133366

Sample Number 02 [redacted]-BH18-SO-2 **Collection Date** 11/10/09

Sample Interval (ft bgs) Fr: 2.0 To: 4.0 **Collection Time** 1225

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland____ Pinon/Juniper Woodland ✓ Ponderosa Pine Woodland____

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations FDUP-08

Chain of Custody Number 6-245797214- 111209 - 0001

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: BH-18B in other GPS. Hit Refusal @ 4ft
2 samples taken due to refusal @ 4ft
Location N 35° 26' 32.8"
W 108° 36' 02.4"

Sampling Team Members RS + PO

Logged By / Date: RS 11/10/09 ***Reviewed By /Date:*** [redacted] 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 02+ BH18 **Job Number** 133366

Sample Number FDUP-07 **Collection Date** 11-10-09

Sample Interval (ft bgs) Fr: 0 To: 2.0 **Collection Time** 1220

Sample Type

Soil Boring ✓ Surface Soil ____ Field Duplicate ✓ USACE QA ____

Sample Location

Desert Scrubland ____ Pinon/Juniper Woodland ✓ Ponderosa Pine Woodland ____

Seasonal Wetlands ____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger ____ Other ____

QC Sample Associations ~~BH18-2~~ MSD 02PS-BH18-SO-1

Chain of Custody Number 6-245797214-111209-0001

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: BH-18B in other GPS. Hit refusal @ 4 ft.
2 samples taken due to refusal @ 4ft
Location N35°26'32.8"
W108°36'02.4"

Sampling Team Members RS + PO

Logged By / Date: RS 11/10/09 ***Reviewed By /Date:*** [illegible] 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 02+ BH-18 **Job Number** 133366

Sample Number FDup-08 **Collection Date** 11-10-09

Sample Interval (ft bgs) Fr: 2.0 To: 4.0 **Collection Time** 1225

Sample Type

Soil Boring ✓ Surface Soil ____ Field Duplicate ✓ USACE QA ____

Sample Location

Desert Scrubland ____ Pinon/Juniper Woodland ✓ Ponderosa Pine Woodland ____

Seasonal Wetlands ____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger ____ Other ____

QC Sample Associations 02-PJ-BH18-SO-2

Chain of Custody Number 6-245797214-111209-0001

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
(	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: BH 18B in other OPS. Hit Refusal @ 4 Ft.
2 samples taken due to Refusal @ 4 Ft
Location N 35° 26' 32.8"
W 108° 36' 02.4"

Sampling Team Members RS + PO

Logged By / Date: RS 11/10/09 ***Reviewed By /Date:*** [signature] 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 01+ BH-19 **Job Number** 133366

Sample Number 01PP-BH19-S0-1 **Collection Date** 11/04/09

Sample Interval (ft bgs) Fr: 0 To: 2 **Collection Time** 1350

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland____ Pinon/Juniper Woodland____ Ponderosa Pine Woodland ✓

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve_____ Hand Auger_____ Other ✓

QC Sample Associations —

Chain of Custody Number 6-245797214-110909-0003

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: Sieve not used, Larger pieces and wood removed AS by hand.
Location N 35° 25' 06.3"
W 108° 35' 58.9"

Sampling Team Members P. Ostrye + R. Skalski

Logged By / Date: PO + RS 11/04/09 ***Reviewed By /Date:*** Robert W. Ostrye 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 01+ BH-19 **Job Number** 133366

Sample Number 01PP-BH19-S0-2 **Collection Date** 11/04/09

Sample Interval (ft bgs) Fr: 3.5 To: 4.5 **Collection Time** 1350

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland____ Pinon/Juniper Woodland____ Ponderosa Pine Woodland ✓

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve_____ Hand Auger_____ Other ✓

QC Sample Associations ———

Chain of Custody Number 6-245797214- 110909 -0003

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: Sieve not used, larger pieces removed by hand

Location N 35° 25' 06.3"
W 108° 35' 58.9"

Sampling Team Members P. Ostrye + R. Skalsk:

Logged By / Date: PO + RS 11/04/09 ***Reviewed By /Date:*** Patrick W. Daly 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 01 + BH-19 **Job Number** 133366

Sample Number 01 PP-BH19-SO-3 **Collection Date** 11/04/09

Sample Interval (ft bgs) Fr: 9 To: 10 **Collection Time** 1350

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland____ Pinon/Juniper Woodland____ Ponderosa Pine Woodland ✓

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve_____ Hand Auger_____ Other ✓

QC Sample Associations ———

Chain of Custody Number 6-245797214-110909-0003

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: Sieve not used, larger pieces and wood removed by hand.
Location N 35° 25' 06.3"
W 108° 35' 58.9"

Sampling Team Members R. Skalski + P. Ostrye

Logged By / Date: RS + PO ***Reviewed By /Date:*** 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID Old BH-20 **Job Number** 133366

Sample Number IPP-BH20-SO-1 **Collection Date** 11/05/09

Sample Interval (ft bgs) Fr: 0 To: 2.0 **Collection Time** 0930

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland____ Pinon/Juniper Woodland____ Ponderosa Pine Woodland ✓

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations ———

Chain of Custody Number 6-245797214-1100109-0002

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: Location N35° 24' 45.1
W108° 35' 58.4

Sampling Team Members R. Skalski + P. Ostrye

Logged By / Date: RJS RS 11/05/09 ***Reviewed By /Date:*** Patrick W. Daly 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 01+BH-20 **Job Number** 133366

Sample Number IPP-BH20-SO-2 **Collection Date** 11/05/09

Sample Interval (ft bgs) Fr: 4.5 To: 5.5 **Collection Time** 0830

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland____ Pinon/Juniper Woodland____ Ponderosa Pine Woodland ✓

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations ———

Chain of Custody Number 6-245797214- 110909 - 0002

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: Location N 35° 24' 45.1"
W 108° 35' 58.4"

Sampling Team Members R. Skalski + P. Ostrye

Logged By / Date: R.S. 11/05/09 ***Reviewed By /Date:*** Patrick W. Ostrye 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 01+ BH-20 RJS

Job Number 133366

Sample Number IPP-BH20-SO-03 RJS

Collection Date 11/05/09

Sample Interval (ft bgs) Fr: ~~6.5~~ 6.0 RJS To: 7.0

Collection Time 0830

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland_____ Pinon/Juniper Woodland_____ Ponderosa Pine Woodland ✓

Seasonal Wetlands_____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations —

Chain of Custody Number 6-245797214- 1109 09 -0002

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: Location N 35° 24' 45.1"
W 108° 35' 58.4"

Sampling Team Members R. Skalski + P. Ostrye

Logged By / Date: R.S. 11/05/09 ***Reviewed By /Date:*** 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID OIP BH-21 **Job Number** 133366

Sample Number OIPP-BH21-SO-1 **Collection Date** 11/05/09

Sample Interval (ft bgs) Fr: 0 To: 2.0 **Collection Time** 0925

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland_____ Pinon/Juniper Woodland_____ Ponderosa Pine Woodland ✓

Seasonal Wetlands_____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations —

Chain of Custody Number 6-245797214-110909-0002

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: Location N35° 24' 37.9" W108° 36' 13.1"

Sampling Team Members R. Skalski + P. Ostrye

Logged By / Date: RS+PO ***Reviewed By /Date:*** Patrick W. Ostrye 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 01 + BH-21 **Job Number** 133366

Sample Number 01 PP-BH21-SO-2 **Collection Date** 11/05/09

Sample Interval (ft bgs) Fr: 4.5 To: 5.5 **Collection Time** 09 ~~25~~ 30 RS

Sample Type

Soil Boring ✓ Surface Soil____ Field Duplicate____ USACE QA____

Sample Location

Desert Scrubland____ Pinon/Juniper Woodland____ Ponderosa Pine Woodland ✓

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger____ Other____

QC Sample Associations ——

Chain of Custody Number 6–245797214– 110909 – 0002

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: Location N 35° 24' 37.9"
W 108° 36' 31.1"

Sampling Team Members R. Skalski + P. Ostrye

Logged By / Date: R.S. 11/05/09 ***Reviewed By /Date:*** Patrick W. Ostrye 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID OU+ BH-21 **Job Number** 133366

Sample Number 01PP-BH21-SO-3 **Collection Date** 11/05/09

Sample Interval (ft bgs) Fr: 9.0 To: 10.0 **Collection Time** 0925 35 RS

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland____ Pinon/Juniper Woodland____ Ponderosa Pine Woodland ✓

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations —

Chain of Custody Number 6-245797214- 110909 -0002

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: Location N35° 24' 37.9" W108° 36' 31.1"

Sampling Team Members R. Skalski + P. Ostrye

Logged By / Date: RS 11/09/09 ***Reviewed By /Date:*** Patricia Wolfe 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 01+ BH-22 **Job Number** 133366

Sample Number 01PP-BH22-S01 **Collection Date** 11/05/09

Sample Interval (ft bgs) Fr: 0.0 To: 2.0 **Collection Time** 1030

Sample Type

Soil Boring ✓ Surface Soil____ Field Duplicate____ USACE QA____

Sample Location

Desert Scrubland____ Pinon/Juniper Woodland____ Ponderosa Pine Woodland ✓

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger____ Other____

QC Sample Associations FDUP-01

Chain of Custody Number 6–245797214– 110909 -0002

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
✓	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: Location N 35° 24' 23.5"
W 108° 36' 24.6"

Sampling Team Members R. Skalski + P. Ostrye

Logged By / Date: RS ~~4/8/10~~ RS 11/05/09 ***Reviewed By /Date:*** [signature] 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 01+BH-22 **Job Number** 133366

Sample Number 01PP-BH22-SO-2 **Collection Date** 11/05/09

Sample Interval (ft bgs) Fr: 4.5 To: 5.5 **Collection Time** 1035

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland____ Pinon/Juniper Woodland____ Ponderosa Pine Woodland ✓

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations FDUP-02

Chain of Custody Number 6-245797214-110909-0002

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: Location N 35° 24' 23.5"
W 108° 36' 24.6"

Sampling Team Members RS + PO

Logged By / Date: RS 11/05/09 ***Reviewed By /Date:*** Patrick W. Daly 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID OIP BH-22 **Job Number** 133366

Sample Number OIPP-BH22-S0-3 **Collection Date** 11/05/09

Sample Interval (ft bgs) Fr: 9.0 To: 10.0 **Collection Time** 1040

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland_____ Pinon/Juniper Woodland_____ Ponderosa Pine Woodland ✓

Seasonal Wetlands_____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations FDUP-03

Chain of Custody Number 6-245797214-110909-0002

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: Location N 35° 24' 23.5" W 108° 36' 24.6"

Sampling Team Members RS+PO

Logged By / Date: RS 11/05/09 ***Reviewed By /Date:*** [signature] 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 01+ BH 22 **Job Number** 133366

Sample Number FDUP-01 **Collection Date** 11/05/09

Sample Interval (ft bgs) Fr: 0.0 To: 2.0 **Collection Time** 1030

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate ✓ USACE QA_____

Sample Location

Desert Scrubland____ Pinon/Juniper Woodland____ Ponderosa Pine Woodland ✓

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations 01PP-BH22-SO-1

Chain of Custody Number 6-245797214- 110909 - 0002

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: Location N35° 24' 23.5" W 108° 36' 24.6"

Sampling Team Members RS + PO

Logged By / Date: RS 11/05/09 ***Reviewed By /Date:*** Patrick W. Ostby 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID OIP BH22 **Job Number** 133366

Sample Number FDUP-02 **Collection Date** 11/05/09

Sample Interval (ft bgs) Fr: 4.5 To: 5.5 **Collection Time** 1035

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate ✓ USACE QA_____

Sample Location

Desert Scrubland____ Pinon/Juniper Woodland____ Ponderosa Pine Woodland ✓

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations OIPP-BH22-50-2

Chain of Custody Number 6-245797214-110909-0002

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: Location N 35° 24' 23.5"
W 108° 36' 24.6"

Sampling Team Members RS+PO

Logged By / Date: RS 11/05/09 ***Reviewed By /Date:*** Patrick W. Culp 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID Olt BH-22 **Job Number** 133366

Sample Number FDUP-03 **Collection Date** 11/05/09

Sample Interval (ft bgs) Fr: 9.0 To: 10.0 **Collection Time** 1040

Sample Type

Soil Boring ✓ Surface Soil____ Field Duplicate ✓ USACE QA____

Sample Location

Desert Scrubland____ Pinon/Juniper Woodland____ Ponderosa Pine Woodland ✓

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger____ Other____

QC Sample Associations 01PP-BH22-50-3

Chain of Custody Number 6-245797214-110909-0002

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: Location N 35° 24' 23.5" W 108° 36' 24.6"

Sampling Team Members RS + PO

Logged By / Date: RS 11/05/09 ***Reviewed By /Date:*** 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 01+ BH-23 **Job Number** 133366

Sample Number 01PP-BH23-SO-1 **Collection Date** 11/05/09

Sample Interval (ft bgs) Fr: 0 To: 2.0 **Collection Time** 1135

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland____ Pinon/Juniper Woodland____ Ponderosa Pine Woodland ✓

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations _____

Chain of Custody Number 6-245797214-110909-0002

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: Location N 35° 24' 38.6"
W 108° 36' 30.7"

Sampling Team Members RS + PO

Logged By / Date: RS 11/05/09 ***Reviewed By /Date:*** 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 01+ BH-23 **Job Number** 133366

Sample Number 01PP-BH23-SO-2 **Collection Date** 11/05/09

Sample Interval (ft bgs) Fr: 4.5 To: 5.5 **Collection Time** 1140

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland____ Pinon/Juniper Woodland____ Ponderosa Pine Woodland ✓

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations ———

Chain of Custody Number 6-245797214- 110909 - 0002

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: Location N35° 24' 38.6"
W108° 36' 30.7"

Sampling Team Members RS + PO

Logged By / Date: RS 11/05/09 ***Reviewed By /Date:*** Patrick W. Eddy 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID OU-BH-23 **Job Number** 133366

Sample Number 01PP-BH23-S0-3 **Collection Date** 11/05/09

Sample Interval (ft bgs) Fr: 9.0 To: 10.0 **Collection Time** 1145

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland____ Pinon/Juniper Woodland____ Ponderosa Pine Woodland ✓

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations ~~_____~~

Chain of Custody Number 6-245797214-110909-0002

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: Location N 35° 24' 38.6"
W 108° 36' 30.7"

Sampling Team Members RS + PO

Logged By / Date: RS 11/05/09 ***Reviewed By /Date:*** Patrick W Duffy

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID Old BH-24 **Job Number** 133366

Sample Number 01PP-BH24-SO-1 **Collection Date** 11/05/09

Sample Interval (ft bgs) Fr: 0 To: 2.0 **Collection Time** 1405

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland_____ Pinon/Juniper Woodland_____ Ponderosa Pine Woodland ✓

Seasonal Wetlands_____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations _____

Chain of Custody Number 6-245797214- 110909 -0002

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: Moved BH-24 to new location due to refusal at original location
N 35° 24 57.3
W 108° 35 58.1

Sampling Team Members RS + PO

Logged By / Date: RS 11/05/09 ***Reviewed By /Date:*** Patrick W. Eddy 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 01+ BH-24 **Job Number** 133366

Sample Number 01PP-BH24-S0-2 **Collection Date** 11/05/09

Sample Interval (ft bgs) Fr: 4.5 To: 5.5 **Collection Time** 1410

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland____ Pinon/Juniper Woodland____ Ponderosa Pine Woodland ✓

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations ———

Chain of Custody Number 6-245797214-1109 09 -0002

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: Moved BH-24 to new location due to Refusal at original location
N 35° 24 57.3
W 108° 35 58.1

Sampling Team Members RS + PO

Logged By / Date: RS 11/05/09 ***Reviewed By /Date:*** Patrick W. Daly 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID OIA BH-24 **Job Number** 133366

Sample Number OIAPP-BH24-SO-3 **Collection Date** 11/05/09

Sample Interval (ft bgs) Fr: 9.0 To: 10.0 **Collection Time** 1440 RJS

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland____ Pinon/Juniper Woodland____ Ponderosa Pine Woodland ✓

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations ——————

Chain of Custody Number 6-245797214- 110909 -0002

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: Moved BH-24 to new location due to refusal at original location
N 35° 24 57.3
W 108° 35 58.1

Sampling Team Members RS + PO

Logged By / Date: RS 11/05/09 ***Reviewed By /Date:*** Patrick W. Duffy 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 02 + BH-25 **Job Number** 133366

Sample Number 02PJ-BH25-SO-1 **Collection Date** 11/10/09

Sample Interval (ft bgs) Fr: 0 To: 2.0 **Collection Time** 1400

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland_____ Pinon/Juniper Woodland ✓ Ponderosa Pine Woodland_____

Seasonal Wetlands_____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations —

Chain of Custody Number 6-245797214-111209-0003

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: Bh-25B in other GPS. Refusal @ 10ft
Location ~~25pwo~~ N35° 27' 13.9"
W 108° 36' 10.5"

Sampling Team Members RS+PO

Logged By / Date: RS 11/10/09 ***Reviewed By /Date:*** Patrick W. Ogle 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 02+BH-25 **Job Number** 133366

Sample Number 02PJ-BH25-50-2 **Collection Date** 11/10/09

Sample Interval (ft bgs) Fr: 4.5 To: 5.5 **Collection Time** 1405

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland_____ Pinon/Juniper Woodland ✓ Ponderosa Pine Woodland_____

Seasonal Wetlands_____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations ~~_____~~

Chain of Custody Number 6-245797214-111209-0003

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: Bh-25B in other GPS. Refusal @ 10ft
Location N35° 27' 13.9"
W 108° 36' 10.5"

Sampling Team Members RS + PO

Logged By / Date: RS 11/10/09 ***Reviewed By /Date:*** Patrick W. Quigley 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 02+ BH-25 **Job Number** 133366

Sample Number 02PJ- BH25-50-3 **Collection Date** 11/10/09

Sample Interval (ft bgs) Fr: 9.0 To: 10.0 **Collection Time** 1410

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland_____ Pinon/Juniper Woodland ✓ Ponderosa Pine Woodland_____

Seasonal Wetlands_____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations ~

Chain of Custody Number 6-245797214- 111209 -0003

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: Bh-25B in other GPS. Refusal @10ft
Location N 35° 27' 13.9"
W 108° 36' 10.5"

Sampling Team Members RS + PO

Logged By / Date: RS 11/10/09 ***Reviewed By /Date:*** Patrick W. Judge 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 02+ BH-26 **Job Number** 133366

Sample Number 02PJ-BH26-S0-1 **Collection Date** 11/10/09

Sample Interval (ft bgs) Fr: 0 To: 20 **Collection Time** 1315

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland_____ Pinon/Juniper Woodland ✓ Ponderosa Pine Woodland_____

Seasonal Wetlands_____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations —

Chain of Custody Number 6-245797214-1112 09 -0002

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: Bh-26B in other BPS. Hit refusal @5ft.
Location N 35° 27' 15.4"
W 108° 36' ~~19.6"~~ 19.5 mll 11/17/09

Sampling Team Members RS+PO

Logged By / Date: RS 11/10/09 ***Reviewed By /Date:*** [signature] 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 02+ BH-26 **Job Number** 133366

Sample Number 02PT-BH26-S0-2 **Collection Date** 11/10/09

Sample Interval (ft bgs) Fr: 3.0 To: 4.0 **Collection Time** 1320

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland____ Pinon/Juniper Woodland ✓ Ponderosa Pine Woodland____

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations —

Chain of Custody Number 6-245797214-111209-0002

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: BH-26B in Other 6ps. Hit refusal @ 5ft.
Location N 35° 27' 15.4"
W 108° 36' 19.6"

Sampling Team Members RS + PO

Logged By / Date: RS 11/10/09 ***Reviewed By /Date:*** 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 02 + BH-26 **Job Number** 133366

Sample Number 02PJ-BH26-50-3 **Collection Date** 11/10/09

Sample Interval (ft bgs) Fr: 40 To: 50 **Collection Time** 1325

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland____ Pinon/Juniper Woodland____ ✓ Ponderosa Pine Woodland____

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations —

Chain of Custody Number 6-245797214-111209-0002

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: BH-26B in other GPS. Hit refusal @ 5ft.
Location N 35° 27' 15.4"
W 108° 36' 19.6"

Sampling Team Members RS + PO

Logged By / Date: RS 11/10/09 ***Reviewed By /Date:*** [signature] 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 02+ BH-27 **Job Number** 133366

Sample Number 02FTJ-BH27-50-1 **Collection Date** 11/10/09

Sample Interval (ft bgs) Fr: 0 To: 1.5 **Collection Time** 0825

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland_____ Pinon/Juniper Woodland ✓ Ponderosa Pine Woodland_____

Seasonal Wetlands_____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations —

Chain of Custody Number 6-245797214-111209-0001

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N35° 27' 40.7" W108° 37' 07.9" 6.2 mll 11-17-09 Hit refusal @ 3ft 1c' due to bedrock

Sampling Team Members RS + PO

Logged By / Date: RS 11/10/09 ***Reviewed By /Date:*** 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 02 & BH-27 **Job Number** 133366

Sample Number 02PJ-BH27-S0-2 **Collection Date** 11/10/09

Sample Interval (ft bgs) Fr: 1.5 To: 3.85 **Collection Time** 0830

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland____ Pinon/Juniper Woodland ✓ Ponderosa Pine Woodland____

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations —

Chain of Custody Number 6-245797214-111209-0001

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35°27' 41.3" W 09°37' 07.9" Hit refusal at 3ft 10' due to bedrock

Sampling Team Members RS + PO

Logged By / Date: RS 11/10/09 ***Reviewed By /Date:*** [signature] 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 02+ BH-28 **Job Number** 133366

Sample Number 02PJ-BH28-SO-1 **Collection Date** 11/10/09

Sample Interval (ft bgs) Fr: 0 To: 1.5 **Collection Time** 0900

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland____ Pinon/Juniper Woodland ✓ Ponderosa Pine Woodland____

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations ~~~~

Chain of Custody Number 6-245797214- 111209 -0001

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 27' 37.3" Hit refusal @ 2.25ft due to bedrock
W 108° 37' 04.5"

Sampling Team Members RS+PO

Logged By / Date: RS 11/10/09 ***Reviewed By /Date:*** 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 02 + BH-28 **Job Number** 133366

Sample Number 02PS-BH28-S0-2 **Collection Date** 11/10/09

Sample Interval (ft bgs) Fr: 1.5 To: 2.25 **Collection Time** 0905

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland____ Pinon/Juniper Woodland ✓ Ponderosa Pine Woodland____

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations ———

Chain of Custody Number 6-245797214- 111209 - 0001

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 27' 37.3" W 108° 37' 04.5" Hit refusal @ 2.25 ft due to bed rock

Sampling Team Members RS + PO

Logged By / Date: RS 11/10/09 RS ***Reviewed By /Date*** 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 02+BH-29 **Job Number** 133366

Sample Number 02PS-BH29-SO-1 **Collection Date** 11/09/09

Sample Interval (ft bgs) Fr: 0 To: 1.5 **Collection Time** 1550

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland____ Pinon/Juniper Woodland ✓ Ponderosa Pine Woodland____

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations ~~_____~~

Chain of Custody Number 6-245797214-110909-0002

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: N 35° 27' 44.5
W 108° 37' 05.0

Sampling Team Members RS+PO

Logged By / Date: RS 11/09/09 ***Reviewed By /Date:*** Patrick W. Daly 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 02+BH-29 **Job Number** 133366

Sample Number 02PJ-BH29-50-2 **Collection Date** 11/09/09

Sample Interval (ft bgs) Fr: 1.5 To: 3.0 **Collection Time** 1555

Sample Type

Soil Boring_____ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland____ Pinon/Juniper Woodland ✓ Ponderosa Pine Woodland____

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations ———

Chain of Custody Number 6-245797214-110909-0002

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: N 35° 27' 44.5"
W 108° 37' 05.0"

Sampling Team Members RS + PO

Logged By / Date: RS 11/09/09 ***Reviewed By /Date:*** Robert W Day 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 02 + BH-~~B~~RS30 **Job Number** 133366

Sample Number 02PJ-BH30-SO-1 **Collection Date** 11/09/09

Sample Interval (ft bgs) Fr: 0 To: 1.5 **Collection Time** 1540

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland____ Pinon/Juniper Woodland ✓ Ponderosa Pine Woodland____

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations ———

Chain of Custody Number 6-245797214-110909-0002

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 27'44.1"
W 108° 37'05.0"

Sampling Team Members RS + PO

Logged By / Date: RS 11/09/09 ***Reviewed By /Date:*** 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 02 + BH-30 RS
Sample Number 02 PJ - BH 30 - 50 - 12
Sample Interval (ft bgs) Fr: 1.5 To: 3.0

Job Number 133366
Collection Date 11/09/09
Collection Time 1545

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland____ Pinon/Juniper Woodland ✓ Ponderosa Pine Woodland____

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations —

Chain of Custody Number 6-245797214-110909-0002

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 27' 44.1"
W 108° 37' 05.0"

Sampling Team Members RS + PO

Logged By / Date: RS 11/09/09 ***Reviewed By /Date:*** Robert W. Duff 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 02+ BH-31 **Job Number** 133366

Sample Number 02DS-BH31-SO-1 **Collection Date** 11/06/09

Sample Interval (ft bgs) Fr: 0.0 To: 2.0 **Collection Time** 0905

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland ✓ Pinon/Juniper Woodland____ Ponderosa Pine Woodland____

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations ———

Chain of Custody Number 6-245797214- 110909 -0002

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: Location N35° 28' 23.9" W108° 37' 11.6"

Sampling Team Members RS + PO

Logged By / Date: RS 11/06/09 ***Reviewed By /Date:*** Alfred W. Ortiz 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 02 + BH-31 RS **Job Number** 133366

Sample Number 02DS-BH31-SO-~~01~~02 **Collection Date** 11/06/09

Sample Interval (ft bgs) Fr: 4.5 To: 5.5 **Collection Time** 0810

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland ✓ Pinon/Juniper Woodland_____ Ponderosa Pine Woodland_____

Seasonal Wetlands_____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations ———

Chain of Custody Number 6-245797214-110909-0002

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 28' 23.9"
W 108° 37' 11.6"

Sampling Team Members RS + PO

Logged By / Date: RS 11/06/09 ***Reviewed By /Date:*** Patrick W. Daly 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 02d BH-31 **Job Number** 133366

Sample Number 0205-BH31-50-3 **Collection Date** 11/06/09

Sample Interval (ft bgs) Fr: 9.0 To: 10.0 **Collection Time** 0915

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland ✓ Pinon/Juniper Woodland____ Ponderosa Pine Woodland____

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations ~~_____~~

Chain of Custody Number 6-245797214-110909-0002

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 28' 23.9"
W 108° 37' 11.6"

Sampling Team Members RS +PO

Logged By / Date: RS 11/06/09 ***Reviewed By /Date:*** Patrick W. Ostby 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 05A + BH-32 **Job Number** 133366

Sample Number 05ADS-BH32-50-1 **Collection Date** 11/06/09

Sample Interval (ft bgs) Fr: 0.0 To: 2.0 **Collection Time** 0955

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland ✓ Pinon/Juniper Woodland____ Ponderosa Pine Woodland____

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations —

Chain of Custody Number 6-245797214-110909-0001

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 29' 10.4" W 108° 37' 14.4"

Sampling Team Members RS + PO

Logged By / Date: RS 11/06/09 ***Reviewed By /Date:*** Patrick W. Eddy 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 05A + BH-32 **Job Number** 133366

Sample Number 05BADS-BH32-50-2 **Collection Date** 11/06/09

Sample Interval (ft bgs) Fr: 4.5 To: 5.5 **Collection Time** 1000

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland ✓ Pinon/Juniper Woodland____ Ponderosa Pine Woodland____

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations —

Chain of Custody Number 6-245797214-110909-0001

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 29' 10.4"
W 108° 37' 14.4"

Sampling Team Members RS + PO

Logged By / Date: RS 11/06/09 ***Reviewed By /Date:*** Patrick W. Daly 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 05A + BH-32 **Job Number** 133366

Sample Number 05AD5-BH32-SO-3 **Collection Date** 11/06/09

Sample Interval (ft bgs) Fr: 9.0 To: 10.0 **Collection Time** 1005

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland ✓ Pinon/Juniper Woodland____ Ponderosa Pine Woodland____

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations —

Chain of Custody Number 6-245797214- 110909 - 0001

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 29' 10.4"
W 108° 37' 14.4"

Sampling Team Members RS + PO

Logged By / Date: RS 11/06/09 ***Reviewed By /Date:*** 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 08 + BH-33 **Job Number** 133366

Sample Number 08DS-BH33-SO-1 **Collection Date** 11/06/09

Sample Interval (ft bgs) Fr: 0 To: 2 **Collection Time** 1035

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland ✓ Pinon/Juniper Woodland____ Ponderosa Pine Woodland____

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations FDUP-10

Chain of Custody Number 6-245797214-110909-0001

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 29' 27.3" W 108° 37' 14.8"

Sampling Team Members RS + PO

Logged By / Date: RS 11/06/09 ***Reviewed By /Date:*** Patrick W. Eddy 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 08+BH-33 **Job Number** 133366

Sample Number 08DS-BH33-SO-2 **Collection Date** 11/06/09

Sample Interval (ft bgs) Fr: 4.5 To: 5.5 **Collection Time** 1040

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland ✓ Pinon/Juniper Woodland____ Ponderosa Pine Woodland____

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations FDUP-11

Chain of Custody Number 6-245797214-110909-0001

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 29' 27.3" W 108° 37' 14.8"

Sampling Team Members RS + PO

Logged By / Date: RS 11/06/09 ***Reviewed By /Date:*** Patrick W. Daly 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID OB + BH-33 RS **Job Number** 133366

Sample Number RS FWDO8DS-BH33-SO-13 **Collection Date** 11/06/09

Sample Interval (ft bgs) Fr: 9.0 To: 10.0 **Collection Time** 1045

Sample Type V

Soil Boring_____ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland V Pinon/Juniper Woodland____ Ponderosa Pine Woodland____

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl V #4 Sieve V Hand Auger_____ Other_____

QC Sample Associations FDUP-12

Chain of Custody Number 6-245797214- 110909 - 0001

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 29' 27.3" W 108° 37' 14.8"

Sampling Team Members RS + PO

Logged By / Date: RS 11/06/09 RS ***Reviewed By /Date:*** 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 08 + BH-33 **Job Number** 133366

Sample Number FDUP-10 **Collection Date** 11/06/09

Sample Interval (ft bgs) Fr: 0 To: 2 **Collection Time** 1035

Sample Type

Soil Boring ✓ Surface Soil ____ Field Duplicate ✓ USACE QA ____

Sample Location

Desert Scrubland ✓ Pinon/Juniper Woodland ____ Ponderosa Pine Woodland ____

Seasonal Wetlands ____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger ____ Other ____

QC Sample Associations 0805-BH33-SO-1

Chain of Custody Number 6-245797214- 110909 -0001

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 29' 27.3" W 108° 37' 14.8"

Sampling Team Members RS+PO

Logged By / Date: RS 11/06/09 ***Reviewed By /Date:*** 11/12/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 084 BH-33 **Job Number** 133366

Sample Number FDUP-11 **Collection Date** 11/06/09

Sample Interval (ft bgs) Fr: 4.5 To: 5.5 **Collection Time** 1040

Sample Type

Soil Boring ✓ Surface Soil ____ Field Duplicate ✓ USACE QA ____

Sample Location

Desert Scrubland ✓ Pinon/Juniper Woodland ____ Ponderosa Pine Woodland ____

Seasonal Wetlands ____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger ____ Other ____

QC Sample Associations 084 DS-BH33-SO-2

Chain of Custody Number 6-245797214-110909-0001

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 29' 27.3" W 108° 37' 14.8"

Sampling Team Members RS + PO

Logged By / Date: RS 11/06/09 ***Reviewed By /Date:*** Patrick W. Dodge 11/13/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 08A BH33 **Job Number** 133366

Sample Number FDUP-12 **Collection Date** 11/06/09

Sample Interval (ft bgs) Fr: 9.0 To: 10.0 **Collection Time** 1045

Sample Type

Soil Boring ✓ Surface Soil ____ Field Duplicate ✓ USACE QA ____

Sample Location

Desert Scrubland ✓ Pinon/Juniper Woodland ____ Ponderosa Pine Woodland ____

Seasonal Wetlands ____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger ____ Other ____

QC Sample Associations 08DS-BH33-SO-3

Chain of Custody Number 6-245797214-110909-0001

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 29' 27.3" W 108° 37' 14.8"

Sampling Team Members RS + PO

Logged By / Date: RS 11/06/09 ***Reviewed By /Date:*** 11/13/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 08 & BH-34 **Job Number** 133366

Sample Number 08 DS-BH34-SO-1 **Collection Date** 11/06/09

Sample Interval (ft bgs) Fr: 0 To: 2.0 **Collection Time** 1125

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland ✓ Pinon/Juniper Woodland____ Ponderosa Pine Woodland____

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations ———

Chain of Custody Number 6-245797214-110909-0001

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 29' 40.0" W 108° 37' 23.7"

Sampling Team Members RS + PO

Logged By / Date: RS 11/06/09 ***Reviewed By /Date:*** Patrick W. Quigley 11/13/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 08A BH-34 **Job Number** 133366

Sample Number 08 OS-BH34-SO-2 **Collection Date** 11/06/09

Sample Interval (ft bgs) Fr: 4.5 To: 5.5 **Collection Time** 1130

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland ✓ Pinon/Juniper Woodland____ Ponderosa Pine Woodland____

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations —

Chain of Custody Number 6-245797214-110909-0001

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 29' 40.0" W 108° 37' 23.7"

Sampling Team Members RS + PO

Logged By / Date: RS 11/06/09 ***Reviewed By /Date:*** Patrick W. Ortega 11/13/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 08 BH-34 dup **Job Number** 133366

Sample Number 08 DS-BH34-50-13 **Collection Date** 11/06/09

Sample Interval (ft bgs) Fr: 9.0 To: 10.0 **Collection Time** 1135

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland ✓ Pinon/Juniper Woodland____ Ponderosa Pine Woodland____

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations _____

Chain of Custody Number 6-245797214-110909-0001

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 29' 40.0" W 108° 37' 23.7"

Sampling Team Members RS + PO

Logged By / Date: RS 11/06/09 RS ***Reviewed By /Date:*** Patrick W. Daly 11/13/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 08 & BH-35 **Job Number** 133366

Sample Number 08DS-BH35-SO-1 **Collection Date** 11/06/09

Sample Interval (ft bgs) Fr: 0 To: 2.0 **Collection Time** 1205

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland ✓ Pinon/Juniper Woodland____ Ponderosa Pine Woodland____

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations —

Chain of Custody Number 6-245797214-110909-0001

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 30' 03.0"
W 108° 37' 33.7"

Sampling Team Members RS+PO

Logged By / Date: RS 11/06/09 ***Reviewed By /Date:*** 11/13/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 08 & BH-35 **Job Number** 133366

Sample Number 08DS-BH35-50-2 **Collection Date** 11/06/09

Sample Interval (ft bgs) Fr: 4.5 To: 5.5 **Collection Time** 1210

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland ✓ Pinon/Juniper Woodland____ Ponderosa Pine Woodland____

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations ———

Chain of Custody Number 6-245797214- 110909 - 0001

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 50' 03.0" W 108° 37' 33.7"

Sampling Team Members RS + PO

Logged By / Date: RS 11/06/09 ***Reviewed By /Date:*** Patrick W. Daly 11/13/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 08 + BH-35 **Job Number** 133366

Sample Number 0805-BH35-S03 **Collection Date** 11/06/09

Sample Interval (ft bgs) Fr: 9.0 To: 10.0 **Collection Time** 1215

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland ✓ Pinon/Juniper Woodland____ Ponderosa Pine Woodland____

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations _____

Chain of Custody Number 6-245797214-110909-0001

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 30' 03.0" W 108° 37' 33.7"

Sampling Team Members RS + PO

Logged By / Date: RS 11/06/09 ***Reviewed By /Date:*** Patrick W. Eddy

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 08 × BH-36 **Job Number** 133366

Sample Number 080S-BH36-50-1 **Collection Date** 11/06/09

Sample Interval (ft bgs) Fr: 0 To: 2.0 **Collection Time** 1255

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland ✓ Pinon/Juniper Woodland____ Ponderosa Pine Woodland____

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations ———

Chain of Custody Number 6-245797214-110909-0001

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 30' 16.6"
W 106° 37' 14.1"

Sampling Team Members RS + PD

Logged By / Date: RS 11/06/09 ***Reviewed By /Date:*** Patrick W. Daly 11/13/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 08+ BH-36 RS **Job Number** 133366

Sample Number 08DS-BH36-50-#2 **Collection Date** 11/06/09

Sample Interval (ft bgs) Fr: 4.5 To: 5.5 **Collection Time** 1300

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland ✓ Pinon/Juniper Woodland____ Ponderosa Pine Woodland____

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations ←

Chain of Custody Number 6-245797214-110909-0001

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 30' 16.6"
W 108° 37' 121.1"

Sampling Team Members RS + PO

Logged By / Date: RS 11/06/09 ***Reviewed By /Date:*** 11/13/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 08 BH-36 **Job Number** 133366

Sample Number 08PS-BH36-50-3 **Collection Date** 11/06/09

Sample Interval (ft bgs) Fr: 9.0 To: 10.0 **Collection Time** 1305

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland ✓ Pinon/Juniper Woodland____ Ponderosa Pine Woodland____

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations —

Chain of Custody Number 6-245797214-110909-0001

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
✓	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 30' 16.6"
W 108° 37' 14.1"

Sampling Team Members RS + PO

Logged By / Date: RS 11/06/09 ***Reviewed By /Date*** Patrick W. Odegard 11/13/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 08 x BH-37 **Job Number** 133366

Sample Number 08DS-BH37-SO-1 **Collection Date** 11/06/09

Sample Interval (ft bgs) Fr: 0 To: 2.0 **Collection Time** 14:25

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland ✓ Pinon/Juniper Woodland____ Ponderosa Pine Woodland____

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations _____

Chain of Custody Number 6-245797214-110909-0001

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 29' 51.5"
W 108° 37' 14.0"

Sampling Team Members RS + PO

Logged By / Date: RS 11/06/09 ***Reviewed By /Date:*** Patrick W. Ordy 11/13/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 08 BH-37 RS

Sample Number 08DAS-BH37-SO-12 RS

Sample Interval (ft bgs) Fr: 4.5 To: 5.5

Job Number 133366

Collection Date 11/06/09

Collection Time 1430

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland ✓ Pinon/Juniper Woodland____ Ponderosa Pine Woodland____

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations ———

Chain of Custody Number 6-245797214-110909-0001

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 29' 51.5" W 108° 37' 14.0"

Sampling Team Members RS + PO

Logged By / Date: RS 11/06/09

Reviewed By /Date: Patrick W. Dalgo 11/13/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 08+ BH-37 **Job Number** 133366

Sample Number 08 OS- BH37-SO-3 **Collection Date** 11/06/09

Sample Interval (ft bgs) Fr: 9.0 To: 10.0 **Collection Time** 1435

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland ✓ Pinon/Juniper Woodland____ Ponderosa Pine Woodland____

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations ———

Chain of Custody Number 6-245797214- 110909 - 0001

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 29' 51.5"
W 108° 37' 14.0"

Sampling Team Members RS +PO

Logged By / Date: RS 11/06/09 ***Reviewed By /Date:*** Patrick W. Eddy 11/13/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 08+ BH-38 **Job Number** 133366

Sample Number 08DS-BH38-SO-1 **Collection Date** 11/06/09

Sample Interval (ft bgs) Fr: 0 To: 2.0 **Collection Time** 1340

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland ✓ Pinon/Juniper Woodland_____ Ponderosa Pine Woodland_____

Seasonal Wetlands_____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations ~

Chain of Custody Number 6-245797214-110909-0001

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
✓	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 31' 02.8" W 108° 37' 15.8"

Sampling Team Members RS + PO

Logged By / Date: RS 11/06/09 ***Reviewed By /Date:*** [signature] 11/13/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 088 + BH-38 **Job Number** 133366

Sample Number 088-BH38-50-2 **Collection Date** 11/06/09

Sample Interval (ft bgs) Fr: 4.5 To: 5.5 **Collection Time** 1345

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland ✓ Pinon/Juniper Woodland____ Ponderosa Pine Woodland____

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations ———

Chain of Custody Number 6-245797214-110909-0001

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 31' 02.8" W 108° 37' 15.5"

Sampling Team Members RS + PO

Logged By / Date: RS 11/06/09 ***Reviewed By /Date:*** 11/13/09

Shaw™ Shaw Environmental, Inc.

Soil Sample Collection Log

Fort Wingate Depot Activity
Metals Background Study

Parcel & Borehole/ID 088 BH-38 **Job Number** 133366

Sample Number 088-BH38-50-3 **Collection Date** 11/06/09

Sample Interval (ft bgs) Fr: 9.0 To: 10.0 **Collection Time** 1350

Sample Type

Soil Boring ✓ Surface Soil_____ Field Duplicate_____ USACE QA_____

Sample Location

Desert Scrubland ✓ Pinon/Juniper Woodland____ Ponderosa Pine Woodland____

Seasonal Wetlands____

Sampling Method

Disposable Scoop/Plastic Bowl ✓ #4 Sieve ✓ Hand Auger_____ Other_____

QC Sample Associations ~~—~~

Chain of Custody Number 6-245797214-110909-0001

Collected	QTY	SIZE	TYPE/Preservation	PARAMETER	METHOD
Soil Boring Samples					
1	1	8 oz	glass/4°C	TAL Metals	EPA 6010B/6020/7471A

Comments: location N 35° 31' 02.8"
W 108° 37' 15.8"

Sampling Team Members RS + PO

Logged By / Date: RS 11/06/09 ***Reviewed By /Date:*** [signature] 11/13/09

Appendix B3
Soil Sample Analysis Request/Chain-of-Custody Records

FedEx Express US Airbill 11/12/09

FedEx Tracking Number 8659 2700 8413

Form ID No. 0215 — Sender's Copy

1 From *Please print and press hard.*

Date 11/10/09 Sender's FedEx Account Number

Sender's Name Patrick W. Ostrye Phone (505) 262-8940

Company Shaw E & I

Address 2440 Louisiana Blvd NE, Suite 300 Dept/Floor/Suite/Room

City Albuquerque State NM ZIP 87110

2 Your Internal Billing Reference

First 24 characters will appear on invoice. OPTIONAL

3 To

Recipient's Name Phone (740) 373-4071

Company MICROBAC LABORTORIES/GOVT

Recipient's Address 158 STARLITE DR

We cannot deliver to P.O. boxes or P.O. ZIP codes. Dept/Floor/Suite/Room

Address

To request a package be held at a specific FedEx location, print FedEx address here.

City MARIETTA State OH ZIP 45750-5279

0380746082

Schedule a pickup at fedex.com
Simplify your shipping. Manage your account. Access all the tools you need.

4a Express Package Service — *Packages up to 150 lbs.*

- [X] FedEx Priority Overnight — Next business morning.* Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
- [ ] FedEx Standard Overnight — Next business afternoon.* Saturday Delivery NOT available.
- [ ] FedEx First Overnight — Earliest next business morning delivery to select locations.* Saturday Delivery NOT available.
- [ ] FedEx 2Day — Second business day.* Thursday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
- [ ] FedEx Express Saver — Third business day.* Saturday Delivery NOT available.

FedEx Envelope rate not available. Minimum charge: One-pound rate.

* To most locations.

4b Express Freight Service — *Packages over 150 lbs.*

- [ ] FedEx 1Day Freight* — Next business day.** Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
- [ ] FedEx 2Day Freight — Second business day.** Thursday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
- [ ] FedEx 3Day Freight — Third business day.** Saturday Delivery NOT available.

* Call for Confirmation:

** To most locations.

5 Packaging

- [ ] FedEx Envelope*
- [ ] FedEx Pak* — Includes FedEx Small Pak, FedEx Large Pak, and FedEx Sturdy Pak.
- [ ] FedEx Box
- [ ] FedEx Tube
- [X] Other

* Declared value limit $500.

6 Special Handling

Include FedEx address in Section 3.

- [ ] **SATURDAY Delivery NOT Available for** FedEx Standard Overnight, FedEx First Overnight, FedEx Express Saver, or FedEx 3Day Freight.
- [ ] **HOLD Weekday at FedEx Location NOT Available for** FedEx First Overnight.
- [ ] **HOLD Saturday at FedEx Location Available ONLY for** FedEx Priority Overnight and FedEx 2Day to select locations.

Does this shipment contain dangerous goods? One box must be checked.

- [X] No
- [ ] Yes — As per attached Shipper's Declaration.
- [ ] Yes — Shipper's Declaration not required.
- [ ] Dry Ice — Dry Ice, 9, UN 1845 ____ x ____ kg

Dangerous goods (including dry ice) cannot be shipped in FedEx packaging.

- [ ] Cargo Aircraft Only

7 Payment *Bill to:* Enter FedEx Acct. No. or Credit Card No. below.

- [ ] Sender — Acct. No. in Section 1 will be billed.
- [X] Recipient
- [ ] Third Party
- [ ] Credit Card
- [ ] Cash/Check

FedEx Acct. No. / Credit Card No. 1578-0596-7 Exp. Date

Total Packages	Total Weight	Total Declared Value†
		$ .00

†Our liability is limited to $100 unless you declare a higher value. See back for details. By using this Airbill you agree to the service conditions on the back of this Airbill and in the current FedEx Service Guide, including terms that limit our liability.

8 Residential Delivery Signature Options

If you require a signature, check Direct or Indirect.

- [ ] No Signature Required — Package may be left without obtaining a signature for delivery.
- [ ] Direct Signature — Someone at recipient's address may sign for delivery. *Fee applies.*
- [ ] Indirect Signature — If no one is available at recipient's address, someone at a neighboring address may sign for delivery. *Fee applies.*

519

Rev. Date 10/06•Part #158279•©1994–2006 FedEx•PRINTED IN U.S.A.•SRF

PULL AND RETAIN THIS COPY BEFORE AFFIXING TO THE PACKAGE. NO POUCH NEEDED.

EPA SHAW ENVIRONMENTAL, INC. -- USACE FORT WINGATE DEPOT ACTIVITY

Generic Chain of Custody

Reference Case 54316
Client No: Microbac Ohio Valley Divi
SDG No:
L

Date Shipped: ~~11/10/2009~~ 11/12/2009
Carrier Name: FedEx
Airbill: 865927008413
Shipped to: Microbac Laboratories, Inc.
158 Starlite Drive
Marietta OH 45750
(800) 373-4071

Chain of Custody Record		Sampler Signature:	
Relinquished By	(Date / Time)	Received By	(Date / Time)
1			
2			
3			
4			

For Lab Use Only
Lab Contract No:
Unit Price:
Transfer To:
Lab Contract No:
Unit Price:

SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE/ Bottles	STATION LOCATION	SAMPLE COLLECT DATE/TIME		FOR LAB USE ONLY Sample Condition On Receipt
05ADS-BH32-SO-1	Soil/ Roxane Skalski	/C	TAL Metals (21)	143 (Ice Only) (1)	05ADS-BH32-SO-1	S: 11/6/2009	9:55	
05ADS-BH32-SO-2	Soil/ Roxane Skalski	/C	TAL Metals (21)	144 (Ice Only) (1)	05ADS-BH32-SO-2	S: 11/6/2009	10:00	
05ADS-BH32-SO-3	Soil/ Roxane Skalski	/C	TAL Metals (21)	145 (Ice Only) (1)	05ADS-BH32-SO-3	S: 11/6/2009	10:05	
08DS-BH33-SO-1	Soil/ Roxane Skalski	/C	TAL Metals (21)	146 (Ice Only) (1)	08DS-BH33-SO-1	S: 11/6/2009	10:35	
08DS-BH33-SO-2	Soil/ Roxane Skalski	/C	TAL Metals (21)	147 (Ice Only) (1)	08DS-BH33-SO-2	S: 11/6/2009	10:40	
08DS-BH33-SO-3	Soil/ Roxane Skalski	/C	TAL Metals (21)	148 (Ice Only) (1)	08DS-BH33-SO-3	S: 11/6/2009	10:45	
08DS-BH34-SO-1	Soil/ Roxane Skalski	/C	TAL Metals (21)	149 (Ice Only) (1)	08DS-BH34-SO-1	S: 11/6/2009	11:25	
08DS-BH34-SO-2	Soil/ Roxane Skalski	/C	TAL Metals (21)	150 (Ice Only) (1)	08DS-BH34-SO-2	S: 11/6/2009	11:30	
08DS-BH34-SO-3	Soil/ Roxane Skalski	/C	TAL Metals (21)	151 (Ice Only) (1)	08DS-BH34-SO-3	S: 11/6/2009	11:35	
08DS-BH35-SO-1	Soil/ Roxane Skalski	/C	TAL Metals (21)	152 (Ice Only) (1)	08DS-BH35-SO-1	S: 11/6/2009	12:05	

Field copy

Shipment for Case Complete? N	Sample(s) to be used for laboratory QC:	Additional Sampler Signature(s):	Cooler Temperature Upon Receipt:	Chain of Custody Seal Number:	
Analysis Key:	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G		Custody Seal Intact? ___	Shipment Iced? ___
TAL Metals = 6010B\6020\7471A					

TR Number: 6-245797214-110909-0001

PR provides preliminary results. Requests for preliminary results will increase analytical costs.
Send Copy to: Shaw Environmental, Inc., Attn: Mark Lyon,

EPA SHAW ENVIRONMENTAL, INC. -- USACE FORT WINGATE DEPOT ACTIVITY

Generic Chain of Custody

Reference Case 54316
Client No: Microbac Ohio Valley Divi
SDG No:
L

Date Shipped: ~~11/10/2009~~ 11/12/2009
Carrier Name: FedEx
Airbill: 865927008413
Shipped to: Microbac Laboratories, Inc.
158 Starlite Drive
Marietta OH 45750
(800) 373-4071

Chain of Custody Record

Relinquished By	(Date / Time)	Received By	(Date / Time)
1			
2			
3			
4			

Sampler Signature:

For Lab Use Only

Lab Contract No:
Unit Price:
Transfer To:
Lab Contract No:
Unit Price:

SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE/ Bottles	STATION LOCATION	SAMPLE COLLECT DATE/TIME		FOR LAB USE ONLY Sample Condition On Receipt
08DS-BH35-SO-2	Soil/ Roxane Skalski	/C	TAL Metals (21)	153 (Ice Only) (1)	08DS-BH35-SO-2	S: 11/6/2009	12:10	
08DS-BH35-SO-3	Soil/ Roxane Skalski	/C	TAL Metals (21)	154 (Ice Only) (1)	08DS-BH35-SO-3	S: 11/6/2009	12:15	
08DS-BH36-SO-1	Soil/ Roxane Skalski	/C	TAL Metals (21)	155 (Ice Only) (1)	08DS-BH36-SO-1	S: 11/6/2009	12:55	
08DS-BH36-SO-2	Soil/ Roxane Skalski	/C	TAL Metals (21)	156 (Ice Only) (1)	08DS-BH36-SO-2	S: 11/6/2009	13:00	
08DS-BH36-SO-3	Soil/ Roxane Skalski	/C	TAL Metals (21)	157 (Ice Only) (1)	08DS-BH36-SO-3	S: 11/6/2009	13:05	
08DS-BH37-SO-1	Soil/ Roxane Skalski	/C	TAL Metals (21)	158 (Ice Only) (1)	08DS-BH37-SO-1	S: 11/6/2009	14:25	
08DS-BH37-SO-2	Soil/ Roxane Skalski	/C	TAL Metals (21)	159 (Ice Only) (1)	08DS-BH37-SO-2	S: 11/6/2009	14:30	
08DS-BH37-SO-3	Soil/ Roxane Skalski	/C	TAL Metals (21)	160 (Ice Only) (1)	08DS-BH37-SO-3	S: 11/6/2009	14:35	
08DS-BH38-SO-1	Soil/ Roxane Skalski	/C	TAL Metals (21)	161 (Ice Only) (1)	08DS-BH38-SO-1	S: 11/6/2009	13:40	
08DS-BH38-SO-2	Soil/ Roxane Skalski	/C	TAL Metals (21)	162 (Ice Only) (1)	08DS-BH38-SO-2	S: 11/6/2009	13:45	

Field copy

Shipment for Case Complete? N	Sample(s) to be used for laboratory QC:	Additional Sampler Signature(s):	Cooler Temperature Upon Receipt:	Chain of Custody Seal Number:	
Analysis Key:	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G		Custody Seal Intact? ___	Shipment Iced? ___

TAL Metals = 6010B\6020\7471A

TR Number: 6-245797214-110909-0001

PR provides preliminary results. Requests for preliminary results will increase analytical costs.
Send Copy to: Shaw Environmental, Inc., Attn: Mark Lyon,

SHAW ENVIRONMENTAL, INC. -- USACE FORT WINGATE DEPOT ACTIVITY

Generic Chain of Custody

Reference Case 54316
Client No: Microbac Ohio Valley Divi
SDG No:

L

Date Shipped: ~~11/10/2009~~ 11/12/2009	**Chain of Custody Record**	Sampler Signature:	**For Lab Use Only**
Carrier Name: FedEx	Relinquished By (Date / Time)	Received By (Date / Time)	Lab Contract No:
Airbill: 865927008413	1		Unit Price:
Shipped to: Microbac Laboratories, Inc. 158 Starlite Drive Marietta OH 45750 (800) 373-4071	2		Transfer To:
	3		Lab Contract No:
	4		Unit Price:

SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE/ Bottles	STATION LOCATION	SAMPLE COLLECT DATE/TIME		FOR LAB USE ONLY Sample Condition On Receipt
08DS-BH38-SO-3	Soil/ Roxane Skalski	/C	TAL Metals (21)	163 (Ice Only) (1)	08DS-BH38-SO-3	S: 11/6/2009	13:50	
FDUP-10	Soil/ Roxane Skalski	/C	TAL Metals (21)	233 (Ice Only) (1)	FDUP-10	S: 11/6/2009	10:35	
FDUP-11	Soil/ Roxane Skalski	/C	TAL Metals (21)	234 (Ice Only) (1)	FDUP-11	S: 11/6/2009	10:40	
FDUP-12	Soil/ Roxane Skalski	/C	TAL Metals (21)	235 (Ice Only) (1)	FDUP-12	S: 11/6/2009	10:45	

Field COPY

Shipment for Case Complete?N	Sample(s) to be used for laboratory QC:	Additional Sampler Signature(s):	Cooler Temperature Upon Receipt:	Chain of Custody Seal Number:
Analysis Key:	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G		Custody Seal Intact? ___ Shipment Iced? ___
TAL Metals = 6010B\6020\7471A				

TR Number: 6-245797214-110909-0001

PR provides preliminary results. Requests for preliminary results will increase analytical costs.
Send Copy to: Shaw Environmental, Inc., Attn: Mark Lyon,
2440 Louisiana Blvd, Ste. 300

FedEx Express **US Airbill** 11/12/09

FedEx Tracking Number 8659 2700 8365

Form ID No. 0215 — Sender's Copy

1 From *Please print and press hard.*

Date 11/9/09 — Sender's FedEx Account Number

Sender's Name Patrick W. Ostrye — Phone (505) 262-8940

Company Shaw E & I

Address 2440 Louisiana Blvd NE, Suite 300 — Dept./Floor/Suite/Room

City Albuquerque — State NM — ZIP 87111

2 Your Internal Billing Reference

First 24 characters will appear on invoice. OPTIONAL

3 To

Recipient's Name — Phone (740) 373-4071

Company MICROBAC LABORTORIES/GOVT

Recipient's Address 158 STARLITE DR — Dept./Floor/Suite/Room

We cannot deliver to P.O. boxes or P.O. ZIP codes.

Address

To request a package be held at a specific FedEx location, print FedEx address here.

City MARIETTA — State OH — ZIP 45750-5279

0380746082

Find drop-off locations at fedex.com
Simplify your shipping. Manage your account. Access all the tools you need.

4a Express Package Service — *Packages up to 150 lbs.*

- [X] FedEx Priority Overnight — Next business morning.* Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
- [ ] FedEx Standard Overnight — Next business afternoon.* Saturday Delivery NOT available.
- [ ] FedEx First Overnight — Earliest next business morning delivery to select locations.* Saturday Delivery NOT available.
- [ ] FedEx 2Day — Second business day.* Thursday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
- [ ] FedEx Express Saver — Third business day.* Saturday Delivery NOT available.

FedEx Envelope rate not available. Minimum charge: One-pound rate.

* To most locations.

4b Express Freight Service — *Packages over 150 lbs.*

- [ ] FedEx 1Day Freight* — Next business day.** Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
- [ ] FedEx 2Day Freight — Second business day.** Thursday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
- [ ] FedEx 3Day Freight — Third business day.** Saturday Delivery NOT available.

* Call for Confirmation: _____

** To most locations.

5 Packaging

- [ ] FedEx Envelope*
- [ ] FedEx Pak* — Includes FedEx Small Pak, FedEx Large Pak, and FedEx Sturdy Pak.
- [ ] FedEx Box
- [ ] FedEx Tube
- [X] Other

* Declared value limit $500.

6 Special Handling

Include FedEx address in Section 3.

- [ ] **SATURDAY Delivery NOT Available for** FedEx Standard Overnight, FedEx First Overnight, FedEx Express Saver, or FedEx 3Day Freight.
- [ ] **HOLD Weekday at FedEx Location NOT Available for** FedEx First Overnight.
- [ ] **HOLD Saturday at FedEx Location Available ONLY for** FedEx Priority Overnight and FedEx 2Day to select locations.

Does this shipment contain dangerous goods? One box must be checked.

- [X] No
- [ ] Yes — As per attached Shipper's Declaration.
- [ ] Yes — Shipper's Declaration not required.
- [ ] Dry Ice — Dry Ice, 9, UN 1845 _____ x _____ kg

Dangerous goods (including dry ice) cannot be shipped in FedEx packaging.

- [ ] Cargo Aircraft Only

7 Payment *Bill to:* Enter FedEx Acct. No. or Credit Card No. below.

- [ ] Sender — Acct. No. in Section 1 will be billed.
- [X] Recipient
- [ ] Third Party
- [ ] Credit Card
- [ ] Cash/Check

FedEx Acct. No. / Credit Card No. 1578-0596-7 — Exp. Date

Total Packages	Total Weight	Total Declared Value†
		$ .00

†Our liability is limited to $100 unless you declare a higher value. See back for details. By using this Airbill you agree to the service conditions on the back of this Airbill and in the current FedEx Service Guide, including terms that limit our liability.

8 Residential Delivery Signature Options

If you require a signature, check Direct or Indirect.

- [ ] No Signature Required — Package may be left without obtaining a signature for delivery.
- [ ] Direct Signature — Someone at recipient's address may sign for delivery. *Fee applies.*
- [ ] Indirect Signature — If no one is available at recipient's address, someone at a neighboring address may sign for delivery. *Fee applies.*

519

Rev. Date 10/06•Part #158279•©1994–2006 FedEx•PRINTED IN U.S.A.•SRF

PULL AND RETAIN THIS COPY BEFORE AFFIXING TO THE PACKAGE. NO POUCH NEEDED.

EPA SHAW ENVIRONMENTAL, INC. -- USACE FORT WINGATE DEPOT ACTIVITY

Generic Chain of Custody

Reference Case 54316
Client No: Microbac Ohio Valley Divi
SDG No:

L

Date Shipped: ~~11/10/2009~~ 11/12/2009
Carrier Name: FedEx
Airbill: 865927008365
Shipped to: Microbac Laboratories, Inc.
158 Starlite Drive
Marietta OH 45750
(800) 373-4071

Chain of Custody Record

Relinquished By	(Date / Time)	Received By	(Date / Time)
1 Roxane			
2			
3			
4			

Sampler Signature: Roxane Skalski

For Lab Use Only
Lab Contract No:
Unit Price:
Transfer To:
Lab Contract No:
Unit Price:

SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE/ Bottles	STATION LOCATION	SAMPLE COLLECT DATE/TIME		FOR LAB USE ONLY Sample Condition On Receipt
01PP-BH20-SO-1	Soil/ Roxane Skalski	/C	TAL Metals (21)	104 (Ice Only) (1)	01PP-BH20-SO-1	S: 11/5/2009	8:30	
01PP-BH20-SO-2	Soil/ Roxane Skalski	/C	TAL Metals (21)	105 (Ice Only) (1)	01PP-BH20-SO-2	S: 11/5/2009	8:30	
01PP-BH20-SO-3	Soil/ Roxane Skalski	/C	TAL Metals (21)	106 (Ice Only) (1)	01PP-BH20-SO-3	S: 11/5/2009	8:30	
01PP-BH21-SO-1	Soil/ Roxane Skalski	/C	TAL Metals (21)	107 (Ice Only) (1)	01PP-BH21-SO-1	S: 11/5/2009	9:25	
01PP-BH21-SO-2	Soil/ Roxane Skalski	/C	TAL Metals (21)	108 (Ice Only) (1)	01PP-BH21-SO-2	S: 11/5/2009	9:30	
01PP-BH21-SO-3	Soil/ Roxane Skalski	/C	TAL Metals (21)	109 (Ice Only) (1)	01PP-BH21-SO-3	S: 11/5/2009	9:35	
01PP-BH22-SO-1	Soil/ Roxane Skalski	/C	TAL Metals (21)	110 (Ice Only) (1)	01PP-BH22-SO-1	S: 11/5/2009	10:30	
01PP-BH22-SO-2	Soil/ Roxane Skalski	/C	TAL Metals (21)	111 (Ice Only) (1)	01PP-BH22-SO-2	S: 11/5/2009	10:35	
01PP-BH22-SO-3	Soil/ Roxane Skalski	/C	TAL Metals (21)	112 (Ice Only) (1)	01PP-BH22-SO-3	S: 11/5/2009	10:40	
01PP-BH23-SO-1	Soil/ Roxane Skalski	/C	TAL Metals (21)	113 (Ice Only) (1)	01PP-BH23-SO-1	S: 11/5/2009	11:35	

Shipment for Case Complete?N	Sample(s) to be used for laboratory QC:	Additional Sampler Signature(s):	Cooler Temperature Upon Receipt:	Chain of Custody Seal Number:	
Analysis Key:	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G		Custody Seal Intact? ___	Shipment Iced? ___
TAL Metals = 6010B\6020\7471A					

TR Number: 6-245797214-110909-0002

PR provides preliminary results. Requests for preliminary results will increase analytical costs.
Send Copy to: Shaw Environmental, Inc., Attn: Mark Lyon,

EPA SHAW ENVIRONMENTAL, INC. -- USACE FORT WINGATE DEPOT ACTIVITY

Generic Chain of Custody

Reference Case 54316
Client No: Microbac Ohio Valley Divi
SDG No:

L

Date Shipped: ~~11/10/2009~~ 11/12/2009
Carrier Name: FedEx
Airbill: 865927008365
Shipped to: Microbac Laboratories, Inc.
158 Starlite Drive
Marietta OH 45750
(800) 373-4071

Chain of Custody Record

Relinquished By	(Date / Time)	Received By	(Date / Time)
1			
2			
3			
4			

Sampler Signature:

For Lab Use Only

Lab Contract No:
Unit Price:
Transfer To:
Lab Contract No:
Unit Price:

SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE/ Bottles	STATION LOCATION	SAMPLE COLLECT DATE/TIME		FOR LAB USE ONLY Sample Condition On Receipt
01PP-BH23-SO-2	Soil/ Roxane Skalski	/C	TAL Metals (21)	114 (Ice Only) (1)	01PP-BH23-SO-2	S: 11/5/2009	11:40	
01PP-BH23-SO-3	Soil/ Roxane Skalski	/C	TAL Metals (21)	115 (Ice Only) (1)	01PP-BH23-SO-3	S: 11/5/2009	11:45	
01PP-BH24-SO-1	Soil/ Roxane Skalski	/C	TAL Metals (21)	116 (Ice Only) (1)	01PP-BH24-SO-1	S: 11/5/2009	14:05	
01PP-BH24-SO-2	Soil/ Roxane Skalski	/C	TAL Metals (21)	117 (Ice Only) (1)	01PP-BH24-SO-2	S: 11/5/2009	14:10	
01PP-BH24-SO-3	Soil/ Roxane Skalski	/C	TAL Metals (21)	118 (Ice Only) (1)	01PP-BH24-SO-3	S: 11/5/2009	14:40	
02DS-BH31-SO-1	Soil/ Roxane Skalski	/C	TAL Metals (21)	140 (Ice Only) (1)	02DS-BH31-SO-1	S: 11/6/2009	8:05	
02DS-BH31-SO-2	Soil/ Roxane Skalski	/C	TAL Metals (21)	141 (Ice Only) (1)	02DS-BH31-SO-2	S: 11/6/2009	8:10	
02DS-BH31-SO-3	Soil/ Roxane Skalski	/C	TAL Metals (21)	142 (Ice Only) (1)	02DS-BH31-SO-3	S: 11/6/2009	8:15	
02PJ-BH29-SO-1	Soil/ Roxane Skalski	/C	TAL Metals (21)	134 (Ice Only) (1)	02PJ-BH29-SO-1	S: 11/9/2009	15:50	
02PJ-BH29-SO-2	Soil/ Roxane Skalski	/C	TAL Metals (21)	135 (Ice Only) (1)	02PJ-BH29-SO-2	S: 11/9/2009	15:55	

Shipment for Case Complete?N	Sample(s) to be used for laboratory QC:	Additional Sampler Signature(s):	Cooler Temperature Upon Receipt:	Chain of Custody Seal Number:	
Analysis Key:	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G		Custody Seal Intact? ___	Shipment Iced? ___
TAL Metals = 6010B\6020\7471A					

TR Number: 6-245797214-110909-0002

PR provides preliminary results. Requests for preliminary results will increase analytical costs.
Send Copy to: Shaw Environmental, Inc., Attn: Mark Lyon,

EPA

SHAW ENVIRONMENTAL, INC. -- USACE FORT WINGATE DEPOT ACTIVITY

Generic Chain of Custody

Reference Case 54316
Client No: Microbac Ohio Valley Divi
SDG No:

L

Date Shipped:	~~11/10/2009~~ 11/12/2009
Carrier Name:	FedEx
Airbill:	865927008365
Shipped to:	Microbac Laboratories, Inc. 158 Starlite Drive Marietta OH 45750 (800) 373-4071

Chain of Custody Record

Relinquished By	(Date / Time)	Received By	(Date / Time)
1			
2			
3			
4			

Sampler Signature:

For Lab Use Only

Lab Contract No:
Unit Price:
Transfer To:
Lab Contract No:
Unit Price:

SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE/ Bottles	STATION LOCATION	SAMPLE COLLECT DATE/TIME		FOR LAB USE ONLY Sample Condition On Receipt
02PJ-BH30-SO-1	Soil/ Roxane Skalski	/C	TAL Metals (21)	137 (Ice Only) (1)	02PJ-BH30-SO-1	S: 11/9/2009	15:40	
02PJ-BH30-SO-2	Soil/ Roxane Skalski	/C	TAL Metals (21)	138 (Ice Only) (1)	02PJ-BH30-SO-2	S: 11/9/2009	15:45	
FDUP-01	Soil/ Roxane Skalski	/C	TAL Metals (21)	224 (Ice Only) (1)	FDUP-01	S: 11/5/2009	10:30	
FDUP-02	Soil/ Roxane Skalski	/C	TAL Metals (21)	225 (Ice Only) (1)	FDUP-02	S: 11/5/2009	10:35	
FDUP-03	Soil/ Roxane Skalski	/C	TAL Metals (21)	226 (Ice Only) (1)	FDUP-03	S: 11/5/2009	10:40	

Shipment for Case Complete?N	Sample(s) to be used for laboratory QC:	Additional Sampler Signature(s):	Cooler Temperature Upon Receipt:	Chain of Custody Seal Number:	
Analysis Key:	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G		Custody Seal Intact? ___	Shipment Iced? ___
TAL Metals = 6010B\6020\7471A					

TR Number: 6-245797214-110909-0002

PR provides preliminary results. Requests for preliminary results will increase analytical costs.
Send Copy to: Shaw Environmental, Inc., Attn: Mark Lyon,
2440 Louisiana Blvd, Ste. 300

FedEx® US Airbill Express 11/12/09

FedEx Tracking Number 8659 2700 8376

Bill No. 0215 — Sender's Copy

1 From *Please print and press hard.*

Date 11/9/09 Sender's FedEx Account Number

Sender's Name Patrick W. Ostrye Phone (505) 262-8940

Company Shaw E+I

Address 2440 Louisiana Blvd NE, Suite 300 Dept./Floor/Suite/Room

City Albuquerque State NM ZIP 87110

2 Your Internal Billing Reference OPTIONAL
First 24 characters will appear on invoice.

3 To

Recipient's Name Phone (740) 373-4071

Company MICROBAC LABORTORIES/GOVT

Recipient's Address 158 STARLITE DR Dept./Floor/Suite/Room
We cannot deliver to P.O. boxes or P.O. ZIP codes.

Address
To request a package be held at a specific FedEx location, print FedEx address here.

City MARIETTA State OH ZIP 45750-5279

0380746082

Schedule a pickup at fedex.com
Simplify your shipping. Manage your account. Access all the tools you need.

4a Express Package Service *Packages up to 150 lbs.*

- [X] FedEx Priority Overnight — Next business morning.* Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
- [ ] FedEx Standard Overnight — Next business afternoon.* Saturday Delivery NOT available.
- [ ] FedEx First Overnight — Earliest next business morning delivery to select locations.* Saturday Delivery NOT available.
- [ ] FedEx 2Day — Second business day.* Thursday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
- [ ] FedEx Express Saver — Third business day.* Saturday Delivery NOT available.

FedEx Envelope rate not available. Minimum charge: One-pound rate. * To most locations.

4b Express Freight Service *Packages over 150 lbs.*

- [ ] FedEx 1Day Freight* — Next business day.** Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
- [ ] FedEx 2Day Freight — Second business day.** Thursday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
- [ ] FedEx 3Day Freight — Third business day.** Saturday Delivery NOT available.

* Call for Confirmation: ** To most locations.

5 Packaging

- [ ] FedEx Envelope*
- [ ] FedEx Pak* — Includes FedEx Small Pak, FedEx Large Pak, and FedEx Sturdy Pak.
- [ ] FedEx Box
- [ ] FedEx Tube
- [X] Other

* Declared value limit $500.

6 Special Handling — Include FedEx address in Section 3.

- [ ] SATURDAY Delivery NOT Available for FedEx Standard Overnight, FedEx First Overnight, FedEx Express Saver, or FedEx 3Day Freight.
- [ ] HOLD Weekday at FedEx Location NOT Available for FedEx First Overnight.
- [ ] HOLD Saturday at FedEx Location Available ONLY for FedEx Priority Overnight and FedEx 2Day to select locations.

Does this shipment contain dangerous goods? One box must be checked.

- [X] No
- [ ] Yes — As per attached Shipper's Declaration.
- [ ] Yes — Shipper's Declaration not required.
- [ ] Dry Ice — Dry Ice, 9, UN 1845 _____ x _____ kg

Dangerous goods (including dry ice) cannot be shipped in FedEx packaging.

- [ ] Cargo Aircraft Only

7 Payment *Bill to:* Enter FedEx Acct. No. or Credit Card No. below.

- [ ] Sender — Acct. No. in Section 1 will be billed.
- [X] Recipient
- [ ] Third Party
- [ ] Credit Card
- [ ] Cash/Check

FedEx Acct. No. / Credit Card No. 1578-0596-7 Exp. Date

Total Packages	Total Weight	Total Declared Value†
		$ .00

†Our liability is limited to $100 unless you declare a higher value. See back for details. By using this Airbill you agree to the service conditions on the back of this Airbill and in the current FedEx Service Guide, including terms that limit our liability.

8 Residential Delivery Signature Options If you require a signature, check Direct or Indirect.

- [ ] No Signature Required — Package may be left without obtaining a signature for delivery.
- [ ] Direct Signature — Someone at recipient's address may sign for delivery. *Fee applies.*
- [ ] Indirect Signature — If no one is available at recipient's address, someone at a neighboring address may sign for delivery. *Fee applies.*

519

Rev. Date 10/06•Part #158279•©1994–2006 FedEx•PRINTED IN U.S.A.•SRF

PULL AND RETAIN THIS COPY BEFORE AFFIXING TO THE PACKAGE. NO POUCH NEEDED.

SHAW ENVIRONMENTAL, INC. -- USACE FORT WINGATE DEPOT ACTIVITY

Generic Chain of Custody

Reference Case 54316
Client No: Microbac Ohio Valley Divi
SDG No:

L

Date Shipped: ~~11/10/2009~~ 11/12/09	**Chain of Custody Record**	Sampler Signature:	**For Lab Use Only**
Carrier Name: FedEx	Relinquished By (Date / Time)	Received By (Date / Time)	Lab Contract No:
Airbill: 865927008376	1		Unit Price:
Shipped to: Microbac Laboratories, Inc. 158 Starlite Drive Marietta OH 45750 (800) 373-4071	2		Transfer To:
	3		Lab Contract No:
	4		Unit Price:

SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE/ Bottles	STATION LOCATION	SAMPLE COLLECT DATE/TIME		FOR LAB USE ONLY Sample Condition On Receipt
01PP-BH19-SO-1	Soil/ Roxane Skalski	/C	TAL Metals (21)	101 (Ice Only) (1)	01PP-BH19-SO-1	S: 11/4/2009	13:50	
01PP-BH19-SO-2	Soil/ Roxane Skalski	/C	TAL Metals (21)	102 (Ice Only) (1)	01PP-BH19-SO-2	S: 11/4/2009	13:50	
01PP-BH19-SO-3	Soil/ Roxane Skalski	/C	TAL Metals (21)	103 (Ice Only) (1)	01PP-BH19-SO-3	S: 11/4/2009	13:50	
15DS-BH07-SO-1	Soil/ Roxane Skalski	/C	TAL Metals (21)	182 (Ice Only) (1)	15DS-BH07-SO-1	S: 11/9/2009	11:35	
15DS-BH07-SO-2	Soil/ Roxane Skalski	/C	TAL Metals (21)	183 (Ice Only) (1)	15DS-BH07-SO-2	S: 11/9/2009	11:40	
15DS-BH07-SO-3	Soil/ Roxane Skalski	/C	TAL Metals (21)	184 (Ice Only) (1)	15DS-BH07-SO-3	S: 11/9/2009	11:45	
15DS-BH08-SO-1	Soil/ Roxane Skalski	/C	TAL Metals (21)	185 (Ice Only) (1)	15DS-BH08-SO-1	S: 11/9/2009	12:30	
15DS-BH08-SO-2	Soil/ Roxane Skalski	/C	TAL Metals (21)	186 (Ice Only) (1)	15DS-BH08-SO-2	S: 11/9/2009	12:35	
15DS-BH08-SO-3	Soil/ Roxane Skalski	/C	TAL Metals (21)	187 (Ice Only) (1)	15DS-BH08-SO-3	S: 11/9/2009	12:40	
15SW-BH04-SO-1	Soil/ Roxane Skalski	/C	TAL Metals (21)	173 (Ice Only) (1)	15SW-BH04-SO-1	S: 11/9/2009	9:35	

Shipment for Case Complete?N	Sample(s) to be used for laboratory QC:	Additional Sampler Signature(s):	Cooler Temperature Upon Receipt:	Chain of Custody Seal Number:	
Analysis Key:	**Concentration:** L = Low, M = Low/Medium, H = High	**Type/Designate:** Composite = C, Grab = G		**Custody Seal Intact?** ___	**Shipment Iced?** ___

TAL Metals = 6010B\6020\7471A

TR Number: 6-245797214-110909-0003

PR provides preliminary results. Requests for preliminary results will increase analytical costs.
Send Copy to: Shaw Environmental, Inc., Attn: Mark Lyon,

EPA SHAW ENVIRONMENTAL, INC. -- USACE FORT WINGATE DEPOT ACTIVITY

Generic Chain of Custody

Reference Case 54316
Client No: Microbac Ohio Valley Divi
SDG No:
L

Date Shipped: ~~11/10/2009~~ 11/12/2009
Carrier Name: FedEx
Airbill: 865927008376
Shipped to: Microbac Laboratories, Inc.
158 Starlite Drive
Marietta OH 45750
(800) 373-4071

Chain of Custody Record

Relinquished By	(Date / Time)	Received By	(Date / Time)
1			
2			
3			
4			

Sampler Signature:

For Lab Use Only
Lab Contract No:
Unit Price:
Transfer To:
Lab Contract No:
Unit Price:

SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE/ Bottles	STATION LOCATION	SAMPLE COLLECT DATE/TIME		FOR LAB USE ONLY Sample Condition On Receipt
15SW-BH04-SO-2	Soil/ Roxane Skalski	/C	TAL Metals (21)	174 (Ice Only) (1)	15SW-BH04-SO-2	S: 11/9/2009	9:40	
15SW-BH04-SO-3	Soil/ Roxane Skalski	/C	TAL Metals (21)	175 (Ice Only) (1)	15SW-BH04-SO-3	S: 11/9/2009	9:45	
15SW-BH05-SO-1	Soil/ Roxane Skalski	/C	TAL Metals (21)	176 (Ice Only) (1)	15SW-BH05-SO-1	S: 11/9/2009	10:05	
15SW-BH05-SO-2	Soil/ Roxane Skalski	/C	TAL Metals (21)	177 (Ice Only) (1)	15SW-BH05-SO-2	S: 11/9/2009	10:10	
15SW-BH05-SO-3	Soil/ Roxane Skalski	/C	TAL Metals (21)	178 (Ice Only) (1)	15SW-BH05-SO-3	S: 11/9/2009	10:15	
15SW-BH06-SO-1	Soil/ Roxane Skalski	/C	TAL Metals (21)	179 (Ice Only) (1)	15SW-BH06-SO-1	S: 11/9/2009	10:55	
15SW-BH06-SO-2	Soil/ Roxane Skalski	/C	TAL Metals (21)	180 (Ice Only) (1)	15SW-BH06-SO-2	S: 11/9/2009	11:00	
15SW-BH06-SO-3	Soil/ Roxane Skalski	/C	TAL Metals (21)	181 (Ice Only) (1)	15SW-BH06-SO-3	S: 11/9/2009	11:05	
17DS-BH10-SO-1	Soil/ Roxane Skalski	/C	TAL Metals (21)	191 (Ice Only) (1)	17DS-BH10-SO-1	S: 11/9/2009	13:35	
17DS-BH10-SO-2	Soil/ Roxane Skalski	/C	TAL Metals (21)	192 (Ice Only) (1)	17DS-BH10-SO-2	S: 11/9/2009	13:40	

Shipment for Case Complete?N	Sample(s) to be used for laboratory QC:	Additional Sampler Signature(s):	Cooler Temperature Upon Receipt:	Chain of Custody Seal Number:	
Analysis Key:	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G		Custody Seal Intact? ___	Shipment Iced? ___

TAL Metals = 6010B\6020\7471A

TR Number: 6-245797214-110909-0003

PR provides preliminary results. Requests for preliminary results will increase analytical costs.
Send Copy to: Shaw Environmental, Inc., Attn: Mark Lyon,
2113 Louisiana Blvd, Ste 200

SHAW ENVIRONMENTAL, INC. -- USACE FORT WINGATE DEPOT ACTIVITY

Generic Chain of Custody

Reference Case 54316
Client No: Microbac Ohio Valley Divi
SDG No:

L

Date Shipped: ~~11/10/2009~~ 11/12/2009
Carrier Name: FedEx
Airbill: 865927008376
Shipped to: Microbac Laboratories, Inc.
158 Starlite Drive
Marietta OH 45750
(800) 373-4071

Chain of Custody Record

Relinquished By	(Date / Time)	Received By	(Date / Time)
1			
2			
3			
4			

Sampler Signature:

For Lab Use Only
Lab Contract No:
Unit Price:
Transfer To:
Lab Contract No:
Unit Price:

SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE/ Bottles	STATION LOCATION	SAMPLE COLLECT DATE/TIME		FOR LAB USE ONLY Sample Condition On Receipt
17DS-BH10-SO-3	Soil/ Roxane Skalski	/C	TAL Metals (21)	193 (Ice Only) (1)	17DS-BH10-SO-3	S: 11/9/2009	13:45	
FDUP-04	Soil/ Roxane Skalski	/C	TAL Metals (21)	227 (Ice Only) (1)	FDUP-04	S: 11/9/2009	10:05	
FDUP-05	Soil/ Roxane Skalski	/C	TAL Metals (21)	228 (Ice Only) (1)	FDUP-05	S: 11/9/2009	10:10	
FDUP-06	Soil/ Roxane Skalski	/C	TAL Metals (21)	229 (Ice Only) (1)	FDUP-06	S: 11/9/2009	10:15	

Shipment for Case Complete? N	Sample(s) to be used for laboratory QC:	Additional Sampler Signature(s):	Cooler Temperature Upon Receipt:	Chain of Custody Seal Number:	
Analysis Key:	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G		Custody Seal Intact? ___	Shipment Iced? ___
TAL Metals = 6010B\6020\7471A					

TR Number: 6-245797214-110909-0003

PR provides preliminary results. Requests for preliminary results will increase analytical costs.
Send Copy to: Shaw Environmental, Inc., Attn: Mark Lyon,

EPA SHAW ENVIRONMENTAL, INC. -- USACE FORT WINGATE DEPOT ACTIVITY

Generic Chain of Custody

Reference Case 54316
Client No: Microbac Ohio Valley Divi
SDG No:

L

Date Shipped:	11/12/2009
Carrier Name:	FedEx
Airbill:	865927008402
Shipped to:	Microbac Laboratories, Inc. 158 Starlite Drive Marietta OH 45750 (800) 373-4071

Chain of Custody Record

Relinquished By	(Date / Time)	Received By	(Date / Time)
1 Roxane Skalski	11/12/09 0900		
2 Fed Ex Ground	11/12/09 0900		
3			
4			

Sampler Signature: Roxane Skalski

For Lab Use Only

Lab Contract No:
Unit Price:
Transfer To:
Lab Contract No:
Unit Price:

SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE/ Bottles	STATION LOCATION	SAMPLE COLLECT DATE/TIME		FOR LAB USE ONLY Sample Condition On Receipt
02PJ-BH25-SO-1	Soil/ Roxane Skalski	/C	TAL Metals (21)	122 (Ice Only) (1)	02PJ-BH25-SO-1	S: 11/10/2009	14:00	
02PJ-BH25-SO-2	Soil/ Roxane Skalski	/C	TAL Metals (21)	123 (Ice Only) (1)	02PJ-BH25-SO-2	S: 11/10/2009	14:05	
02PJ-BH25-SO-3	Soil/ Roxane Skalski	/C	TAL Metals (21)	124 (Ice Only) (1)	02PJ-BH25-SO-3	S: 11/10/2009	14:10	
19SW-AH01-SO-1	Soil/ Roxane Skalski	/C	TAL Metals (21)	197 (Ice Only) (1)	19SW-AH01-SO-1	S: 11/11/2009	14:15	
19SW-AH01-SO-2	Soil/ Roxane Skalski	/C	TAL Metals (21)	198 (Ice Only) (1)	19SW-AH01-SO-2	S: 11/11/2009	14:20	
19SW-AH02-SO-1	Soil/ Roxane Skalski	/C	TAL Metals (21)	199 (Ice Only) (1)	19SW-AH02-SO-1	S: 11/11/2009	14:50	
19SW-AH02-SO-2	Soil/ Roxane Skalski	/C	TAL Metals (21)	200 (Ice Only) (1)	19SW-AH02-SO-2	S: 11/11/2009	14:55	
19SW-AH03-SO-1	Soil/ Roxane Skalski	/C	TAL Metals (21)	201 (Ice Only) (1)	19SW-AH03-SO-1	S: 11/11/2009	15:30	
19SW-AH03-SO-2	Soil/ Roxane Skalski	/C	TAL Metals (21)	202 (Ice Only) (1)	19SW-AH03-SO-2	S: 11/11/2009	15:35	
19SW-AH04-SO-1	Soil/ Roxane Skalski	/C	TAL Metals (21)	203 (Ice Only) (1)	19SW-AH04-SO-1	S: 11/11/2009	16:05	

Microbac OVD 221000002971
Received: 11/13/2009 10:47
By: ERIN PORTER
Erin Potter

Shipment for Case Complete?N	Sample(s) to be u	Cooler Temperature Upon Receipt:	Chain of Custody Seal Number:
Analysis Key:	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G	Custody Seal Intact? ___ Shipment Iced? ___

TAL Metals = 6010B\6020\7471A

TR Number: 6-245797214-111209-0003

PR provides preliminary results. Requests for preliminary results will increase analytical costs.
Send Copy to: Shaw Environmental, Inc., Attn: Mark Lyon,
2440 Louisiana Blvd, Ste. 300

SHAW ENVIRONMENTAL, INC. -- USACE FORT WINGATE DEPOT ACTIVITY

Generic Chain of Custody

Reference Case 54316
Client No: Microbac Ohio Valley Divi
SDG No:

L

Date Shipped:	11/12/2009
Carrier Name:	FedEx
Airbill:	865927008402
Shipped to:	Microbac Laboratories, Inc. 158 Starlite Drive Marietta OH 45750 (800) 373-4071

Chain of Custody Record

Sampler Signature: Roxane Skalski

	Relinquished By (Date / Time)	Received By (Date / Time)
1	Roxane Skalski 11/12/09 0900	
2	[illegible] 11/12/09 0900	
3		
4		

For Lab Use Only

Lab Contract No:
Unit Price:
Transfer To:
Lab Contract No:
Unit Price:

SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE/ Bottles	STATION LOCATION	SAMPLE COLLECT DATE/TIME	FOR LAB USE ONLY Sample Condition On Receipt
19SW-AH04-SO-2	Soil/ Roxane Skalski	/C	TAL Metals (21)	204 (Ice Only) (1)	19SW-AH04-SO-2	S: 11/11/2009	16:10
FDUP-09	Soil/ Patrick Ostrye	/C	TAL Metals (21)	232 (Ice Only) (1)	FDUP-09	11/11/2009	14:55

221000002971

Microbac OVD
Received: 11/13/2009 10:47
By: ERIN PORTER

Erin Porter

Shipment for Case Complete?N	Sample(s)	(s):	Cooler Temperature Upon Receipt:	Chain of Custody Seal Number:
Analysis Key:	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G		Custody Seal Intact? ___ Shipment Iced? ___

TAL Metals = 6010B\6020\7471A

TR Number: 6-245797214-111209-0003

PR provides preliminary results. Requests for preliminary results will increase analytical costs.
Send Copy to: Shaw Environmental, Inc., Attn: Mark Lyon,
2440 Louisiana Blvd, Ste. 300

EPA SHAW ENVIRONMENTAL, INC. -- USACE FORT WINGATE DEPOT ACTIVITY

Generic Chain of Custody

Reference Case 54316
Client No: Microbac Ohio Valley Divi
SDG No:

L

Date Shipped:	11/12/2009
Carrier Name:	FedEx
Airbill:	865927008398
Shipped to:	Microbac Laboratories, Inc. 158 Starlite Drive Marietta OH 45750 (800) 373-4071

Chain of Custody Record

Sampler Signature: Roxane Skalski

	Relinquished By (Date / Time)	Received By (Date / Time)
1	Roxane Skalski 11/12/09 0900	
2	[illegible] 11/12/09 0900	
3		
4		

For Lab Use Only

Lab Contract No:
Unit Price:
Transfer To:
Lab Contract No:
Unit Price:

SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE/ Bottles	STATION LOCATION	SAMPLE COLLECT DATE/TIME		FOR LAB USE ONLY Sample Condition On Receipt
02PJ-BH26-SO-1	Soil/ Roxane Skalski	/C	TAL Metals (21)	125 (Ice Only) (1)	02PJ-BH26-SO-1	S: 11/10/2009	13:15	
02PJ-BH26-SO-2	Soil/ Roxane Skalski	/C	TAL Metals (21)	126 (Ice Only) (1)	02PJ-BH26-SO-2	S: 11/10/2009	13:20	
02PJ-BH26-SO-3	Soil/ Roxane Skalski	/C	TAL Metals (21)	127 (Ice Only) (1)	02PJ-BH26-SO-3	S: 11/10/2009	13:25	
14DS-BH01-SO-1	Soil/ Roxane Skalski	/C	TAL Metals (21)	164 (Ice Only) (1)	14DS-BH01-SO-1	S: 11/5/2009	15:43	
14DS-BH01-SO-2	Soil/ Roxane Skalski	/C	TAL Metals (21)	165 (Ice Only) (1)	14DS-BH01-SO-2	S: 11/5/2009	15:48	
14DS-BH01-SO-3	Soil/ Roxane Skalski	/C	TAL Metals (21)	166 (Ice Only) (1)	14DS-BH01-SO-3	S: 11/5/2009	15:54	
14DS-BH02-SO-1	Soil/ Roxane Skalski	/C	TAL Metals (21)	167 (Ice Only) (1)	14DS-BH02-SO-1	S: 11/9/2009	14:35	
14DS-BH02-SO-2	Soil/ Roxane Skalski	/C	TAL Metals (21)	168 (Ice Only) (1)	14DS-BH02-SO-2	S: 11/9/2009	14:40	
14DS-BH02-SO-3	Soil/ Roxane Skalski	/C	TAL Metals (21)	169 (Ice Only) (1)	14DS-BH02-SO-3	S: 11/9/2009	14:45	
15SW-BH03-SO-1	Soil/ Roxane Skalski	/C	TAL Metals (21)	170 (Ice Only) (1)	15SW-BH03-SO-1	S: 11/9/2009	8:55	

Microbac OVD
Received: 11/13/2009 10:47
By: ERIN PORTER
221000002931

Shipment for Case Complete?N	Sample(s) to be used for laboratory QC:	Add	Chain of Custody Seal Number:
Analysis Key:	Concentration: L = Low, M = Low/Medium, H = High		Custody Seal Intact? ___ Shipment Iced? ___

TAL Metals = 6010B\6020\7471A

TR Number: 6-245797214-111209-0002

PR provides preliminary results. Requests for preliminary results will increase analytical costs.
Send Copy to: Shaw Environmental, Inc., Attn: Mark Lyon,
2440 Louisiana Blvd, Ste. 300

SHAW ENVIRONMENTAL, INC. -- USACE FORT WINGATE DEPOT ACTIVITY

Generic Chain of Custody

Reference Case 54316
Client No: Microbac Ohio Valley Divi
SDG No:

L

Date Shipped:	11/12/2009
Carrier Name:	FedEx
Airbill:	865927008398
Shipped to:	Microbac Laboratories, Inc. 158 Starlite Drive Marietta OH 45750 (800) 373-4071

Chain of Custody Record

Sampler Signature: Roxane Skalski

Relinquished By	(Date / Time)	Received By	(Date / Time)
1 Roxane Skalski	11/12/09 0900		
2 Patrick W. Duff	11/12/09 0900		
3			
4			

For Lab Use Only

Lab Contract No:
Unit Price:
Transfer To:
Lab Contract No:
Unit Price:

SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE/ Bottles	STATION LOCATION	SAMPLE COLLECT DATE/TIME		FOR LAB USE ONLY Sample Condition On Receipt
15SW-BH03-SO-2	Soil/ Roxane Skalski	/C	TAL Metals (21)	171 (Ice Only) (1)	15SW-BH03-SO-2	S: 11/9/2009	9:00	
15SW-BH03-SO-3	Soil/ Roxane Skalski	/C	TAL Metals (21)	172 (Ice Only) (1)	15SW-BH03-SO-3	S: 11/9/2009	9:05	

221000002931

Microbac OVD
Received: 11/13/2009 10:47
By: ERIN PORTER

Erin Porter

Shipment for Case Complete? N	**Sar**	**nature(s):**	**Cooler Temperature Upon Receipt:** / **Chain of Custody Seal Number:**
Analysis Key:	**Concentration:** L = Low, M = Low/Medium, H = High	**Type/Designate:** Composite = C, Grab = G	**Custody Seal Intact?** ___ **Shipment Iced?** ___

TAL Metals = 6010B\6020\7471A

TR Number: 6-245797214-111209-0002

PR provides preliminary results. Requests for preliminary results will increase analytical costs.
Send Copy to: Shaw Environmental, Inc., Attn: Mark Lyon,
2440 Louisiana Blvd, Ste. 300

EPA SHAW ENVIRONMENTAL, INC. -- USACE FORT WINGATE DEPOT ACTIVITY

Generic Chain of Custody

Reference Case 54316
Client No: Microbac Ohio Valley Divi
SDG No:

L

Date Shipped:	11/12/2009
Carrier Name:	FedEx
Airbill:	865927008387
Shipped to:	Microbac Laboratories, Inc. 158 Starlite Drive Marietta OH 45750 (800) 373-4071

Chain of Custody Record

	Relinquished By	(Date / Time)	Received By	(Date / Time)
1	Roxane Skalski	11/12/09 0900		
2		11/12/09 0900		
3				
4				

Sampler Signature: Roxane Skalski

For Lab Use Only

Lab Contract No:
Unit Price:
Transfer To:
Lab Contract No:
Unit Price:

SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE/ Bottles	STATION LOCATION	SAMPLE COLLECT DATE/TIME		FOR LAB USE ONLY Sample Condition On Receipt
02PJ-BH18-SO-1	Soil/ Roxane Skalski	/C	TAL Metals (21)	119 (Ice Only) (1)	02PJ-BH18-SO-1	S: 11/10/2009	12:20	
02PJ-BH18-SO-2	Soil/ Roxane Skalski	/C	TAL Metals (21)	120 (Ice Only) (1)	02PJ-BH18-SO-2	S: 11/10/2009	12:25	
02PJ-BH27-SO-1	Soil/ Roxane Skalski	/C	TAL Metals (21)	128 (Ice Only) (1)	02PJ-BH27-SO-1	S: 11/10/2009	8:25	
02PJ-BH27-SO-2	Soil/ Roxane Skalski	/C	TAL Metals (21)	129 (Ice Only) (1)	02PJ-BH27-SO-2	S: 11/10/2009	8:30	
02PJ-BH28-SO-1	Soil/ Roxane Skalski	/C	TAL Metals (21)	131 (Ice Only) (1)	02PJ-BH28-SO-1	S: 11/10/2009	9:00	
02PJ-BH28-SO-2	Soil/ Roxane Skalski	/C	TAL Metals (21)	132 (Ice Only) (1)	02PJ-BH28-SO-2	S: 11/10/2009	9:05	
17DS-BH09-SO-1	Soil/ Roxane Skalski	/C	TAL Metals (21)	188 (Ice Only) (1)	17DS-BH09-SO-1	S: 11/11/2009	11:55	
17DS-BH09-SO-2	Soil/ Roxane Skalski	/C	TAL Metals (21)	189 (Ice Only) (1)	17DS-BH09-SO-2	S: 11/11/2009	12:00	
17DS-BH11-SO-1	Soil/ Roxane Skalski	/C	TAL Metals (21)	194 (Ice Only) (1)	17DS-BH11-SO-1	S: 11/11/2009	12:30	
17DS-BH11-SO-2	Soil/ Roxane Skalski	/C	TAL Metals (21)	195 (Ice Only) (1)	17DS-BH11-SO-2	S: 11/11/2009	12:35	

Microbac OVD 221000002968
Received: 11/13/2009 10:47
By: ERIN PORTER
Erin Porter

Shipment for Case Complete?N	Sample(s) to be u	Cooler Temperature Upon Receipt:	Chain of Custody Seal Number:
Analysis Key:	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G	Custody Seal Intact? ___ Shipment Iced? ___

TAL Metals = 6010B\6020\7471A

TR Number: 6-245797214-111209-0001

PR provides preliminary results. Requests for preliminary results will increase analytical costs.
Send Copy to: Shaw Environmental, Inc., Attn: Mark Lyon,
2440 Louisiana Blvd, Ste. 300

EPA

SHAW ENVIRONMENTAL, INC. -- USACE FORT WINGATE DEPOT ACTIVITY

Generic Chain of Custody

Reference Case 54316
Client No: Microbac Ohio Valley Divi
SDG No:

L

Date Shipped:	11/12/2009
Carrier Name:	FedEx
Airbill:	865927008387
Shipped to:	Microbac Laboratories, Inc. 158 Starlite Drive Marietta OH 45750 (800) 373-4071

Chain of Custody Record

Relinquished By	(Date / Time)	Received By	(Date / Time)
1 Roxane Skalski	11/12/09 0900		
2 Patrick M. Daly	11/12/09 0900		
3			
4			

Sampler Signature: Roxane Skalski

For Lab Use Only

Lab Contract No:
Unit Price:
Transfer To:
Lab Contract No:
Unit Price:

SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE/ Bottles	STATION LOCATION	SAMPLE COLLECT DATE/TIME		FOR LAB USE ONLY Sample Condition On Receipt
19DS-BH12-SO-1	Soil/ Roxane Skalski	/C	TAL Metals (21)	205 (Ice Only) (1)	19DS-BH12-SO-1	S: 11/11/2009	9:35	
19DS-BH12-SO-2	Soil/ Roxane Skalski	/C	TAL Metals (21)	206 (Ice Only) (1)	19DS-BH12-SO-2	S: 11/11/2009	9:40	
19DS-BH12-SO-3	Soil/ Roxane Skalski	/C	TAL Metals (21)	207 (Ice Only) (1)	19DS-BH12-SO-3	S: 11/11/2009	9:45	
19DS-BH13-SO-1	Soil/ Roxane Skalski	/C	TAL Metals (21)	208 (Ice Only) (1)	19DS-BH13-SO-1	S: 11/11/2009	8:45	
19DS-BH13-SO-2	Soil/ Roxane Skalski	/C	TAL Metals (21)	209 (Ice Only) (1)	19DS-BH13-SO-2	S: 11/11/2009	8:50	
19DS-BH13-SO-3	Soil/ Roxane Skalski	/C	TAL Metals (21)	210 (Ice Only) (1)	19DS-BH13-SO-3	S: 11/11/2009	8:55	
19DS-BH14-SO-1	Soil/ Roxane Skalski	/C	TAL Metals (21)	211 (Ice Only) (1)	19DS-BH14-SO-1	S: 11/11/2009	8:05	
19DS-BH14-SO-2	Soil/ Roxane Skalski	/C	TAL Metals (21)	212 (Ice Only) (1)	19DS-BH14-SO-2	S: 11/11/2009	8:10	
19DS-BH14-SO-3	Soil/ Roxane Skalski	/C	TAL Metals (21)	213 (Ice Only) (1)	19DS-BH14-SO-3	S: 11/11/2009	8:15	
20PJ-BH15-SO-1	Soil/ Roxane Skalski	/C	TAL Metals (21)	214 (Ice Only) (1)	20PJ-BH15-SO-1	S: 11/10/2009	10:40	

Microbac OVD
Received: 11/13/2009 10:47
By: ERIN PORTER
221000002968

Shipment for Case Complete?N	Sample(s) to be used		Cooler Temperature Upon Receipt:	Chain of Custody Seal Number:	
Analysis Key:	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G		Custody Seal Intact? ___	Shipment Iced? ___

TAL Metals = 6010B\6020\7471A

TR Number: 6-245797214-111209-0001

PR provides preliminary results. Requests for preliminary results will increase analytical costs.
Send Copy to: Shaw Environmental, Inc., Attn: Mark Lyon,
2440 Louisiana Blvd, Ste. 300

EPA SHAW ENVIRONMENTAL, INC. -- USACE FORT WINGATE DEPOT ACTIVITY

Generic Chain of Custody

Reference Case 54316
Client No: Microbac Ohio Valley Divi
SDG No:

L

Date Shipped:	11/12/2009
Carrier Name:	FedEx
Airbill:	865927008387
Shipped to:	Microbac Laboratories, Inc. 158 Starlite Drive Marietta OH 45750 (800) 373-4071

Chain of Custody Record

Sampler Signature: Roxane Skalski

Relinquished By	(Date / Time)	Received By	(Date / Time)
1 Roxane Skalski	11/12/09 0900		
2 [illegible]	11/12/09 0900		
3			
4			

For Lab Use Only

Lab Contract No:
Unit Price:
Transfer To:
Lab Contract No:
Unit Price:

SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE/ Bottles	STATION LOCATION	SAMPLE COLLECT DATE/TIME		FOR LAB USE ONLY Sample Condition On Receipt
20PJ-BH15-SO-2	Soil/ Roxane Skalski	/C	TAL Metals (21)	215 (Ice Only) (1)	20PJ-BH15-SO-2	S: 11/10/2009	10:45	
20PJ-BH16-SO-1	Soil/ Roxane Skalski	/C	TAL Metals (21)	217 (Ice Only) (1)	20PJ-BH16-SO-1	S: 11/10/2009	11:15	
20PJ-BH17-SO-1	Soil/ Roxane Skalski	/C	TAL Metals (21)	220 (Ice Only) (1)	20PJ-BH17-SO-1	S: 11/10/2009	11:45	
20PJ-BH17-SO-2	Soil/ Roxane Skalski	/C	TAL Metals (21)	221 (Ice Only) (1)	20PJ-BH17-SO-2	S: 11/10/2009	11:50	
20PJ-BH17-SO-3	Soil/ Roxane Skalski	/C	TAL Metals (21)	222 (Ice Only) (1)	20PJ-BH17-SO-3	S: 11/10/2009	11:55	
FDUP-~~06~~ 08	Soil/ Roxane Skalski	/C	TAL Metals (21)	229 (Ice Only) (1)	FDUP-06	S: ~~11/9/2009~~ 11/10/2009	~~10:15~~ 12:25	Changed per M. Cyon Sm 11/19/09
FDUP-07	Soil/ Roxane Skalski	/C	TAL Metals (21)	230 (Ice Only) (1)	FDUP-07	S: 11/10/2009	12:20	

Shipment for Case Complete? N	Sample(s) to be used for laboratory QC:	Additional Sampler Signature(s):	Cooler Temperature Upon Receipt:	Chain of Custody Seal Number:	
Analysis Key:	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G		Custody Seal Intact? ___	Shipment Iced? ___

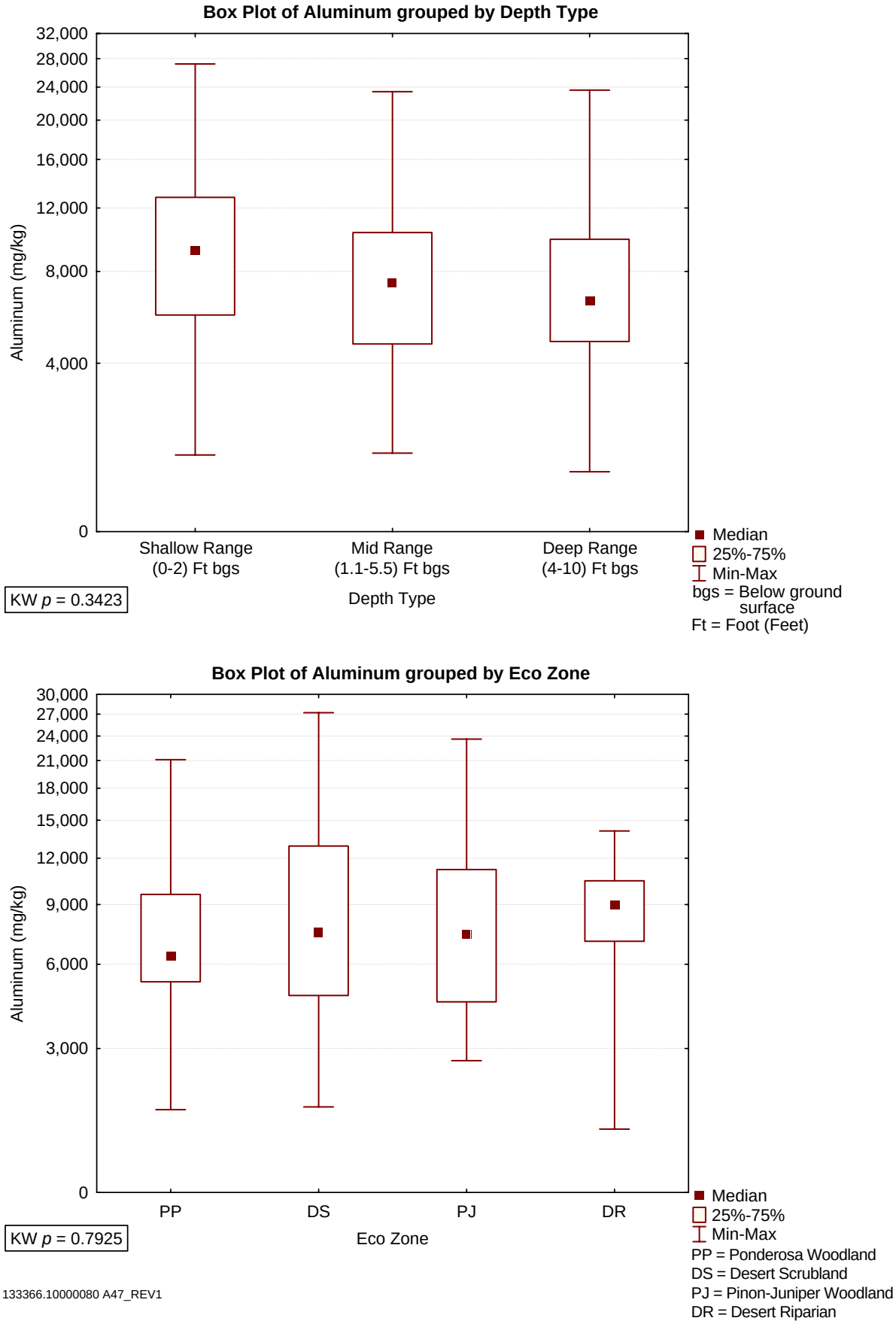
TAL Metals = 6010B\6020\7471A

TR Number: 6-245797214-111209-0001

PR provides preliminary results. Requests for preliminary results will increase analytical costs.
Send Copy to: Shaw Environmental, Inc., Attn: Mark Lyon,
2440 Louisiana Blvd, Ste. 300

Appendix B4
Soil Boring and Sampling Activity Photos
(See "Appendices" folder on this compact disc)

Appendix C
Data Evaluation Results—Box Plots



133366.10000080 A47_REV1

Figure C1-1
Box Plot of Aluminum grouped by Depth Type and Eco Zone

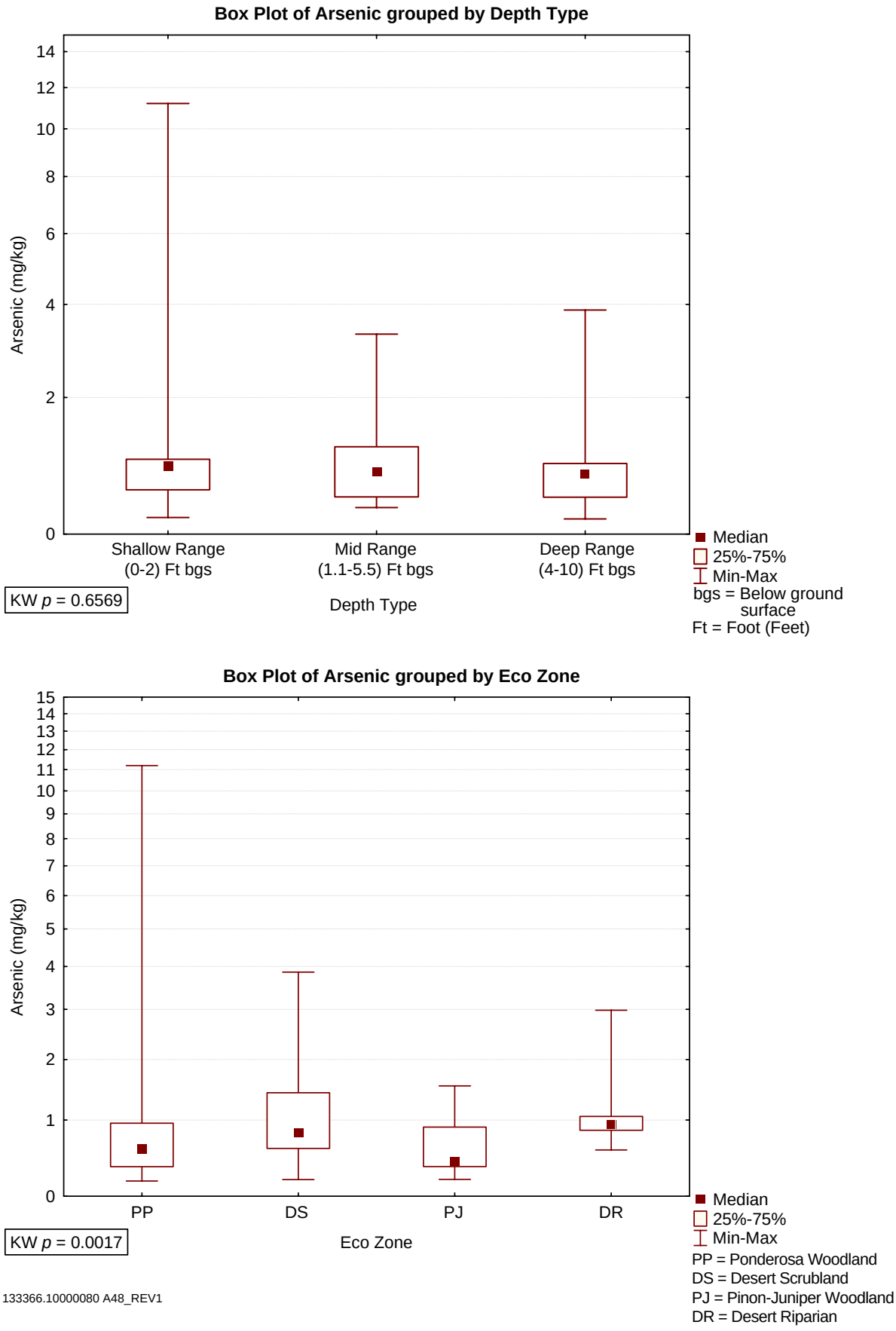


Figure C1-2
Box Plot of Arsenic grouped by Depth Type and Eco Zone

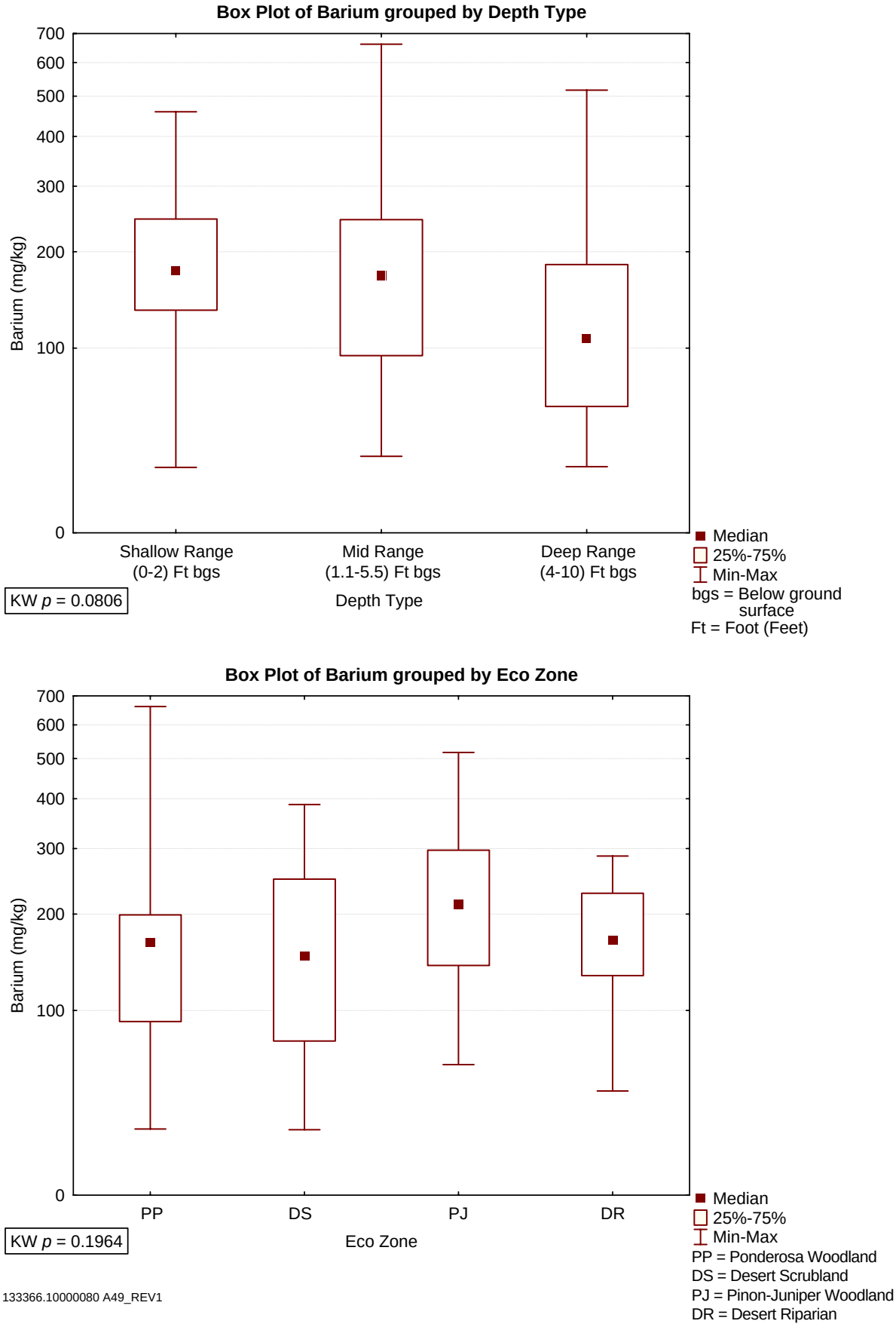
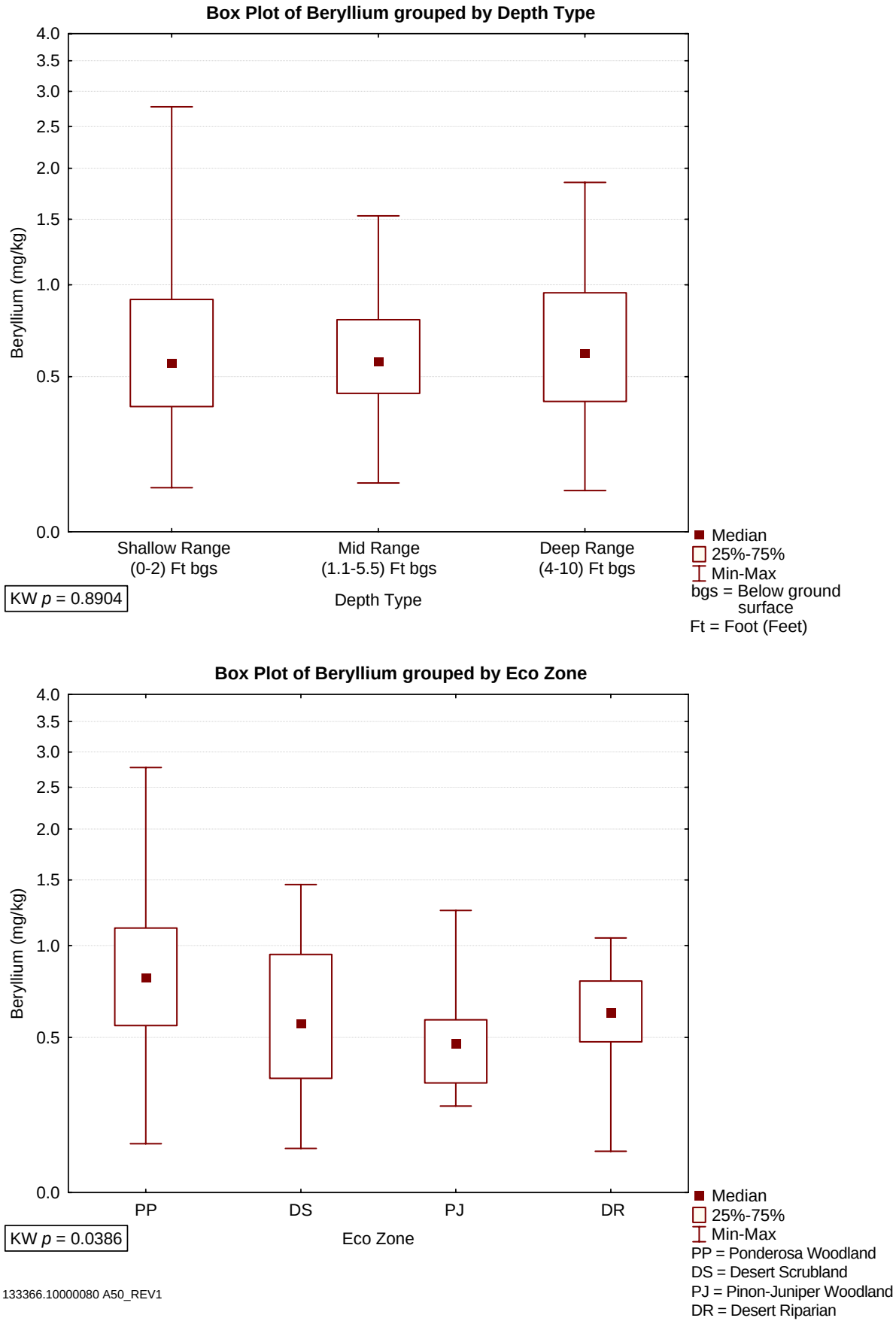


Figure C1-3
Box Plot of Barium grouped by Depth Type and Eco Zone



133366.10000080 A50_REV1

Figure C1-4
Box Plot of Beryllium grouped by Depth Type and Eco Zone

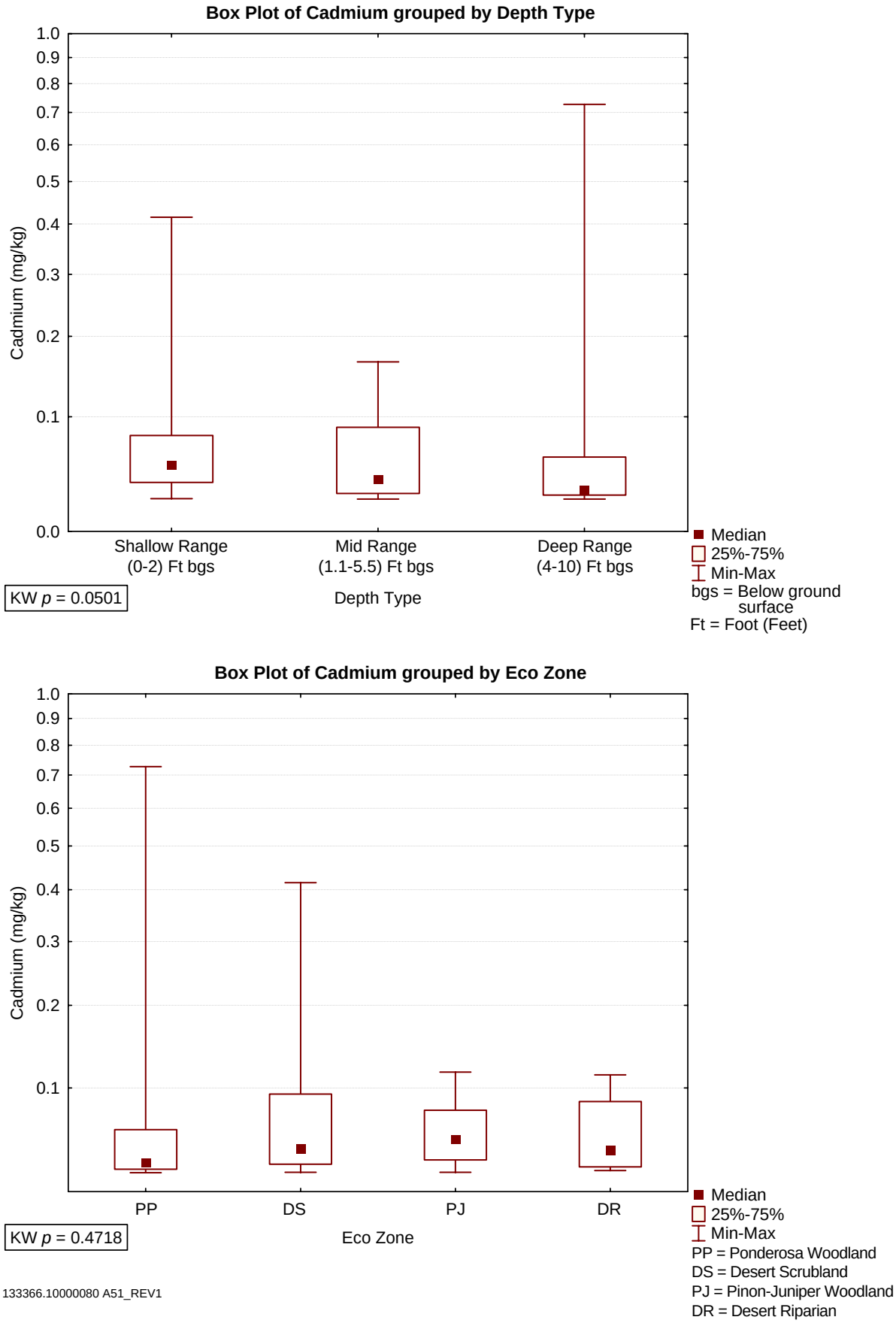


Figure C1-5
Box Plot of Cadmium grouped by Depth Type and Eco Zone

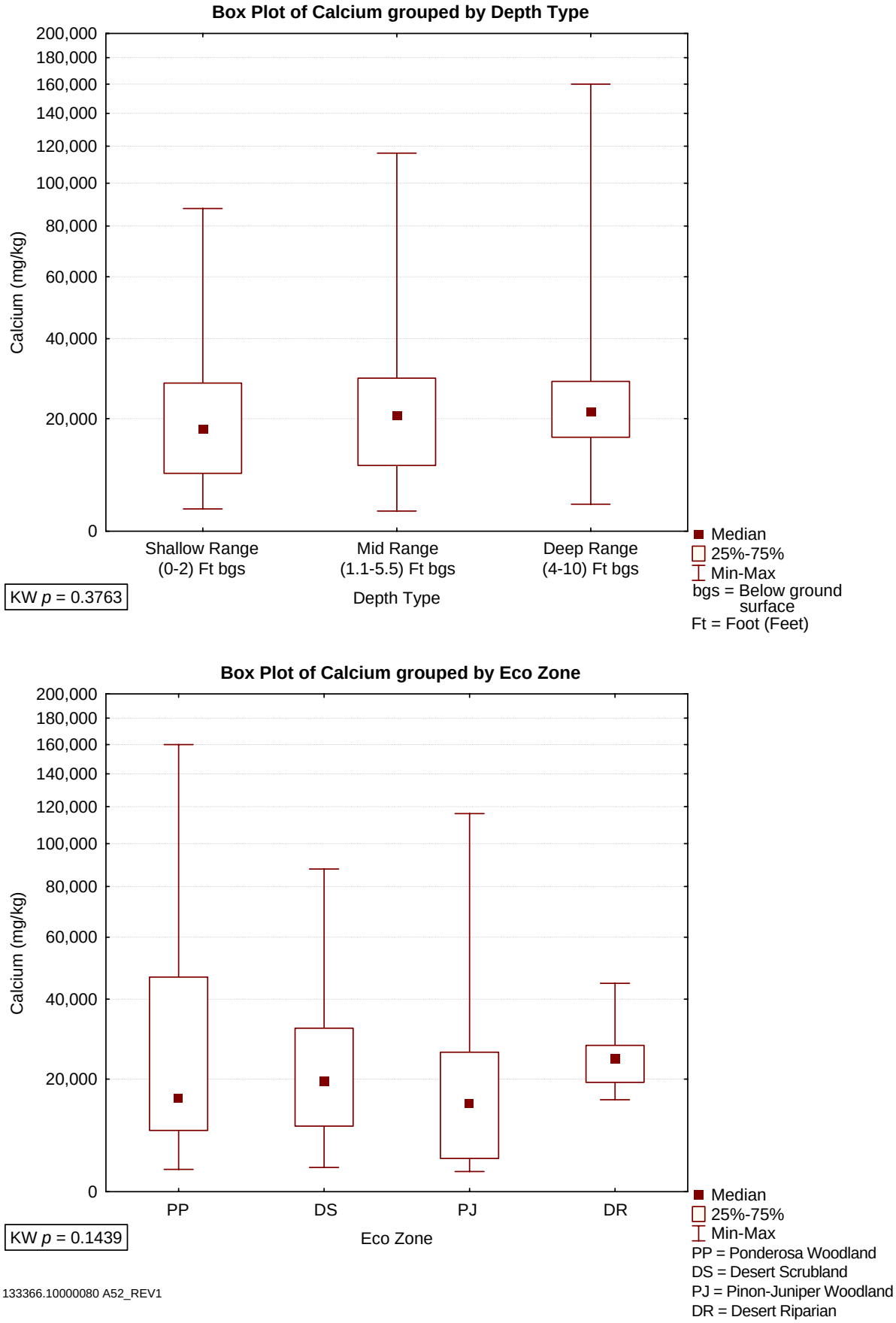


Figure C1-6
Box Plot of Calcium grouped by Depth Type and Eco Zone

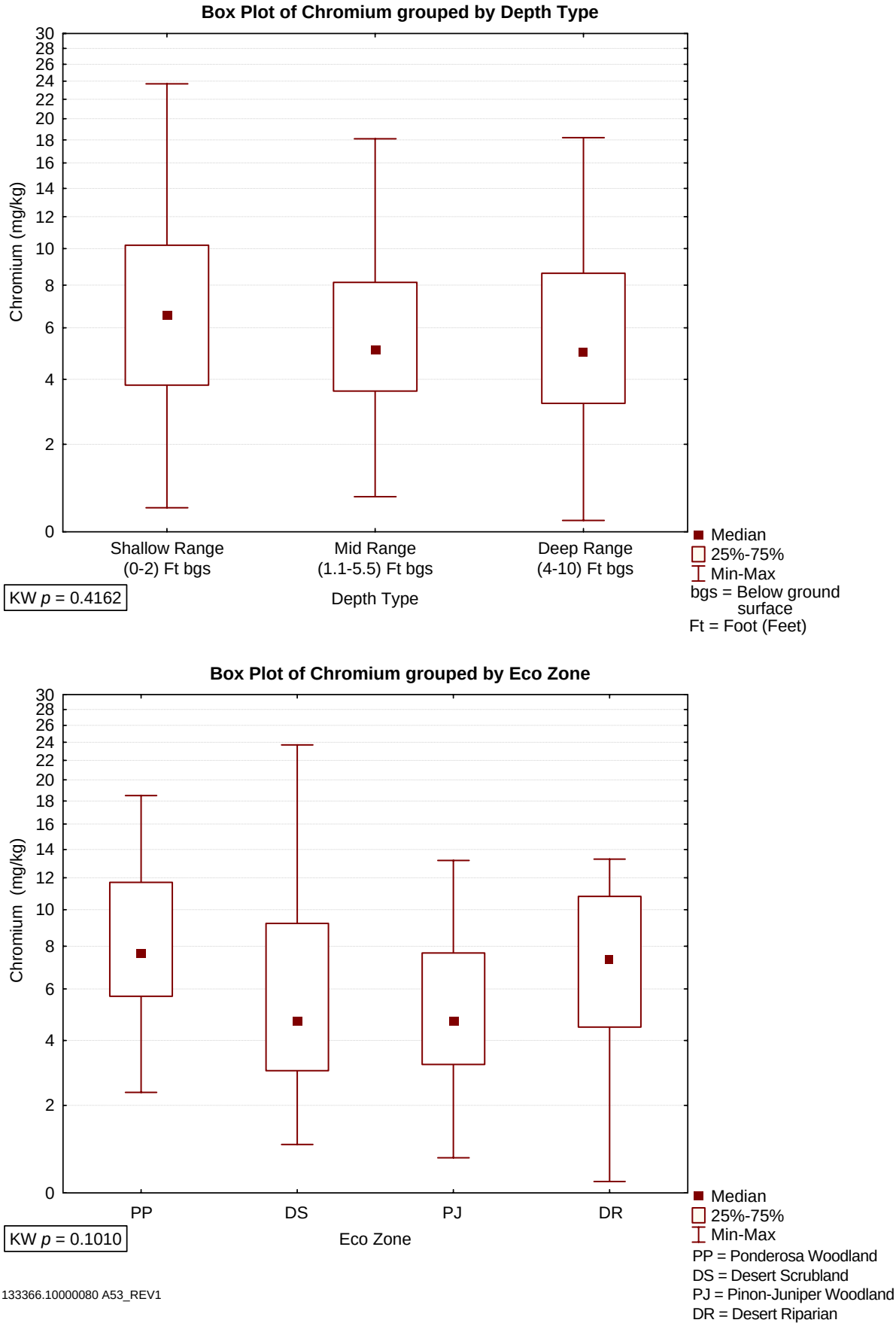


Figure C1-7
Box Plot of Chromium grouped by Depth Type and Eco Zone

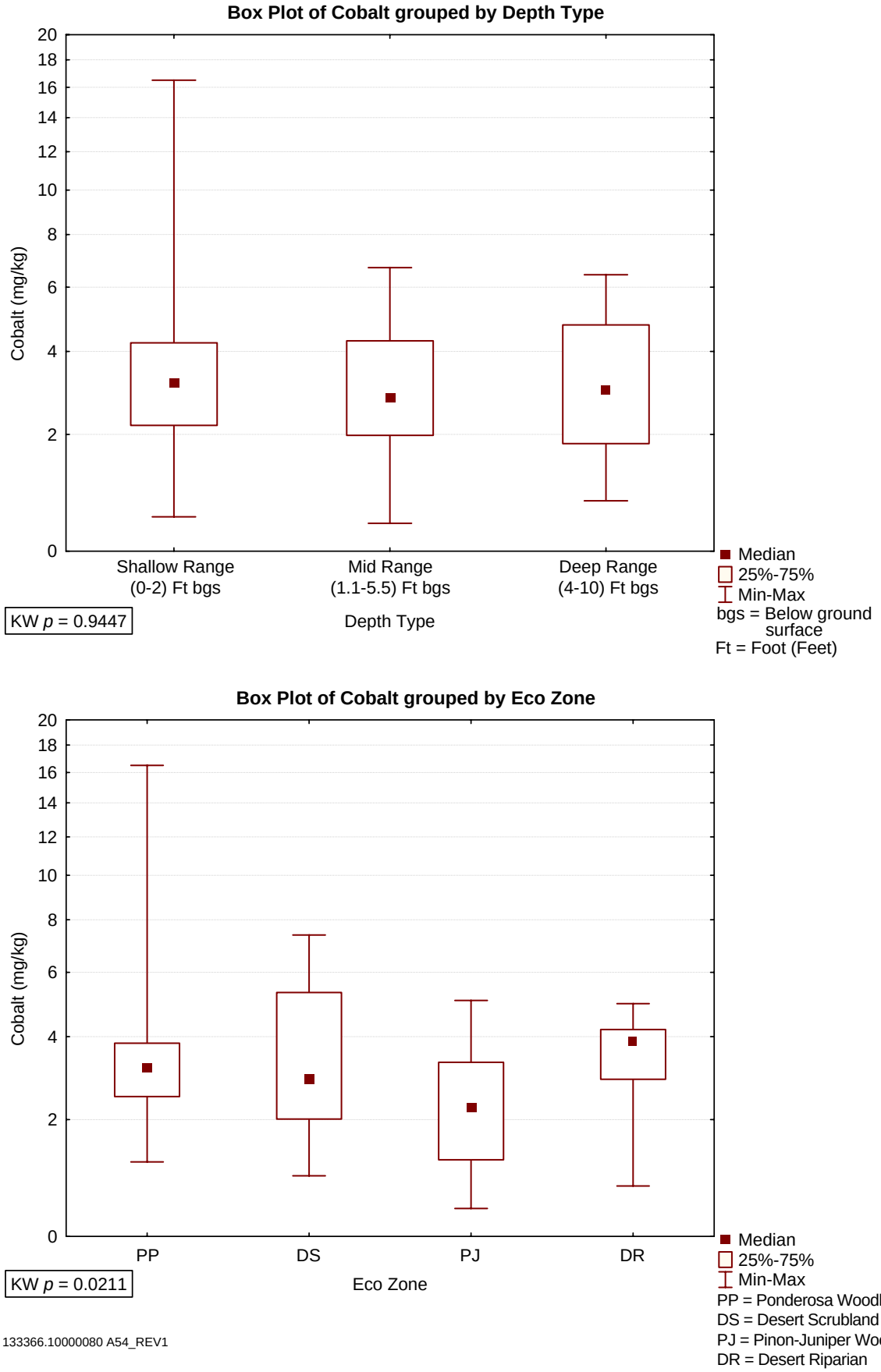
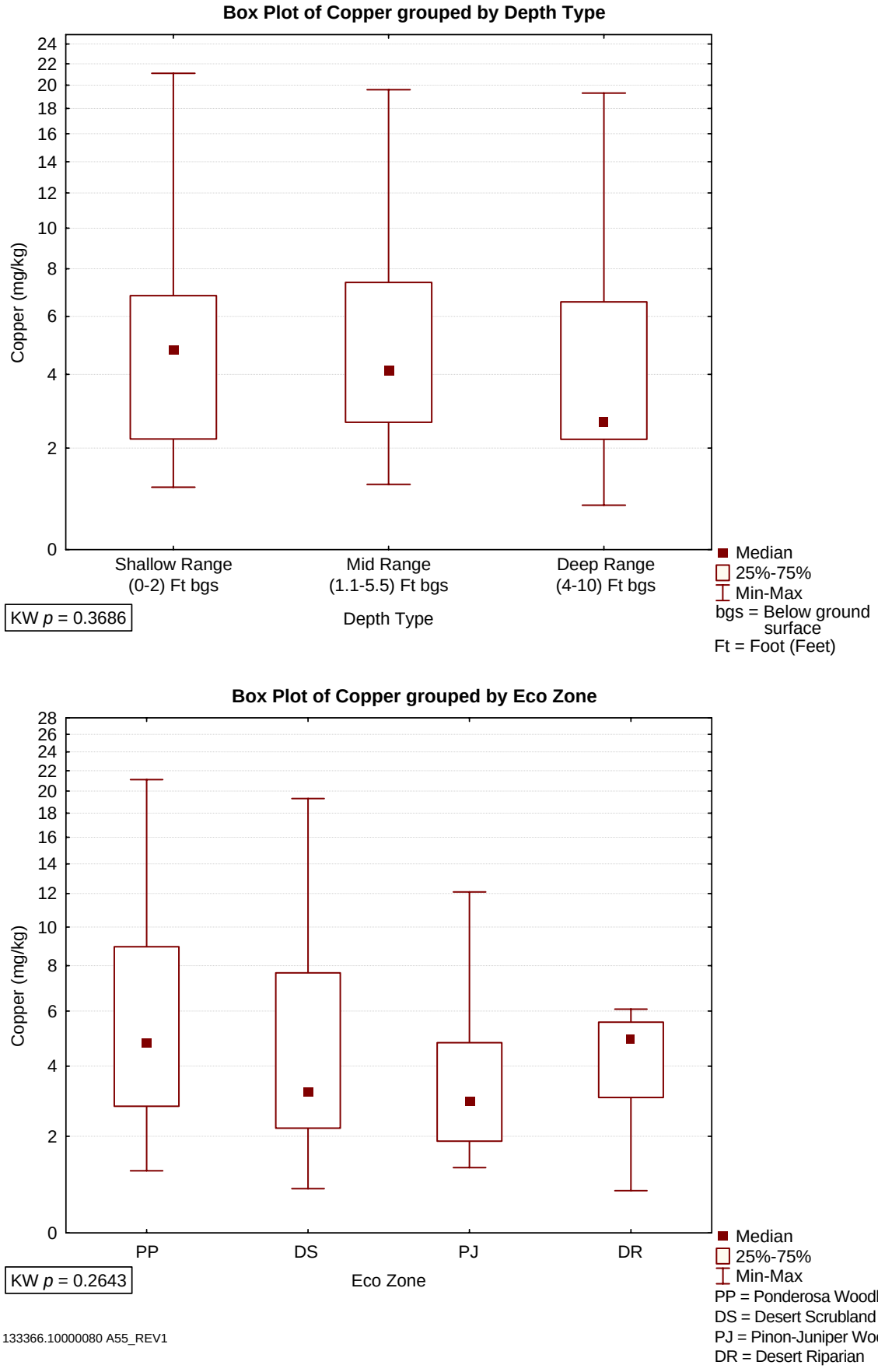


Figure C1-8
Box Plot of Cobalt grouped by Depth Type and Eco Zone



133366.10000080 A55_REV1

Figure C1-9
Box Plot of Copper grouped by Depth Type and Eco Zone

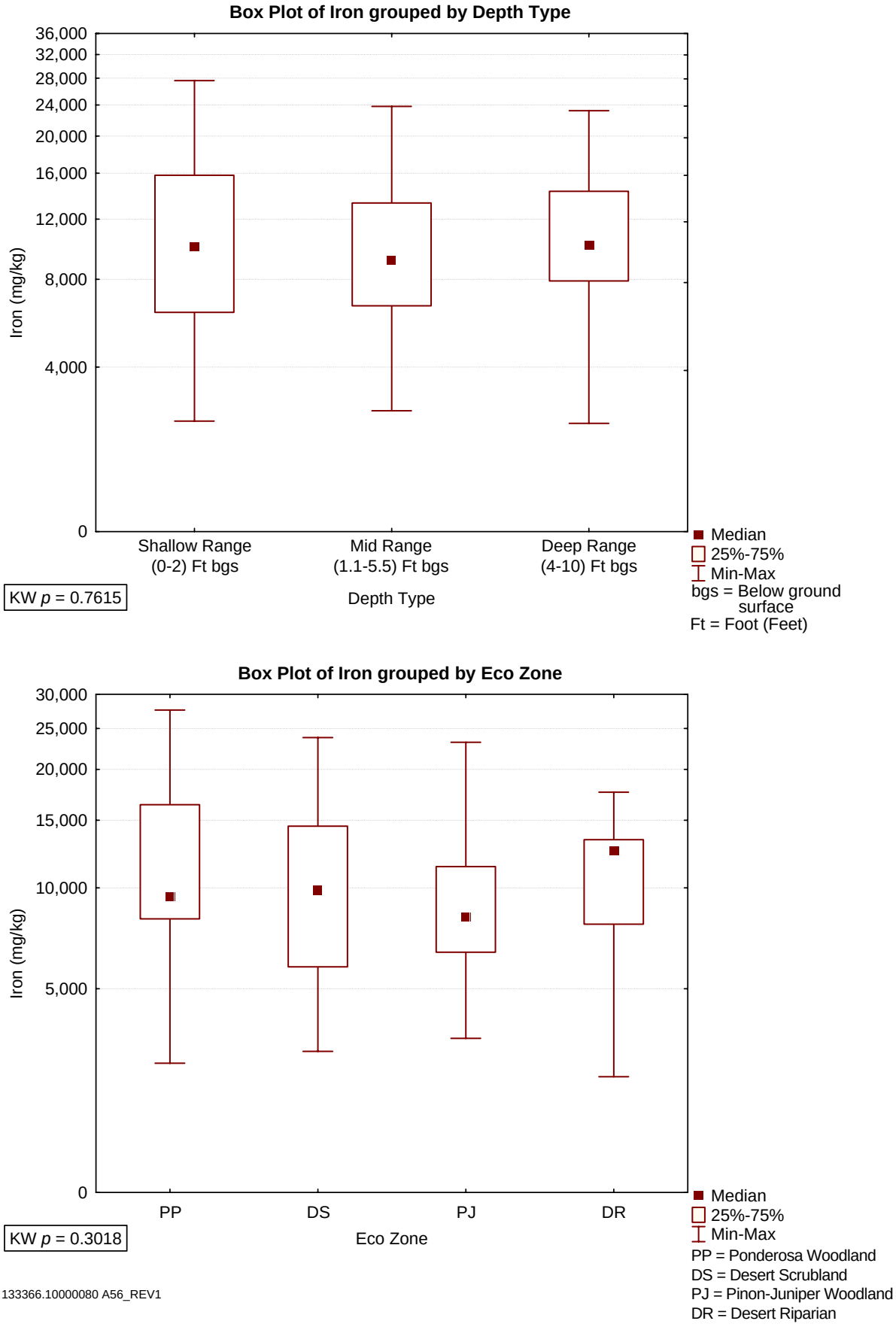


Figure C1-10
Box Plot of Iron grouped by Depth Type and Eco Zone

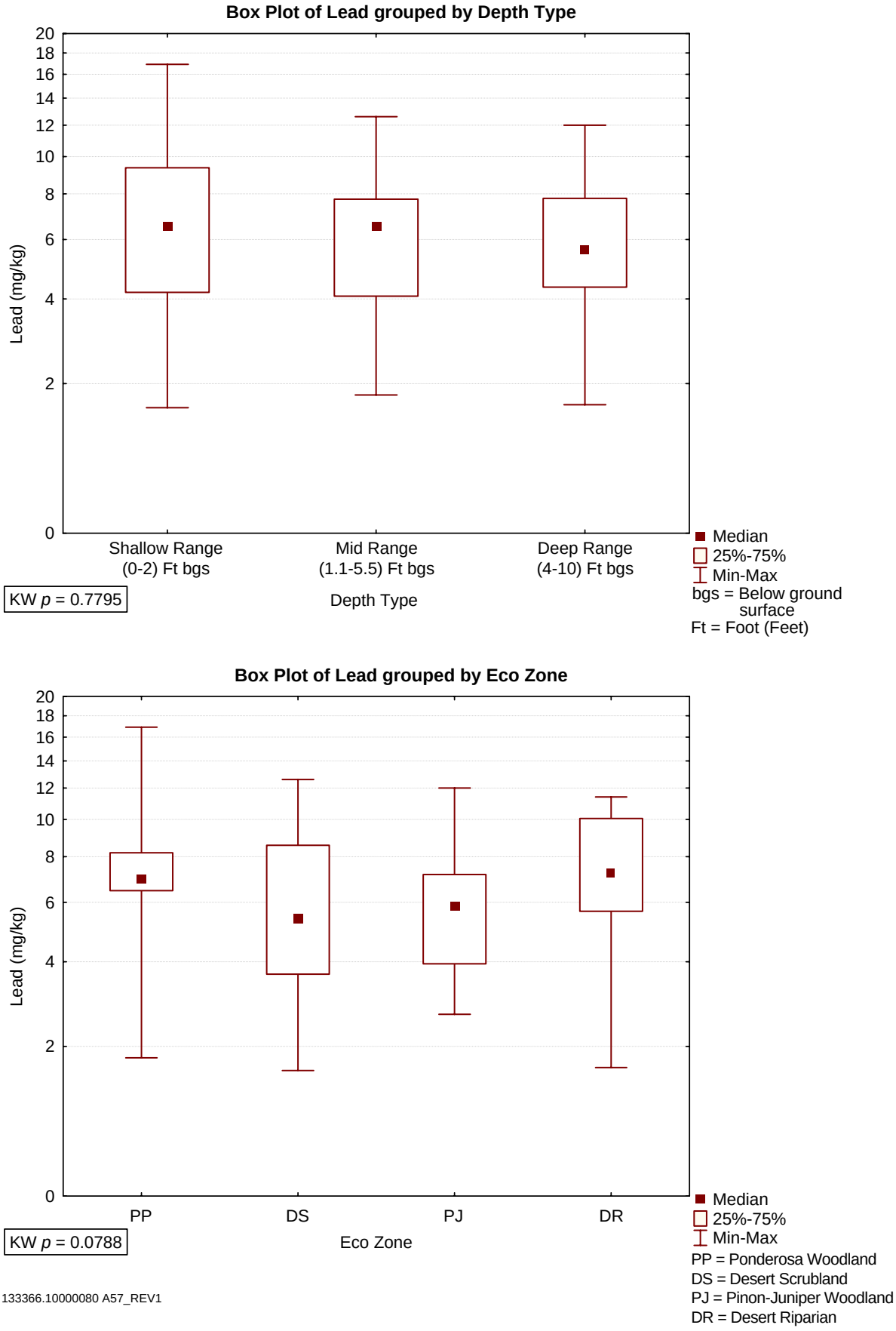


Figure C1-11
Box Plot of Lead grouped by Depth Type and Eco Zone

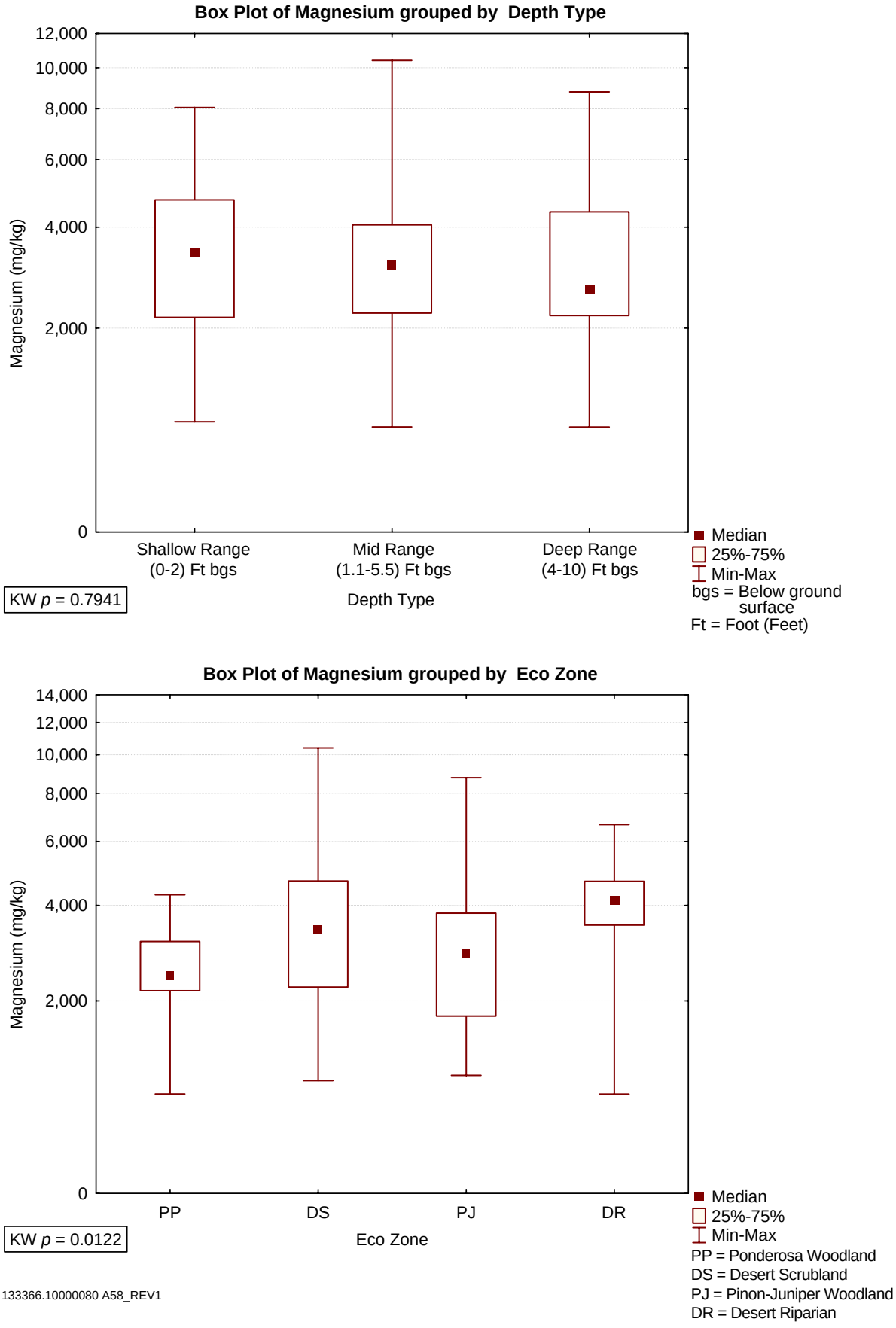


Figure C1-12
Box Plot of Magnesium grouped by Depth Type and Eco Zone

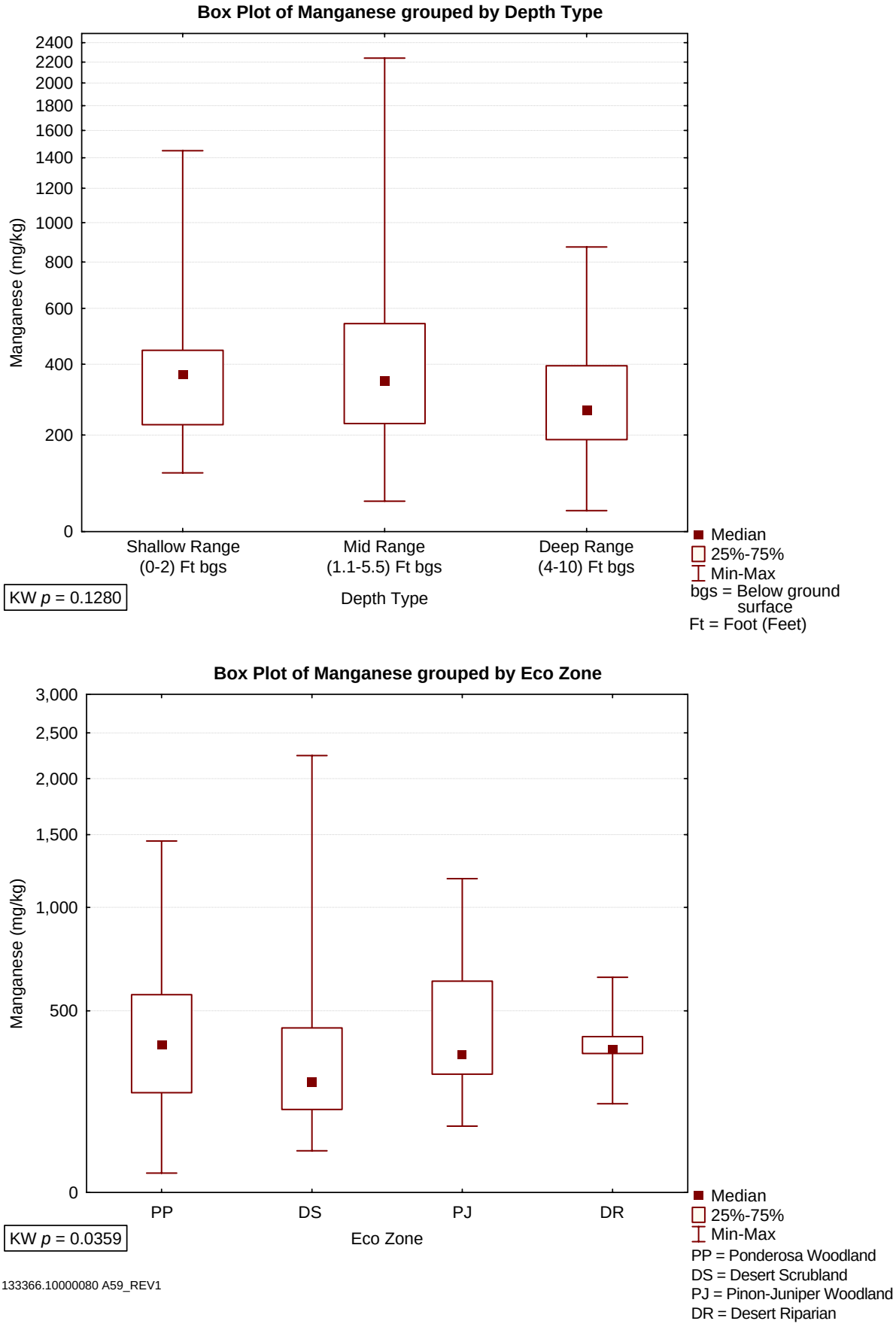


Figure C1-13
Box Plot of Manganese grouped by Depth Type and Eco Zone

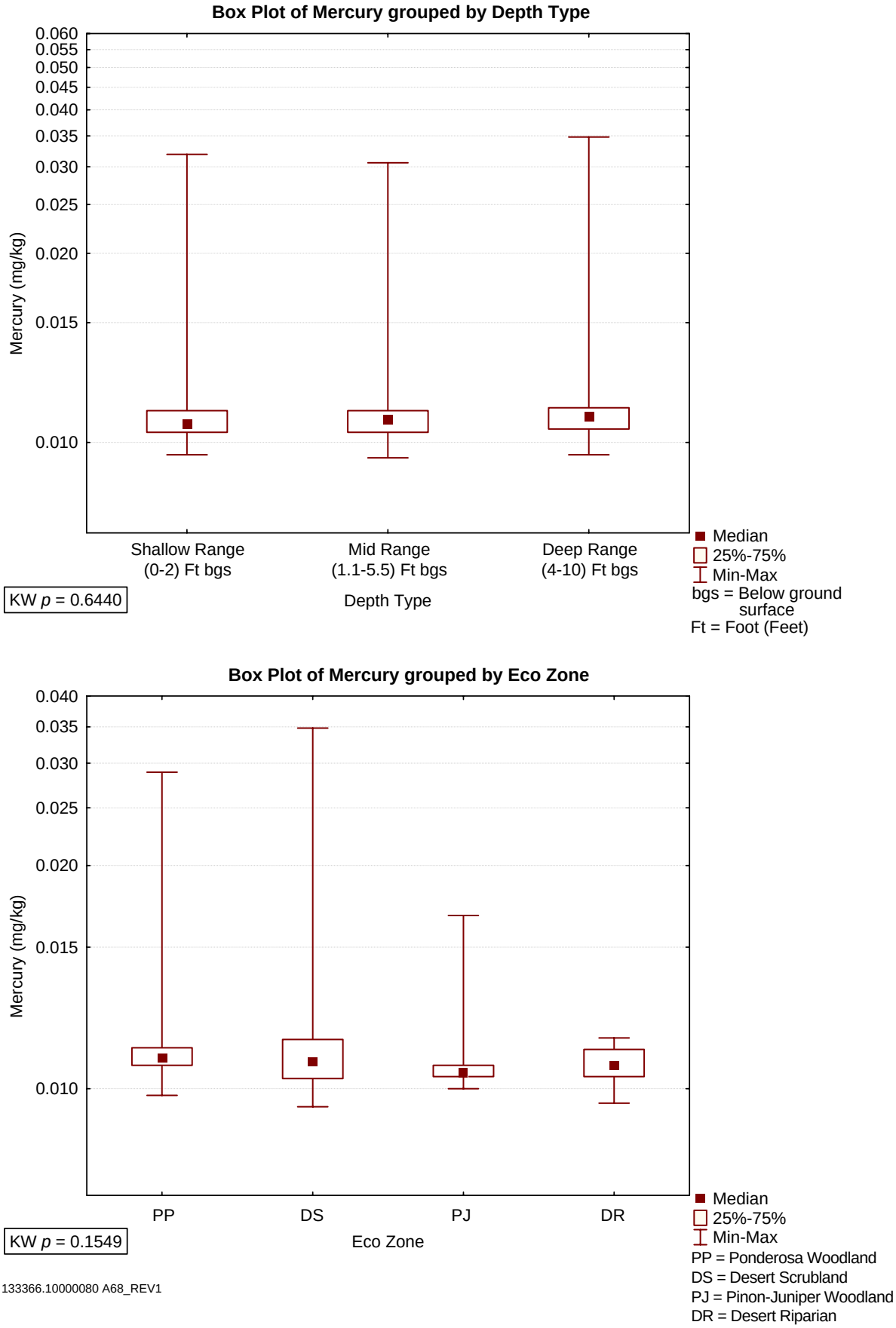


Figure C1-14
Box Plot of Mercury grouped by Depth Type and Eco Zone

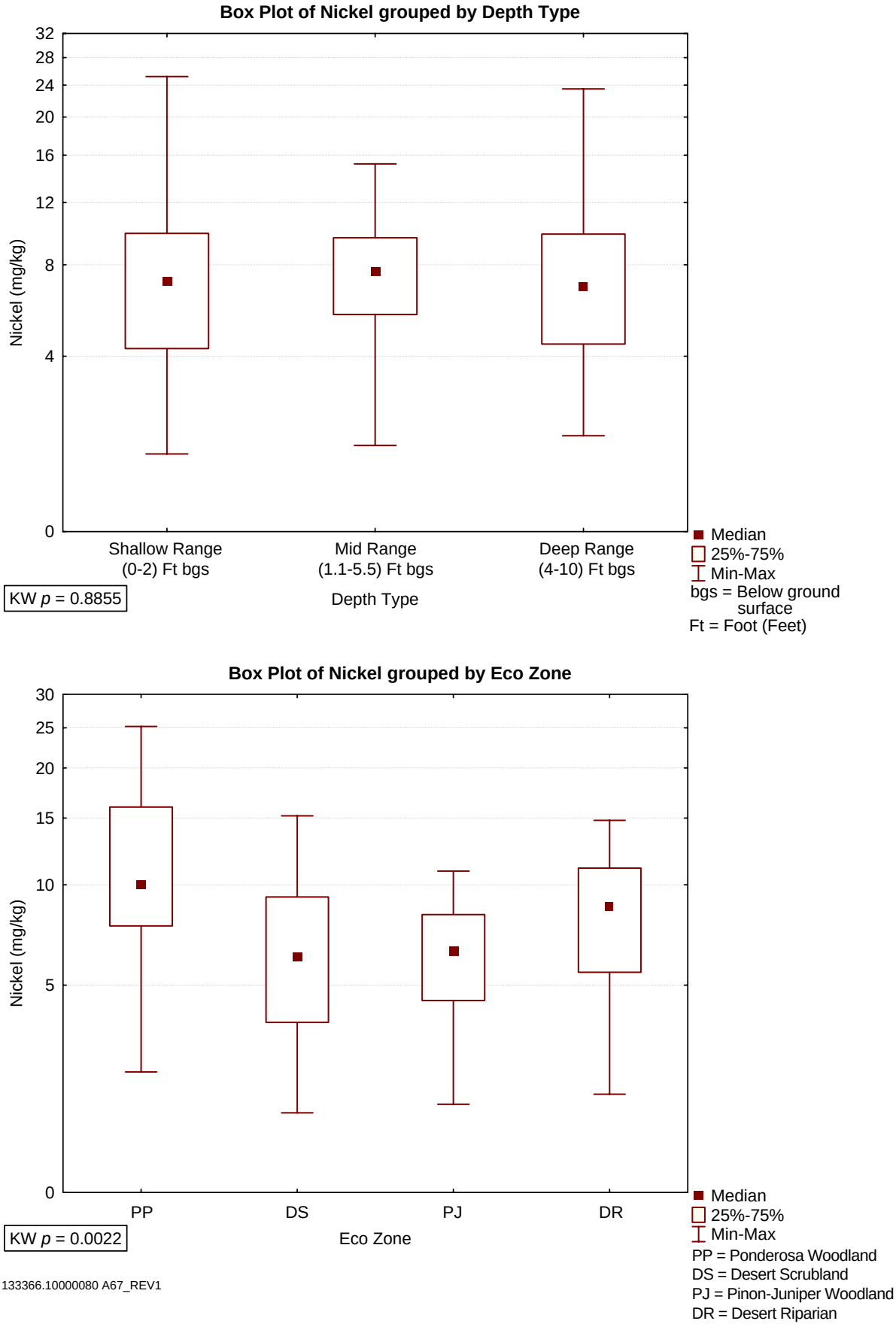
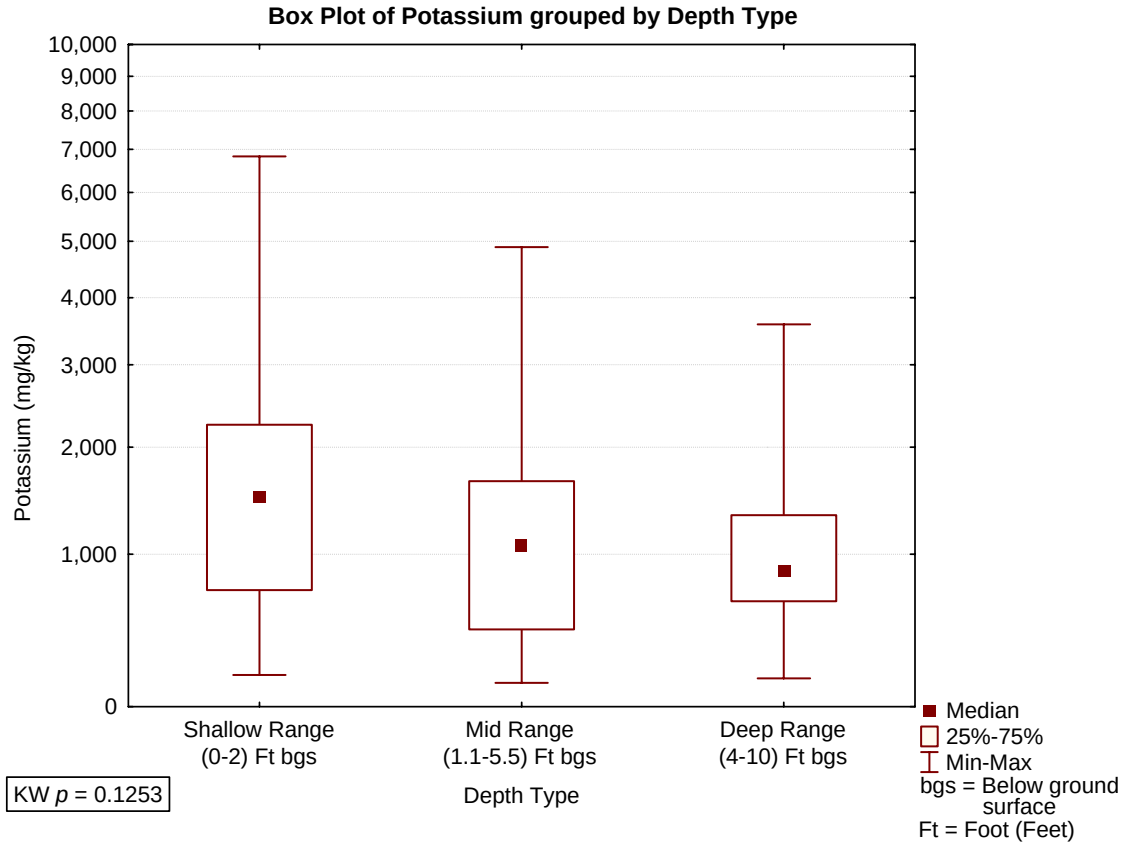
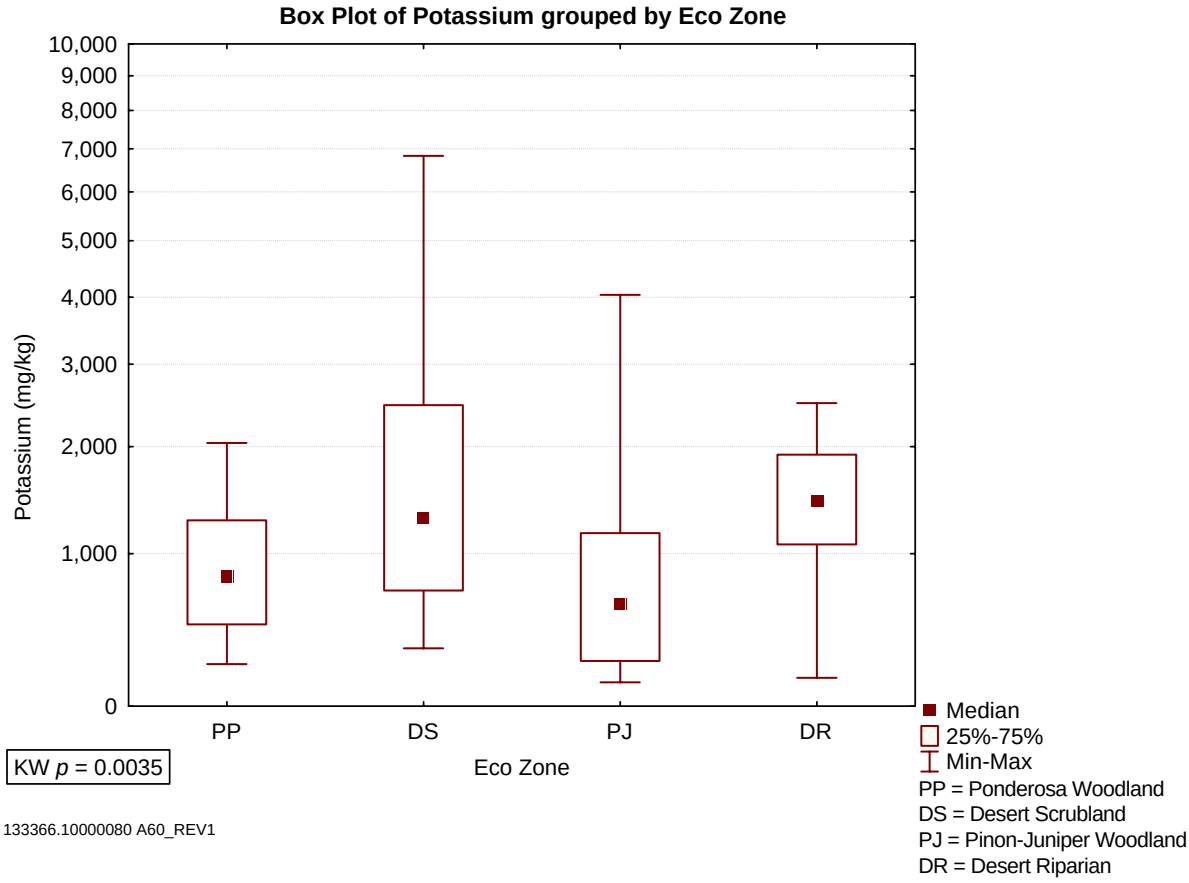


Figure C1-15
Box Plot of Nickel grouped by Depth Type and Eco Zone





133366.10000080 A60_REV1

Figure C1-16
Box Plot of Potassium grouped by Depth Type and Eco Zone

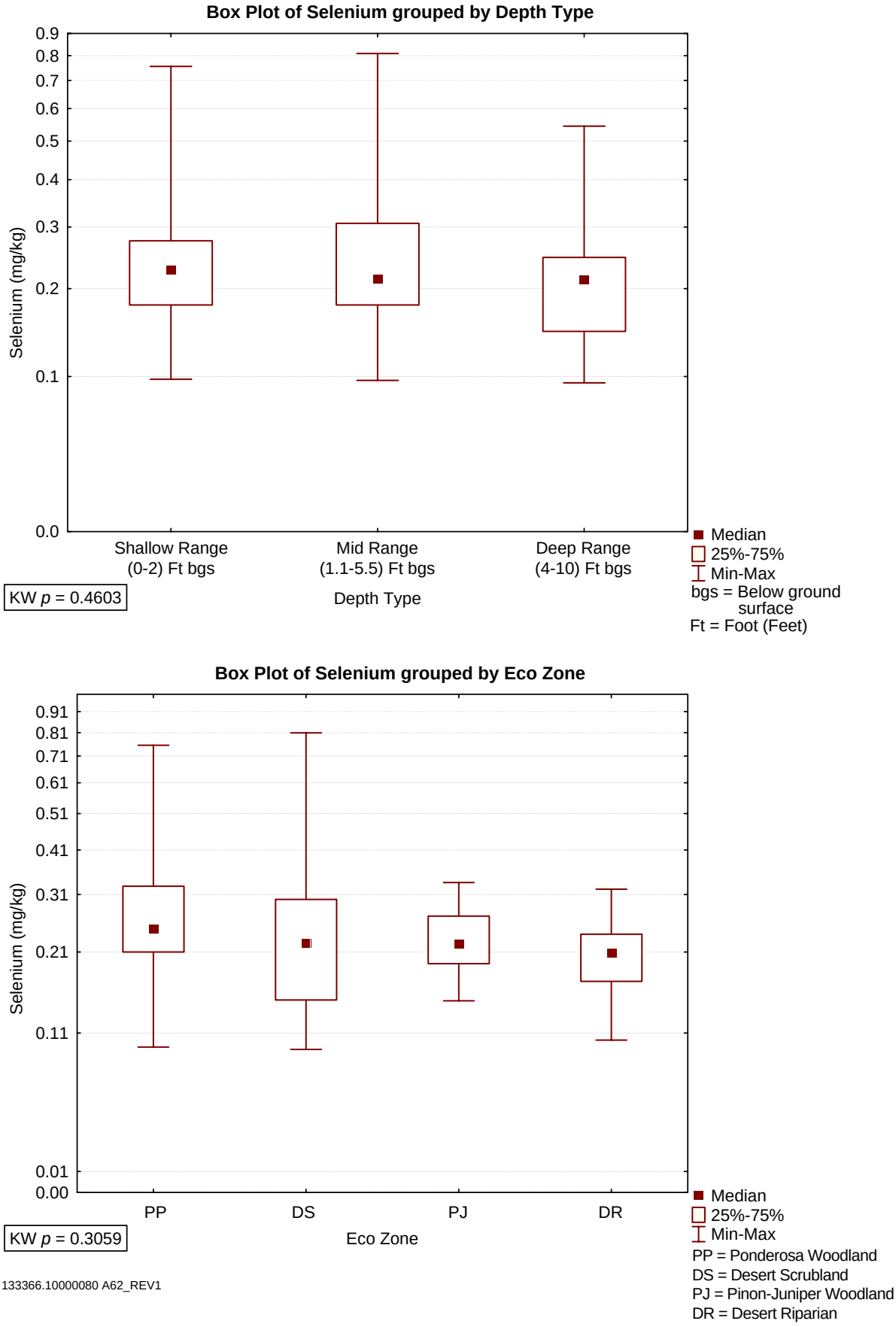
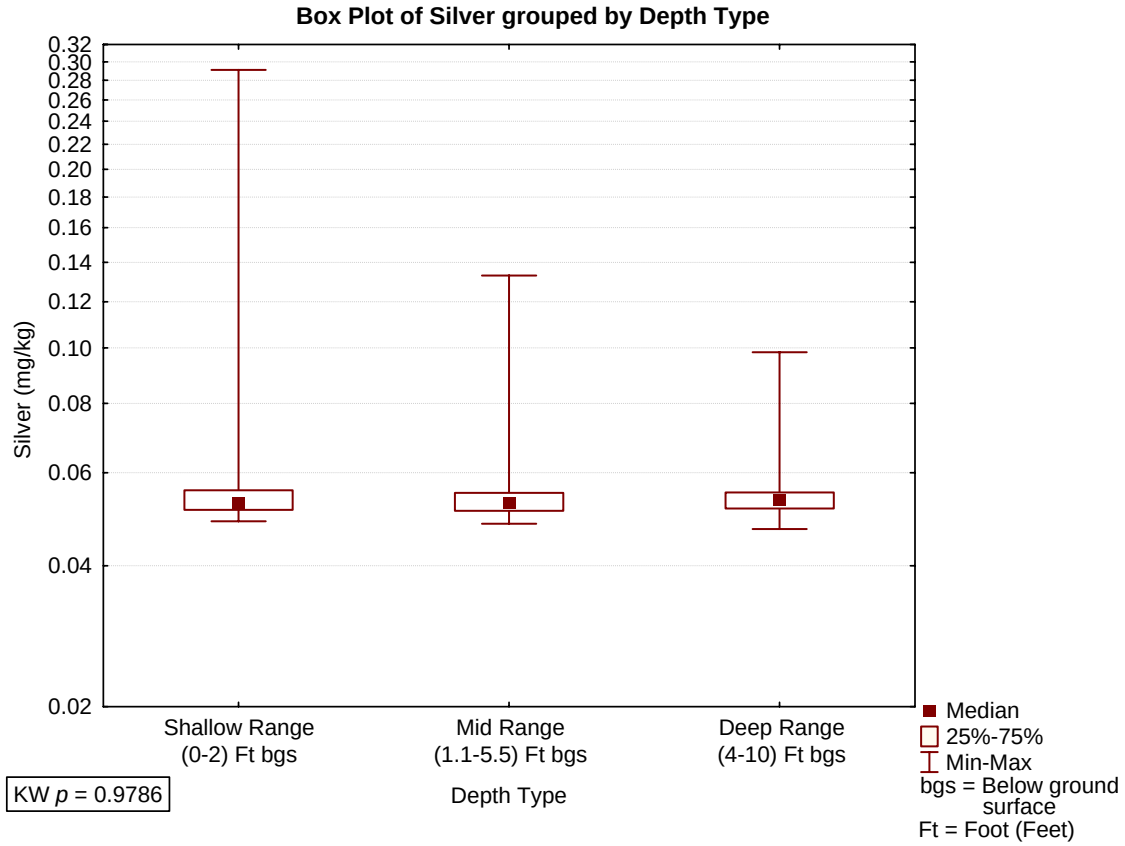
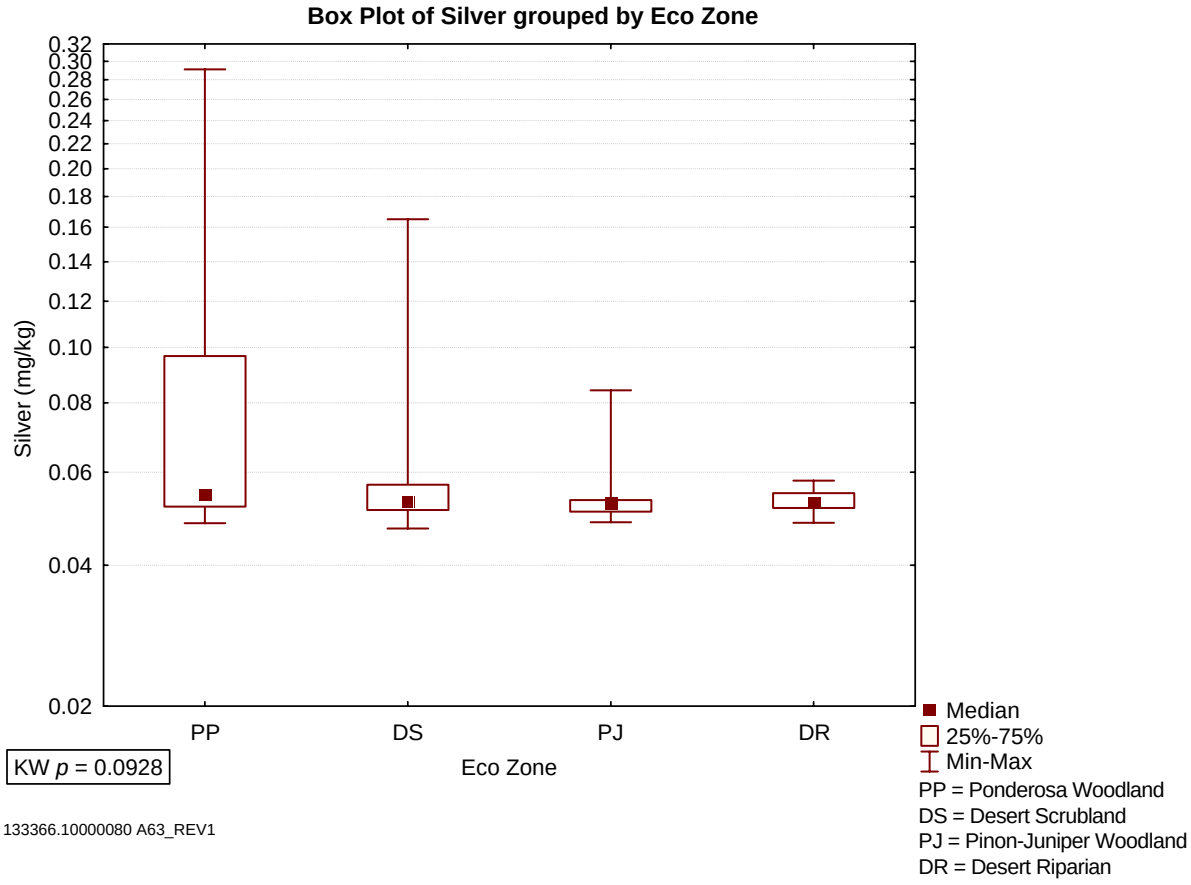


Figure C1-17
Box Plot of Selenium grouped by Depth Type and Eco Zone





133366.10000080 A63_REV1

Figure C1-18
Box Plot of Silver grouped by Depth Type and Eco Zone

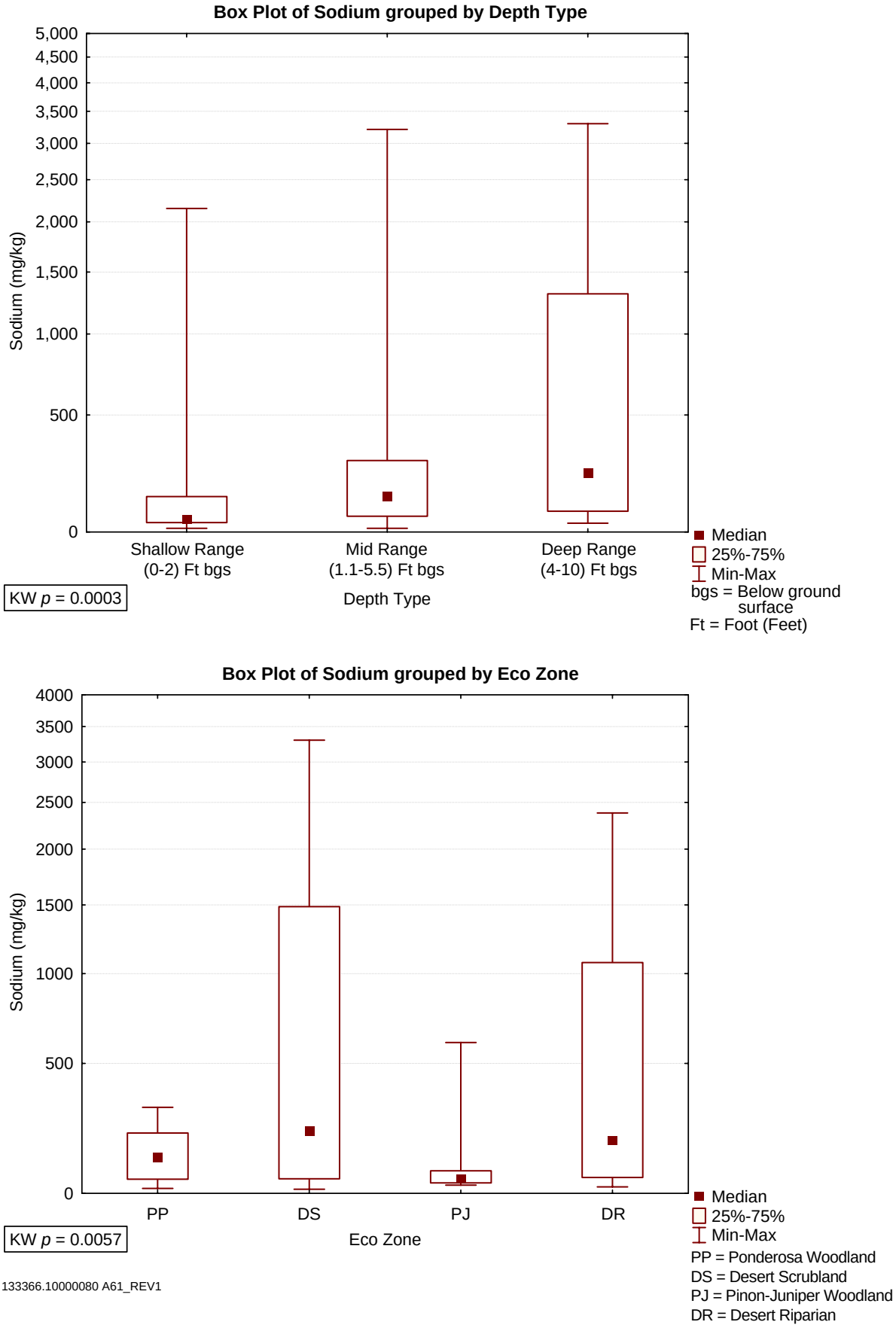


Figure C1-19
Box Plot of Sodium grouped by Depth Type and Eco Zone

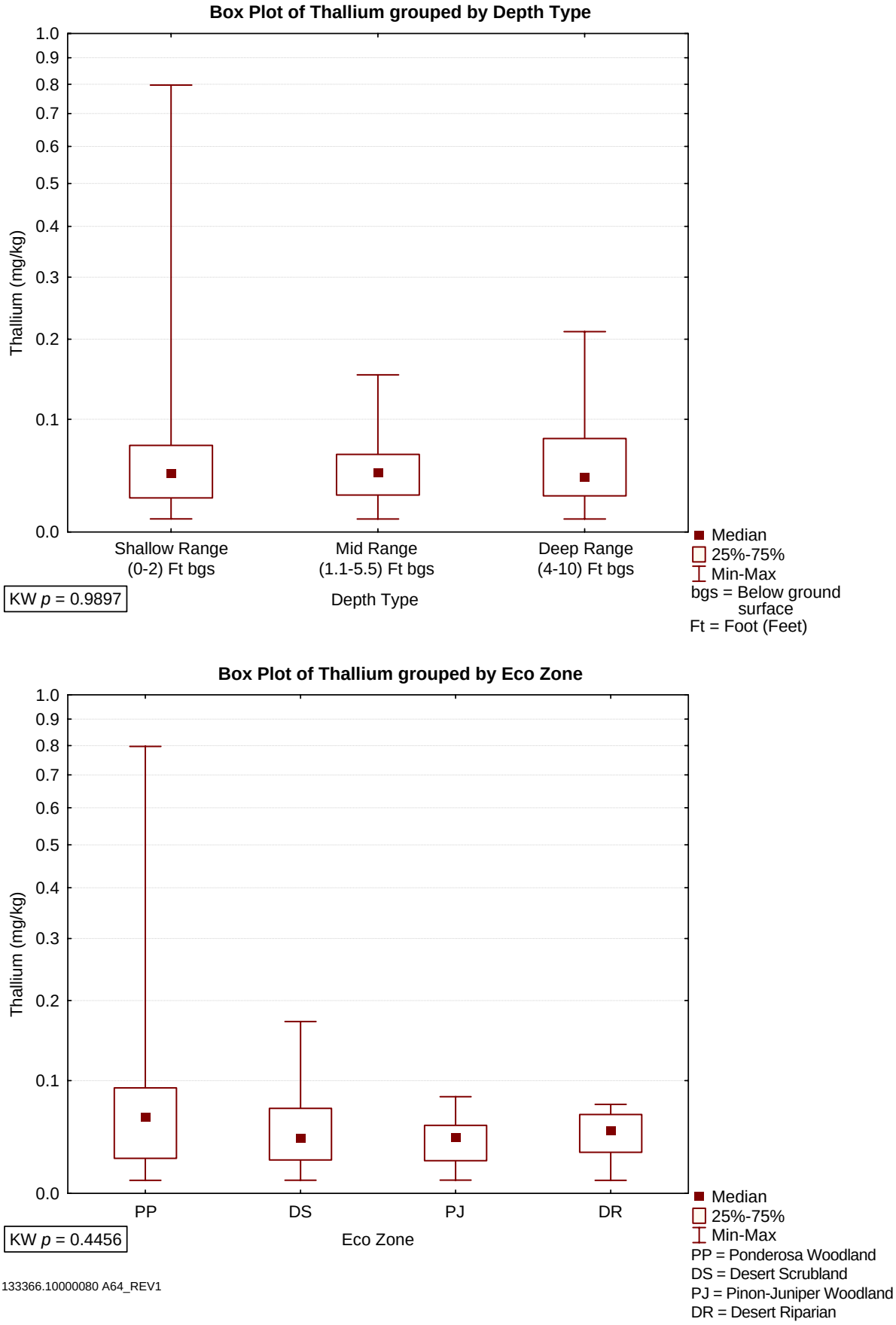


Figure C1-20
Box Plot of Thallium grouped by Depth Type and Eco Zone

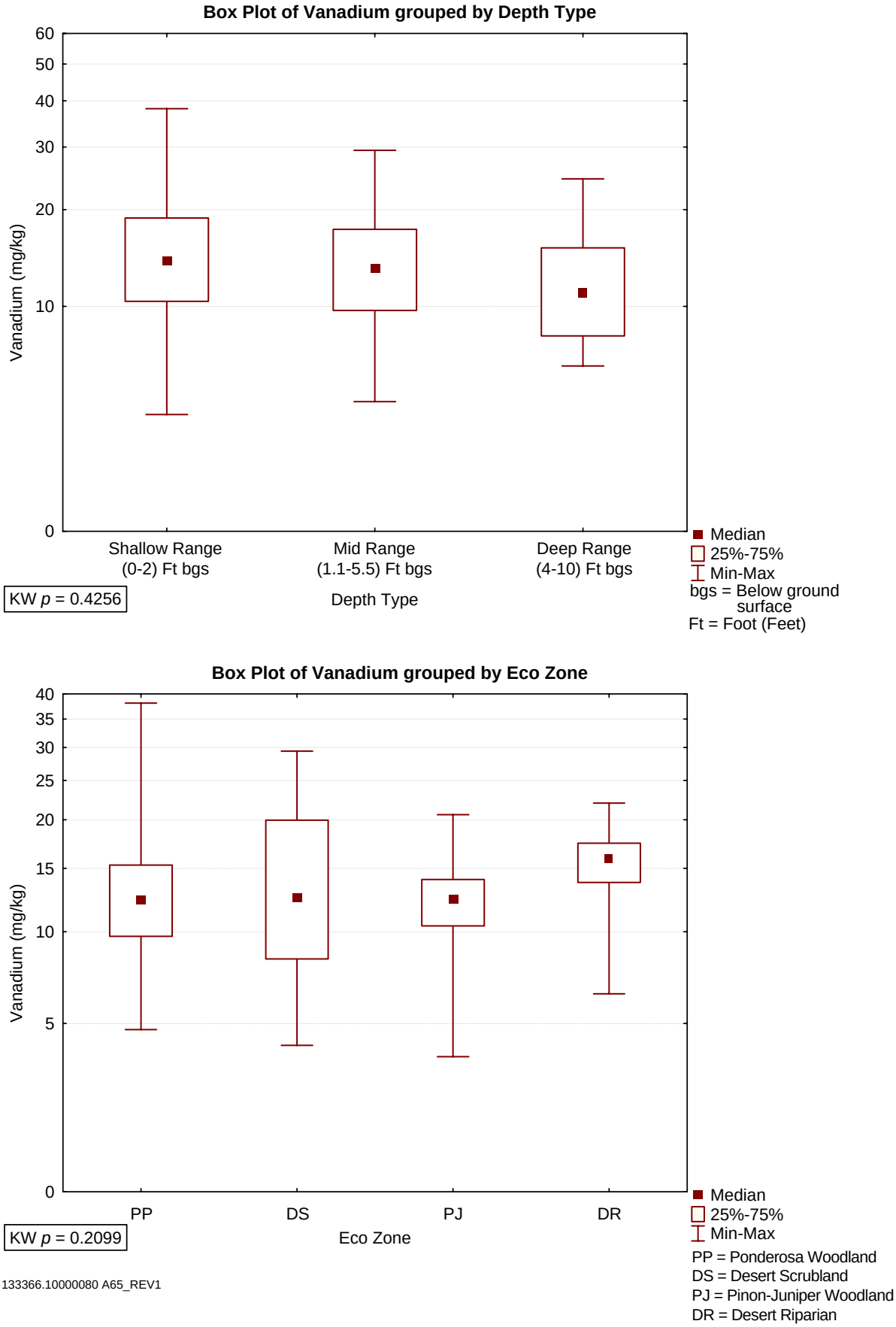


Figure C1-21
Box Plot of Vanadium grouped by Depth Type and Eco Zone

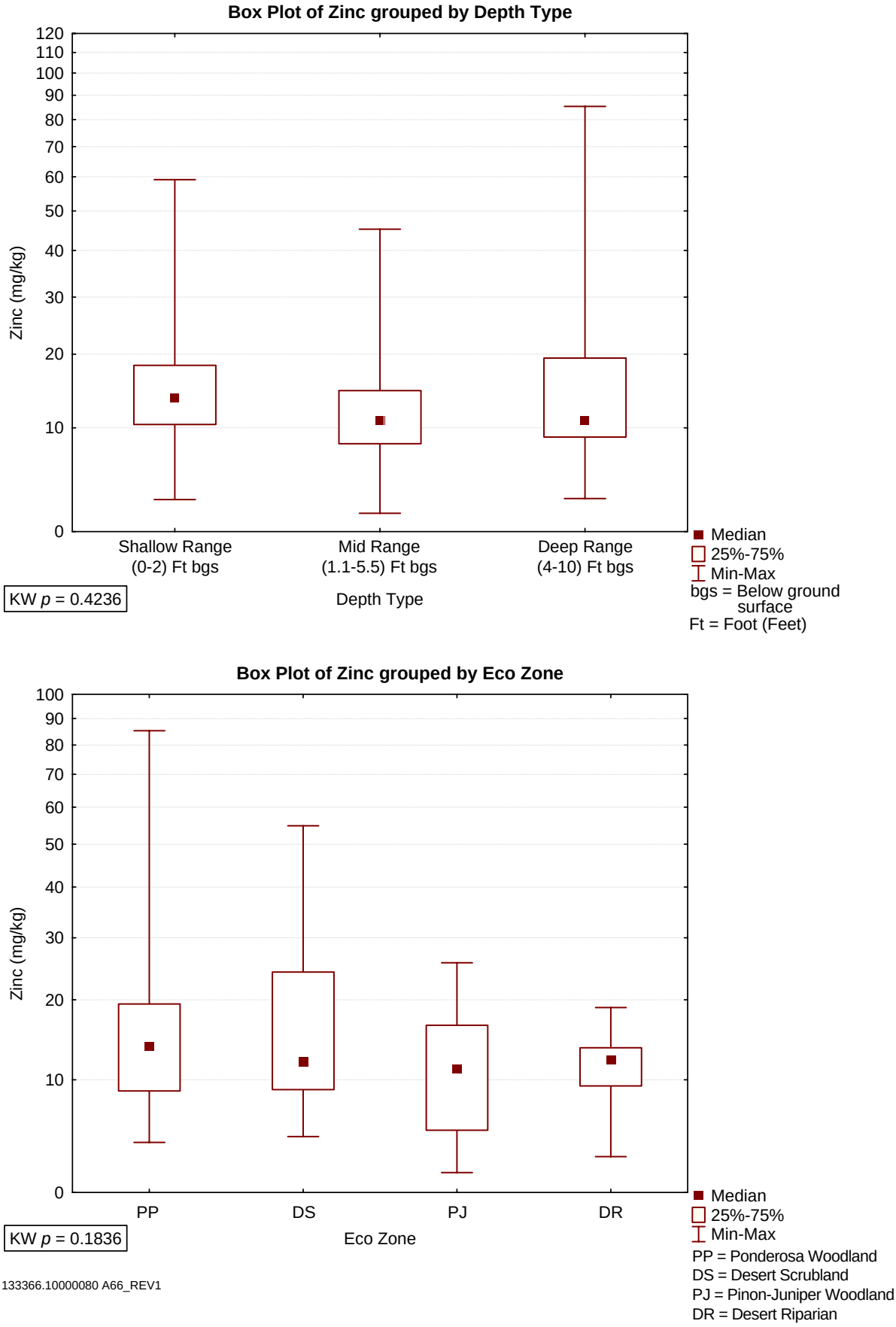


Figure C1-22
Box Plot of Zinc grouped by Depth Type and Eco Zone

Appendix D
Soil Classification Logs

Shaw Environmental and Infrastructure Group
2440 Louisiana Blvd NE; Suite 300
Albuquerque, New Mexico 87110
Telephone: 1.505.262.8940
Fax: 1.505.262.8855

BORING NUMBER AH-1

CLIENT USACE
PROJECT NAME Fort Wingate Depot Activity Soil Background Study
PROJECT NUMBER 133366.10
PROJECT LOCATION Fort Wingate Depot Activity, Gallup, New Mexico
DATE STARTED 11/11/09 **COMPLETED** 11/11/09
GROUND ELEVATION (meters amsl)
DRILLING CONTRACTOR Shaw
BOREHOLE DIAMETER (in) 3.0
DRILLING METHOD Hand Auger
NORTHING 720304.00 **EASTING** 3929248
LOGGED BY P. Ostrye
DEPTH TO WATER (ft bgs): NA
ENTERED BY
NOTES

DEPTH (ft)	SAMPLE NUMBER	REMARKS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0					
	19SW-AH01-SO-1	No Remarks	SM		Silty sand, reddish brown (2.5YR 5/4), dry, very soft, non plastic, no gravel, grain size range FU to VFU, greater than 15% fines.
5	19SW-AH01-SO-2				Consistancy grades from very soft to soft.
					Bottom of hole at 5.0 feet.
10					
15					
20					
25					
30					

Shaw Environmental and Infrastructure Group
2440 Louisiana Blvd NE; Suite 300
Albuquerque, New Mexico 87110
Telephone: 1.505.262.8940
Fax: 1.505.262.8855

BORING NUMBER AH-2

CLIENT USACE
PROJECT NAME Fort Wingate Depot Activity Soil Background Study
PROJECT NUMBER 133366.10
PROJECT LOCATION Fort Wingate Depot Activity, Gallup, New Mexico
DATE STARTED 11/11/09 **COMPLETED** 11/11/09
GROUND ELEVATION (meters amsl)
DRILLING CONTRACTOR Shaw
BOREHOLE DIAMETER (in) 3.0
DRILLING METHOD Hand Auger
NORTHING 720272.51 **EASTING** 3929253.416
LOGGED BY P. Ostrye
DEPTH TO WATER (ft bgs): NA
ENTERED BY
NOTES

DEPTH (ft)	SAMPLE NUMBER	REMARKS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0	19SW-AH02-SO-1	No Remarks	SW-SM		Well graded sand with silt, reddish brown (2.5YR 4/4), dry, very soft, no gravel, grain size range VCU to FL, max grain size 2 mm, 10% fines.
			SM		Silty sand, dusky red (10R 3/3), slight moisture, firm, low plasticity, no gravel, grain size VFL, greater than 15% fines.
			SM		
5	19SW-AH02-SO-2		SW-SM		Silty sand, reddish brown (2.5YR 4/3), dry, soft, non plastic, no gravels, grain size range FU to FL, greater than 15% fines.
					Well graded sand with silt, dusky red (10R 3/4), dry, very soft, no gravel, grain size range VCU to FL, 10% fines.
					Bottom of hole at 5.0 feet.
10					
15					
20					
25					
30					

Shaw Environmental and Infrastructure Group
2440 Louisiana Blvd NE; Suite 300
Albuquerque, New Mexico 87110
Telephone: 1.505.262.8940
Fax: 1.505.262.8855

BORING NUMBER AH-3

CLIENT USACE
PROJECT NAME Fort Wingate Depot Activity Soil Background Study
PROJECT NUMBER 133366.10
PROJECT LOCATION Fort Wingate Depot Activity, Gallup, New Mexico
DATE STARTED 11/11/09 **COMPLETED** 11/11/09
GROUND ELEVATION (meters amsl) 2077.761
DRILLING CONTRACTOR Shaw
BOREHOLE DIAMETER (in) 3.0
DRILLING METHOD Hand Auger
NORTHING 720260.70 **EASTING** 3929294.139
LOGGED BY P. Ostrye
DEPTH TO WATER (ft bgs): NA
ENTERED BY
NOTES

DEPTH (ft)	SAMPLE NUMBER	REMARKS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0	19SW-BH03-SO-1		SP-SM		Poorly graded sand with silt, dark reddish brown (2.5YR 3/4), dry, very soft, non plastic, no gravel, grain size range CU to FU, angular to rounded, 10% fines.
5	19SW-BH03-SO-2	Refusal due to roots	SW-SM		Well graded sand with silt and gravel, dark reddish brown (2.5YR 3/3), dry, very soft, non plastic, 30% gravel, grain size range 1 to 15 mm, angualr to subrounded, 60% sand, 10% fines. 3 to 4.8 ft, roots. Soil clumped around roots.
					Bottom of hole at 4.8 feet.
10					
15					
20					
25					
30					

Shaw Environmental and Infrastructure Group
2440 Louisiana Blvd NE; Suite 300
Albuquerque, New Mexico 87110
Telephone: 1.505.262.8940
Fax: 1.505.262.8855

BORING NUMBER AH-4

CLIENT USACE
PROJECT NAME Fort Wingate Depot Activity Soil Background Study
PROJECT NUMBER 133366.10
PROJECT LOCATION Fort Wingate Depot Activity, Gallup, New Mexico
DATE STARTED 11/11/09 **COMPLETED** 11/11/09
GROUND ELEVATION (meters amsl)
DRILLING CONTRACTOR Shaw
BOREHOLE DIAMETER (in) 3.0
DRILLING METHOD Hand Auger
NORTHING 720280.77 **EASTING** 3929327.622
LOGGED BY P. Ostrye
DEPTH TO WATER (ft bgs): NA
ENTERED BY
NOTES

DEPTH (ft)	SAMPLE NUMBER	REMARKS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0	19SW-AH04-SO-1	No Remarks	SP-SM		Poorly graded sand with silt, dark reddish brown (2.5YR 3/4), dry, soft, non plastic, no gravel, grain size range CU to FU, subrounded to rounded, 10% fines.
			SW		Well graded sand, dark reddish brown (2.5YR 3/3), dry, soft, non plastic, no gravels, grain size range CL to FL, subangular to subrounded, 5% fines.
5	19SW-AH04-SO-2		SW-SM		Well graded sand with silt and gravel, dark reddish brown (2.5YR 3/3), dry, soft, non plastic, 30% gravel, 1 to 20 mm, subangualr to subrounded, 60% sand, 10% fines.
					Bottom of hole at 5.0 feet.
10					
15					
20					
25					
30					

Shaw Environmental and Infrastructure Group
2440 Louisiana Blvd NE; Suite 300
Albuquerque, New Mexico 87110
Telephone: 1.505.262.8940
Fax: 1.505.262.8855

BORING NUMBER BH-1

CLIENT USACE
PROJECT NAME Fort Wingate Depot Activity Soil Background Study
PROJECT NUMBER 133366.10
PROJECT LOCATION Fort Wingate Depot Activity, Gallup, New Mexico
DATE STARTED 11/5/09 **COMPLETED** 11/5/09
GROUND ELEVATION (meters amsl) 2044.842
DRILLING CONTRACTOR J.R. Drilling
BOREHOLE DIAMETER (in) 2.0
DRILLING METHOD Geoprobe-direct push
NORTHING 719541.25 **EASTING** 3933565.293
LOGGED BY P. Ostrye
DEPTH TO WATER (ft bgs): NA
ENTERED BY
NOTES

DEPTH (ft)	SAMPLE NUMBER	REMARKS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0	14DS-BH01-SO-1	No Remarks	SM		Silty sand, reddish brown (2.5YR 4/4), slight moisture, soft-firm, low plasticity, no gravels, grain size range FL to VFU, greater than 15% fines.
5	14DS-BH01-SO-2				
10	14DS-BH01-SO-3		SP		Poorly graded sand, reddish brown (2.5YR 4/4), dry, very soft, non plastic, grain size range FU to FL, less than 5% fines.
					Bottom of hole at 10.0 feet.
15					
20					
25					
30					

Shaw Environmental and Infrastructure Group
2440 Louisiana Blvd NE; Suite 300
Albuquerque, New Mexico 87110
Telephone: 1.505.262.8940
Fax: 1.505.262.8855

BORING NUMBER BH-2

CLIENT USACE
PROJECT NAME Fort Wingate Depot Activity Soil Background Study
PROJECT NUMBER 133366.10
PROJECT LOCATION Fort Wingate Depot Activity, Gallup, New Mexico
DATE STARTED 11/9/09 **COMPLETED** 11/9/09
GROUND ELEVATION (meters amsl) 2044.598
DRILLING CONTRACTOR J.R. Drilling
BOREHOLE DIAMETER (in) 2.0
DRILLING METHOD Geoprobe-direct push
NORTHING 719768.49 **EASTING** 3933604.914
LOGGED BY P. Ostrye
DEPTH TO WATER (ft bgs): NA
ENTERED BY
NOTES

DEPTH (ft)	SAMPLE NUMBER	REMARKS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0	14DS-BH02-SO-1	No Remarks	SP		Poorly graded sand, light reddish brown (5YR 6/4), moist, very soft, non plastic, no gravel, grain size range FU to FL, subrounded to rounded, less than 5% fines.
			SC-SM		Clayey sand, dusky red (10R 3/4), moist, firm, low plasticity, no gravels, greater than 15% fines.
5	14DS-BH02-SO-2		SP		Poorly graded sand, light reddish brown (5YR 6/4), moist, very soft, non plastic, no gravel, grain size range FU to FL, subrounded to rounded, less than 5% fines.
			SC-SM		Clayey sand, dusky red (10R 3/4), moist, firm, low plasticity, no gravels, greater than 15% fines.
			SP		Poorly graded sand, light reddish brown (5YR 6/4,) moist, very soft, non plastic, no gravel, grain size range FU to FL, subrounded to rounded, less than 5% fines.
10	14DS-BH02-SO-3		SC		6-inch lens: Clayey sand, dusky red (10R 3/4), moist, firm, low plasticity, no gravels, greater than 15% fines.
			SP		Poorly graded sand, light reddish brown (5YR 6/4), moist, very soft, non plastic, no gravel, grain size range FU to FL, subrounded to rounded, less than 5% fines.
15					Bottom of hole at 10.0 feet.
20					
25					
30					

Shaw Environmental and Infrastructure Group
2440 Louisiana Blvd NE; Suite 300
Albuquerque, New Mexico 87110
Telephone: 1.505.262.8940
Fax: 1.505.262.8855

BORING NUMBER BH-3

CLIENT USACE
PROJECT NAME Fort Wingate Depot Activity Soil Background Study
PROJECT NUMBER 133366.10
PROJECT LOCATION Fort Wingate Depot Activity, Gallup, New Mexico
DATE STARTED 11/9/09 **COMPLETED** 11/9/09
GROUND ELEVATION (meters amsl)
DRILLING CONTRACTOR J.R. Drilling
BOREHOLE DIAMETER (in) 2.0
DRILLING METHOD Geoprobe-direct push
NORTHING 722236.90 **EASTING** 3932311.505
LOGGED BY P. Ostrye
DEPTH TO WATER (ft bgs): NA
ENTERED BY
NOTES

DEPTH (ft)	SAMPLE NUMBER	REMARKS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0	15SW-BH03-SO-1	No Remarks	SM		Silty sand, weak red (10R 4/4), dry, firm, non plastic, no gravel, grain size range FU to VFL subangular to subrounded, greater than 15% fines.
5	15SW-BH03-SO-2				
10	15SW-BH03-SO-3				
					Bottom of hole at 10.0 feet.
15					
20					
25					
30					

Shaw Environmental and Infrastructure Group
2440 Louisiana Blvd NE; Suite 300
Albuquerque, New Mexico 87110
Telephone: 1.505.262.8940
Fax: 1.505.262.8855

BORING NUMBER BH-4

CLIENT USACE
PROJECT NAME Fort Wingate Depot Activity Soil Background Study
PROJECT NUMBER 133366.10
PROJECT LOCATION Fort Wingate Depot Activity, Gallup, New Mexico
DATE STARTED 11/9/09 **COMPLETED** 11/9/09
GROUND ELEVATION (meters amsl)
DRILLING CONTRACTOR J.R. Drilling
BOREHOLE DIAMETER (in) 2.0
DRILLING METHOD Geoprobe-direct push
NORTHING 722456.12 **EASTING** 3932215.2
LOGGED BY P. Ostrye
DEPTH TO WATER (ft bgs): NA
ENTERED BY
NOTES

DEPTH (ft)	SAMPLE NUMBER	REMARKS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0	15SW-BH04-SO-1	No Remarks	SM		Silty sand, weak red (10R 4/3), slight moisture, firm, low plasticity, platey, no gravel, grain size range VFU to VFL, greater than 15% fines.
5	15SW-BH04-SO-2		SC-SM		Clayey sand, dusky red (10R 3/4), slight moisture, firm, low plasticity, no gravel, grain size range VFU to VFL.
10	15SW-BH04-SO-3		SM		Silty sand, weak red (10R 4/3), slight moisture, firm, low plasticity, platey, no gravel, grain size range VFU to VFL, greater than 15% fines.
					Bottom of hole at 10.0 feet.
15					
20					
25					
30					

Shaw Environmental and Infrastructure Group
2440 Louisiana Blvd NE; Suite 300
Albuquerque, New Mexico 87110
Telephone: 1.505.262.8940
Fax: 1.505.262.8855

BORING NUMBER BH-5

CLIENT USACE
PROJECT NAME Fort Wingate Depot Activity Soil Background Study
PROJECT NUMBER 133366.10
PROJECT LOCATION Fort Wingate Depot Activity, Gallup, New Mexico
DATE STARTED 11/9/09 **COMPLETED** 11/9/09
GROUND ELEVATION (meters amsl) 2056.12
DRILLING CONTRACTOR J.R. Drilling
BOREHOLE DIAMETER (in) 2.0
DRILLING METHOD Geoprobe-direct push
NORTHING 722525.10 **EASTING** 3932021.504
LOGGED BY P. Ostrye
DEPTH TO WATER (ft bgs): NA
ENTERED BY
NOTES

DEPTH (ft)	SAMPLE NUMBER	REMARKS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0	15SW-BH05-SO-1	No Remarks	SM		Silty sand, dusky red (10R 3/4), slight moisture, firm, low plasticity, no gravel, grain size range VFU to VFL, greater than 15% fines.
			SC-SM		Clayey sand, dark reddish brown (2.5YR 3/3), moist, firm to hard, low plasticity, no gravel, grain size range VFU to VFL.
5	15SW-BH05-SO-2		SM		Silty sand, dusky red (10R 3/4), slight moisture, firm, low plasticity, no gravel, grain size range VFU to VFL, greater than 15% fines.
10	15SW-BH05-SO-3				Bottom of hole at 10.0 feet.
15					
20					
25					
30					

ATLAS LEACHFIELD REPORT FWDA SOIL LOGS.GPJ GINT US.GDT 2/4/10

Shaw Environmental and Infrastructure Group
2440 Louisiana Blvd NE; Suite 300
Albuquerque, New Mexico 87110
Telephone: 1.505.262.8940
Fax: 1.505.262.8855

BORING NUMBER BH-6

CLIENT USACE
PROJECT NAME Fort Wingate Depot Activity Soil Background Study
PROJECT NUMBER 133366.10
PROJECT LOCATION Fort Wingate Depot Activity, Gallup, New Mexico
DATE STARTED 11/9/09 **COMPLETED** 11/9/09
GROUND ELEVATION (meters amsl) 2053.712
DRILLING CONTRACTOR J.R. Drilling
BOREHOLE DIAMETER (in) 2.0
DRILLING METHOD Geoprobe-direct push
NORTHING 722591.61 **EASTING** 3931793.589
LOGGED BY P. Ostrye
DEPTH TO WATER (ft bgs): NA
ENTERED BY
NOTES

DEPTH (ft)	SAMPLE NUMBER	REMARKS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0	15SW-BH06-SO-1	No Remarks	SP		Poorly graded sand, light brown (7.5YR 6/4), dry, soft, non plastic, no gravel, grain size range VCL to CL, less than 5% fines.
5	15SW-BH06-SO-2		GW		Well graded gravel with sands, light reddish brown (2.5YR 6/4), slight moisture, soft, non plastic, gravel size range 0.5 to 10 mm, greater than 50% gravel, greater than 15% sands, less than 5% fines. 5ft- Roughly 4-inch clay lens: Dark reddish brown (5YR 3/3) moist, firm, medium plasticity. 8.5 ft- Roughly 4-inch clay lens: Dark reddish brown (5YR 3/3) moist, firm, medium plasticity.
10	15SW-BH06-SO-3				
					Bottom of hole at 10.0 feet.
15					
20					
25					
30					

Shaw Environmental and Infrastructure Group
2440 Louisiana Blvd NE; Suite 300
Albuquerque, New Mexico 87110
Telephone: 1.505.262.8940
Fax: 1.505.262.8855

BORING NUMBER BH-7

CLIENT USACE
PROJECT NAME Fort Wingate Depot Activity Soil Background Study
PROJECT NUMBER 133366.10
PROJECT LOCATION Fort Wingate Depot Activity, Gallup, New Mexico
DATE STARTED 11/9/09 **COMPLETED** 11/9/09
GROUND ELEVATION (meters amsl)
DRILLING CONTRACTOR J.R. Drilling
BOREHOLE DIAMETER (in) 2.0
DRILLING METHOD Geoprobe-direct push
NORTHING 722424.06 **EASTING** 3931375.68
LOGGED BY P. Ostrye
DEPTH TO WATER (ft bgs): NA
ENTERED BY
NOTES

DEPTH (ft)	SAMPLE NUMBER	REMARKS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0	15DS-BH07-SO-1	No Remarks	SP		Poorly graded sand, light reddish brown (2.5YR 6/3), dry, soft, non plastic, no gravel, grain size range CU to ML, max size 3 mm, angular to rounded, less than 5% fines. Grain sizes increases to max 7 mm at 4 feet bgs.
5	15DS-BH07-SO-2		SM		Silty sand, reddish brown (5YR 4/3), dry, hard, low pasticity, no gravel, greater than 15% fines. Begins to grade into clayey sand at 6.5 feet bgs.
10	15DS-BH07-SO-3		SC-SM		Clayey sand, dusky red (2.5YR 3/2), dry, hard, low plasticity, no gravel, greater than 15% fines.
15					Bottom of hole at 10.0 feet.
20					
25					
30					

Shaw Environmental and Infrastructure Group
2440 Louisiana Blvd NE; Suite 300
Albuquerque, New Mexico 87110
Telephone: 1.505.262.8940
Fax: 1.505.262.8855

BORING NUMBER BH-8

CLIENT USACE
PROJECT NAME Fort Wingate Depot Activity Soil Background Study
PROJECT NUMBER 133366.10
PROJECT LOCATION Fort Wingate Depot Activity, Gallup, New Mexico
DATE STARTED 11/9/09 **COMPLETED** 11/9/09
GROUND ELEVATION (meters amsl) 2061.911
DRILLING CONTRACTOR J.R. Drilling
BOREHOLE DIAMETER (in) 2.0
DRILLING METHOD Geoprobe-direct push
NORTHING 722750.51 **EASTING** 3931542.693
LOGGED BY P. Ostrye
DEPTH TO WATER (ft bgs): NA
ENTERED BY
NOTES

DEPTH (ft)	SAMPLE NUMBER	REMARKS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0	15DS-BH08-SO-1	No Remarks	SC-SM		Clayey sand, dusky red (10R 3/3), moist, firm to hard, low plasticity, no gravel, some mottling and small pockets of sand, grain size range FL to VFU, subrounded, greater than 15% fines.
5	15DS-BH08-SO-2				
10	15DS-BH08-SO-3		SM		Silty sand, reddish brown (5YR 4/3), dry, firm, non plastic, no gravel, grain size range MU to FL with max of 3 mm, subangular to subrounded, greater than 15% fines.
					Bottom of hole at 10.0 feet.
15					
20					
25					
30					

Shaw Environmental and Infrastructure Group
2440 Louisiana Blvd NE; Suite 300
Albuquerque, New Mexico 87110
Telephone: 1.505.262.8940
Fax: 1.505.262.8855

BORING NUMBER BH-9

CLIENT USACE
PROJECT NAME Fort Wingate Depot Activity Soil Background Study
PROJECT NUMBER 133366.10
PROJECT LOCATION Fort Wingate Depot Activity, Gallup, New Mexico
DATE STARTED 11/11/09 **COMPLETED** 11/11/09
GROUND ELEVATION (meters amsl) 2083.278
DRILLING CONTRACTOR J.R. Drilling
BOREHOLE DIAMETER (in) 3.0
DRILLING METHOD Hand Auger
NORTHING 722375.48 **EASTING** 3930741.443
LOGGED BY P. Ostrye
DEPTH TO WATER (ft bgs): NA
ENTERED BY
NOTES

DEPTH (ft)	SAMPLE NUMBER	REMARKS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0	17DS-BH09-SO-1		SM		Silty sand, reddish brown (2.5YR 5/3), dry, very soft, non plastic, no gravel, grain size range ML to FL, greater than 15% fines.
	17DS-BH09-SO-2	Hand auger refusal	SM		Silty sand, reddish brown (2.5YR 5/3), dry, very soft, less than 5% gravel, 3 to 40 mm, subangular, greater than 15% fines.
					Bottom of hole at 2.5 feet.
5					
10					
15					
20					
25					
30					

ATLAS LEACHFIELD REPORT FWDA SOIL LOGS.GPJ GINT US.GDT 2/4/10

Shaw Environmental and Infrastructure Group
2440 Louisiana Blvd NE; Suite 300
Albuquerque, New Mexico 87110
Telephone: 1.505.262.8940
Fax: 1.505.262.8855

BORING NUMBER BH-10

CLIENT USACE
PROJECT NAME Fort Wingate Depot Activity Soil Background Study
PROJECT NUMBER 133366.10
PROJECT LOCATION Fort Wingate Depot Activity, Gallup, New Mexico
DATE STARTED 11/9/09 **COMPLETED** 11/9/09
GROUND ELEVATION (meters amsl)
DRILLING CONTRACTOR J.R. Drilling
BOREHOLE DIAMETER (in) 2.0
DRILLING METHOD Geoprobe-direct push
NORTHING 722748.12 **EASTING** 3930918.129
LOGGED BY P. Ostrye
DEPTH TO WATER (ft bgs): NA
ENTERED BY
NOTES

DEPTH (ft)	SAMPLE NUMBER	REMARKS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0	17DS-BH10-SO-1		SM		Silty sand, dark reddish brown (2.5YR 3/3), dry, firm, non plastic, no gravel, grain size range CU to FL, greater than 15% fines. Some mottling throughout.
			SM		Silty sand, reddish brown (2.5YR 5/3), dry, soft to firm, non plastic, no gravel, greater than 15% fines. Some mottling throughout.
5	17DS-BH10-SO-2		SC-SM		Clayey sand, dusky red (10R 3/2), dry, hard, non plastic, blocky, no gravel, grain size range VFU to VFL, greater than 15% fines. Becomes very hard toward 8 ft.
	17DS-BH10-SO-3	Bedrock refusal			
10			Rock		Sandstone, well cemented, angular to subangular, grain size range FL to VFU. Bottom of hole at 8.0 feet.
15					
20					
25					
30					

Shaw Environmental and Infrastructure Group
2440 Louisiana Blvd NE; Suite 300
Albuquerque, New Mexico 87110
Telephone: 1.505.262.8940
Fax: 1.505.262.8855

BORING NUMBER BH-11

CLIENT USACE
PROJECT NAME Fort Wingate Depot Activity Soil Background Study
PROJECT NUMBER 133366.10
PROJECT LOCATION Fort Wingate Depot Activity, Gallup, New Mexico
DATE STARTED 11/11/09 **COMPLETED** 11/11/09
GROUND ELEVATION (meters amsl)
DRILLING CONTRACTOR J.R. Drilling
BOREHOLE DIAMETER (in) 3.0
DRILLING METHOD Hand Auger
NORTHING 722271.17 **EASTING** 3930425.234
LOGGED BY P. Ostrye
DEPTH TO WATER (ft bgs): NA
ENTERED BY
NOTES

DEPTH (ft)	SAMPLE NUMBER	REMARKS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0	17DS-BH11-SO-1		SM		Silty sand, reddish brown (2.5YR 4/4), dry, very soft, non plastic, less than 5% gravels, max grain size 5 mm, rounded, greater than 15% fines.
	17DS-BH11-SO-2	Hand auger refusal due to bedrock/gravels	SM		Silty sand with gravel, reddish brown (2.5YR 4/4), dry, very soft, non plastic, greater than 15% gravels, max size of 22 mm, subangular to subrounded, greater than 15% fines.
					Bottom of hole at 2.0 feet.
5					
10					
15					
20					
25					
30					

ATLAS LEACHFIELD REPORT FWDA SOIL LOGS.GPJ GINT US.GDT 2/4/10

Shaw Environmental and Infrastructure Group
2440 Louisiana Blvd NE; Suite 300
Albuquerque, New Mexico 87110
Telephone: 1.505.262.8940
Fax: 1.505.262.8855

BORING NUMBER BH-12

CLIENT USACE
PROJECT NAME Fort Wingate Depot Activity Soil Background Study
PROJECT NUMBER 133366.10
PROJECT LOCATION Fort Wingate Depot Activity, Gallup, New Mexico
DATE STARTED 11/11/09 **COMPLETED** 11/11/09
GROUND ELEVATION (meters amsl) 2086.661
DRILLING CONTRACTOR J.R. Drilling
BOREHOLE DIAMETER (in) 2.0
DRILLING METHOD Geoprobe-direct push
NORTHING 720822.08 **EASTING** 3929133.191
LOGGED BY P. Ostrye
DEPTH TO WATER (ft bgs): NA
ENTERED BY
NOTES

DEPTH (ft)	SAMPLE NUMBER	REMARKS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0	19DS-BH12-SO-1	No Remarks	SM		Silty sand, dusky red (10R 3/2), slight moisture, firm, non plastic, no gravels, blocky, grain size range VFU to VFL, greater than 15% fines.
5	19DS-BH12-SO-2				
			SM		Silt sand, dusky red (10R 3/2), slight moisture, firm to hard, non plastic, no gravels, blocky, grain size range VFU to VFL, greater than 15% fines.
10	19DS-BH12-SO-3				Bottom of hole at 10.0 feet.
15					
20					
25					
30					

Shaw Environmental and Infrastructure Group
2440 Louisiana Blvd NE; Suite 300
Albuquerque, New Mexico 87110
Telephone: 1.505.262.8940
Fax: 1.505.262.8855

BORING NUMBER BH-13

CLIENT USACE
PROJECT NAME Fort Wingate Depot Activity Soil Background Study
PROJECT NUMBER 133366.10
PROJECT LOCATION Fort Wingate Depot Activity, Gallup, New Mexico
DATE STARTED 11/11/09 **COMPLETED** 11/11/09
GROUND ELEVATION (meters amsl)
DRILLING CONTRACTOR J.R. Drilling
BOREHOLE DIAMETER (in) 2.0
DRILLING METHOD Geoprobe-direct push
NORTHING 720165.02 **EASTING** 3928701.913
LOGGED BY P. Ostrye
DEPTH TO WATER (ft bgs): NA
ENTERED BY
NOTES

DEPTH (ft)	SAMPLE NUMBER	REMARKS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0	1-DS-BH13-SO-1		SM		Silty sand, dusky red (10R 3/4), slight moisture, firm, non plastic, no gravel, some mottling, grain size range FL to VFU.
5	1-DS-BH13-SO-2	Sharp contact	SM		Silty sand, dusky red (10R 3/2), slight moisture, hard, low plasticity, no gravel, blocky, greater than 15% fines. Clay content increasing with depth.
10	1-DS-BH13-SO-3		SM		Silty sand, reddish brown (2.5YR 4/4), dry, soft, non plastic, no gravel, grain size range FL to VFU, greater than 15% fines.
15					Bottom of hole at 10.0 feet.
20					
25					
30					

Shaw Environmental and Infrastructure Group
2440 Louisiana Blvd NE; Suite 300
Albuquerque, New Mexico 87110
Telephone: 1.505.262.8940
Fax: 1.505.262.8855

BORING NUMBER BH-14

CLIENT USACE
PROJECT NAME Fort Wingate Depot Activity Soil Background Study
PROJECT NUMBER 133366.10
PROJECT LOCATION Fort Wingate Depot Activity, Gallup, New Mexico
DATE STARTED 11/11/09 **COMPLETED** 11/11/09
GROUND ELEVATION (meters amsl)
DRILLING CONTRACTOR J.R. Drilling
BOREHOLE DIAMETER (in) 2.0
DRILLING METHOD Geoprobe-direct push
NORTHING 720076.73 **EASTING** 3928394.479
LOGGED BY P. Ostrye
DEPTH TO WATER (ft bgs): NA
ENTERED BY
NOTES

DEPTH (ft)	SAMPLE NUMBER	REMARKS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0	19DS-BH14-SO-1	No Remarks	SM		Silty sand, dusky red (10R 3/2), dry, firm to hard, no plastic, blocky , mottling below 2 feet, no gravels, grain size range FL to VFU, greater than 15% fines.
5	19DS-BH14-SO-2				Same description, max grain size 2 mm between 7 to 8 feet.
10	19DS-BH14-SO-3		SM		Silty sand, weak red (10R 4/4), dry, hard, non plastic, no gravel, grain size range FL to VFU, greater than 15% fines.
					Bottom of hole at 10.0 feet.
15					
20					
25					
30					

Shaw Environmental and Infrastructure Group
2440 Louisiana Blvd NE; Suite 300
Albuquerque, New Mexico 87110
Telephone: 1.505.262.8940
Fax: 1.505.262.8855

BORING NUMBER BH-15

CLIENT USACE
PROJECT NAME Fort Wingate Depot Activity Soil Background Study
PROJECT NUMBER 133366.10
PROJECT LOCATION Fort Wingate Depot Activity, Gallup, New Mexico
DATE STARTED 11/10/09 **COMPLETED** 11/10/09
GROUND ELEVATION (meters amsl) 2230.862
DRILLING CONTRACTOR J.R. Drilling
BOREHOLE DIAMETER (in) 2.0
DRILLING METHOD Geoprobe-direct push
NORTHING 717676.00 **EASTING** 3925169.007
LOGGED BY P. Ostrye
DEPTH TO WATER (ft bgs): NA
ENTERED BY
NOTES

DEPTH (ft)	SAMPLE NUMBER	REMARKS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0	20PJ-BH-SO-1		SP-SM		Poorly graded sand with silt, dusky red (10R 3/3), moist, very soft, non plastic, no gravel, grain size range ML to FL, angular to subrounded, 10% fines.
	20PJ-BH-SO-2	Bedrock refusal	Rock		Sandstone, white (7.5YR 8/1), well cemented, angular to subrounded, grain size range FU to FL. Mainly sandstone with very thin layers of soil.
5					Bottom of hole at 2.5 feet.
10					
15					
20					
25					
30					

Shaw Environmental and Infrastructure Group
2440 Louisiana Blvd NE; Suite 300
Albuquerque, New Mexico 87110
Telephone: 1.505.262.8940
Fax: 1.505.262.8855

BORING NUMBER BH-16

CLIENT USACE
PROJECT NAME Fort Wingate Depot Activity Soil Background Study
PROJECT NUMBER 133366.10
PROJECT LOCATION Fort Wingate Depot Activity, Gallup, New Mexico
DATE STARTED 11/10/09 **COMPLETED** 11/10/09
GROUND ELEVATION (meters amsl) 2238.299
DRILLING CONTRACTOR J.R. Drilling
BOREHOLE DIAMETER (in) 2.0
DRILLING METHOD Geoprobe-direct push
NORTHING 717753.48 **EASTING** 3925087.561
LOGGED BY P. Ostrye
DEPTH TO WATER (ft bgs): NA
ENTERED BY
NOTES

DEPTH (ft)	SAMPLE NUMBER	REMARKS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0	20PJ-BH16-SO-1		SM		Silt sand, dusky red (10R 3/3), dry, firm, non plastic, blocky, no gravel, grain size range FL to VFL, greater than 15% fines.
		Bedrock refusal	Rock		Sandstone, white (7.5YR 8/1), grain size range FU to FL, angular to subrounded, well cemented.
					Bottom of hole at 1.5 feet.
5					
10					
15					
20					
25					
30					

Shaw Environmental and Infrastructure Group
2440 Louisiana Blvd NE; Suite 300
Albuquerque, New Mexico 87110
Telephone: 1.505.262.8940
Fax: 1.505.262.8855

BORING NUMBER BH-17

CLIENT USACE
PROJECT NAME Fort Wingate Depot Activity Soil Background Study
PROJECT NUMBER 133366.10
PROJECT LOCATION Fort Wingate Depot Activity, Gallup, New Mexico
DATE STARTED 11/10/09 **COMPLETED** 11/10/09
GROUND ELEVATION (meters amsl) 2252.716
DRILLING CONTRACTOR J.R. Drilling
BOREHOLE DIAMETER (in) 2.0
DRILLING METHOD Geoprobe-direct push
NORTHING 717896.58 **EASTING** 3924862.299
LOGGED BY P. Ostrye
DEPTH TO WATER (ft bgs): NA
ENTERED BY
NOTES

DEPTH (ft)	SAMPLE NUMBER	REMARKS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0	20PJ-BH17-SO-1		SP-SM		Poorly graded sand with silt, weak red (10R 4/2), slight moisture, firm, non plastic, blocky, no gravel, grain size range FU to FL, 10% fines.
			SM		Silty sand, dusky red (10R 3/3), dry, firm, non plastic, no gravel, grain size range FU to FL, greater than 15% fines.
	20PJ-BH17-SO-2		SP-SM		Poorly graded sand with silt, weak red (10R 5/3), dry, firm, non plastic, no gravel, grain size range ML to FU, 10% fines.
5	20PJ-BH17-SO-3	Bedrock refusal	Rock		Sandstone, white (7.5YR 8/1), well cemented, angular to subrounded, grain size range FU to FL.
					Bottom of hole at 5.0 feet.
10					
15					
20					
25					
30					

Shaw Environmental and Infrastructure Group
2440 Louisiana Blvd NE; Suite 300
Albuquerque, New Mexico 87110
Telephone: 1.505.262.8940
Fax: 1.505.262.8855

BORING NUMBER BH-18

CLIENT USACE
PROJECT NAME Fort Wingate Depot Activity Soil Background Study
PROJECT NUMBER 133366.10
PROJECT LOCATION Fort Wingate Depot Activity, Gallup, New Mexico
DATE STARTED 11/10/09 **COMPLETED** 11/10/09
GROUND ELEVATION (meters amsl) 2253.447
DRILLING CONTRACTOR J.R. Drilling
BOREHOLE DIAMETER (in) 2.0
DRILLING METHOD Geoprobe-direct push
NORTHING 717779.60 **EASTING** 3924755.929
LOGGED BY P. Ostrye
DEPTH TO WATER (ft bgs): NA
ENTERED BY
NOTES

DEPTH (ft)	SAMPLE NUMBER	REMARKS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0	02PJ-BH18-SO-1		SM		Silt sand, dusky red (10R 3/4), dry, firm, non plastic, blocky, no gravel, grain size range VFU to VFL, greater than 15% fines.
	02PJ-BH18-SO-2		SM		Silty sand, weak red (10R 4/4,) dry, firm, non plastic, no gravel, grain size range VFU to VFL, greater than 15% fines.
5		Bedrock refusal	Rock		Sandstone, white (7.5YR 8/1), well cemented, angular to subrounded, grain size range FU to FL.
					Bottom of hole at 4.0 feet.
10					
15					
20					
25					
30					

Shaw Environmental and Infrastructure Group
2440 Louisiana Blvd NE; Suite 300
Albuquerque, New Mexico 87110
Telephone: 1.505.262.8940
Fax: 1.505.262.8855

BORING NUMBER BH-19

CLIENT USACE
PROJECT NAME Fort Wingate Depot Activity Soil Background Study
PROJECT NUMBER 133366.10
PROJECT LOCATION Fort Wingate Depot Activity, Gallup, New Mexico
DATE STARTED 11/4/09 **COMPLETED** 11/4/09
GROUND ELEVATION (meters amsl) 2384.664
DRILLING CONTRACTOR J.R. Drilling
BOREHOLE DIAMETER (in) 2.0
DRILLING METHOD Geoprobe-direct push
NORTHING 717933.24 **EASTING** 3922092.579
LOGGED BY P. Ostrye
DEPTH TO WATER (ft bgs): NA
ENTERED BY
NOTES

DEPTH (ft)	SAMPLE NUMBER	REMARKS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0	01PP-BH19-SO-1	No Remarks	SM		Silty sand, dark reddish brown (2.5YR 3/3), moist, soft, non to low plasticity, no gravel, grain size range FU to VFU, greater than 15% fines.
			SM		Silty sand, reddish brown (2.5YR 4/4), dry, firm to hard, non plastic, no gravel, up to 10% mottling, grain size range, ML to FL, greater than 15% fines.
	01PP-BH19-SO-2				
5			SM		Silty sand, dark reddish brown (2.5YR 3/3), moist, firm, non to low plasticity, no gravel, greater than 15% fines.
			SW-SM		Well graded sand with silt, dark reddish brown (2.5YR 3/3), dry, firm, low plasticity, mottling, no gravel, grain size range VCU to FU, max size 5 mm, angular, 10% fines.
			SM		Silty sand, dark reddish gray (5YR 4/2), dry, firm, non plastic, platey, no gravel, grain size range FL to VFL, greater than 15% fines.
10	01PP-BH19-SO-3				
					Bottom of hole at 10.0 feet.
15					
20					
25					
30					

Shaw Environmental and Infrastructure Group
2440 Louisiana Blvd NE; Suite 300
Albuquerque, New Mexico 87110
Telephone: 1.505.262.8940
Fax: 1.505.262.8855

BORING NUMBER BH-20

CLIENT USACE
PROJECT NAME Fort Wingate Depot Activity Soil Background Study
PROJECT NUMBER 133366.10
PROJECT LOCATION Fort Wingate Depot Activity, Gallup, New Mexico
DATE STARTED 11/5/09 **COMPLETED** 11/5/09
GROUND ELEVATION (meters amsl) 2353.666
DRILLING CONTRACTOR J.R. Drilling
BOREHOLE DIAMETER (in) 2.0
DRILLING METHOD Geoprobe-direct push
NORTHING 717960.98 **EASTING** 3921440.268
LOGGED BY P. Ostrye
DEPTH TO WATER (ft bgs): NA
ENTERED BY
NOTES

DEPTH (ft)	SAMPLE NUMBER	REMARKS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0	1PP-BH20-SO-1		SP-SC		Poorly graded sand with clay, dark reddish brown (5YR 3/2), moist, firm, low plasticity, platey, grain size FL, max size 3 mm, angular to subrounded.
			SP-SC		Poorly graded sand with clay, dark reddish brown (2.5YR 3/3), moist, firm, low plasticity, slightly platey, grain size VFU, max 10 mm, angular, 10% fines.
5	1PP-BH20-SO-2		SP		Poorly graded sand, dark reddish brown (5YR 3/2), dry, soft, non plastic, grain size FU, max 20 mm, subangular to subrounded, 5% Fines.
	1PP-BH20-SO-3	Bedrock refusal	SP-SC		Poorly graded sand with clay, brown (7.5YR 4/3), moist soft, low plasticity, grain size range ML to FL, 10% fines.
					Bottom of hole at 7.0 feet.
10					
15					
20					
25					
30					

ATLAS LEACHFIELD REPORT FWDA SOIL LOGS.GPJ GINT US.GDT 2/4/10

Shaw Environmental and Infrastructure Group
2440 Louisiana Blvd NE; Suite 300
Albuquerque, New Mexico 87110
Telephone: 1.505.262.8940
Fax: 1.505.262.8855

BORING NUMBER BH-21

CLIENT USACE
PROJECT NAME Fort Wingate Depot Activity Soil Background Study
PROJECT NUMBER 133366.10
PROJECT LOCATION Fort Wingate Depot Activity, Gallup, New Mexico
DATE STARTED 11/5/09 **COMPLETED** 11/5/09
GROUND ELEVATION (meters amsl) 2323.856
DRILLING CONTRACTOR J.R. Drilling
BOREHOLE DIAMETER (in) 2.0
DRILLING METHOD Geoprobe-direct push
NORTHING 717595.21 **EASTING** 3921206.94
LOGGED BY P. Ostrye
DEPTH TO WATER (ft bgs): NA
ENTERED BY
NOTES

DEPTH (ft)	SAMPLE NUMBER	REMARKS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0	1PP-BH21-SO-1	No Remarks	SP-SC		Poorly graded sand with clay, greenish black (Glay 2 2.5/5BG) moist, soft, low plasticity, some peds, no gravel, grain size range FU to VFU, 10% fines. Much organic material at 1 foot bgs.
			SM		Silty sand, very dark brown (7.5YR 2.5/3), moist, soft, low to medium plasticity, less than 5% gravels, grain size range ML to VFU, max 10 mm, angular, greater than 15% fines.
5	1PP-BH21-SO-2		SP-SC		Poorly graded sand with clay, dark reddish brown (5YR 3/3), moist, low plasticity, grain size 0.5 to 10 mm, subrounded to rounded, 10% fines.
			SC-SM		Clayey sand, very dark greenish gray (Glay 2 3/10BG), moist, firm, low plasticity, platey, no gravel, grain size range FU to VFU, max size 5 mm, subrounded, greater than 15% fines.
10	1PP-BH21-SO-3		SC-SM		Clayey sand, greenish black (Glay 2 3/5B), moist, firm, low plasticity, no gravel, grain size range FL to VFL, greater than 15% fines.
					Bottom of hole at 10.0 feet.
15					
20					
25					
30					

Shaw Environmental and Infrastructure Group
2440 Louisiana Blvd NE; Suite 300
Albuquerque, New Mexico 87110
Telephone: 1.505.262.8940
Fax: 1.505.262.8855

BORING NUMBER BH-22

CLIENT USACE
PROJECT NAME Fort Wingate Depot Activity Soil Background Study
PROJECT NUMBER 133366.10
PROJECT LOCATION Fort Wingate Depot Activity, Gallup, New Mexico
DATE STARTED 11/5/09 **COMPLETED** 11/5/09
GROUND ELEVATION (meters amsl) 2298.863
DRILLING CONTRACTOR J.R. Drilling
BOREHOLE DIAMETER (in) 2.0
DRILLING METHOD Geoprobe-direct push
NORTHING 717315.10 **EASTING** 3920758.883
LOGGED BY P. Ostrye
DEPTH TO WATER (ft bgs): NA
ENTERED BY
NOTES

DEPTH (ft)	SAMPLE NUMBER	REMARKS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0	1PP-BH22-SO-1	No Remarks	SP-SC		Poorly graded sand with clay, dark reddish brown (2.5YR 3/3), dry, soft to firm, non plastic, no gravel, grain size range FU to VFU, 10% fines.
			SP		Poorly graded sand, reddish brown (2.5TR 4/4), dry, soft, non plastic, no gravel, grain size range MU to ML, angular, 5% fines.
5	1PP-BH22-SO-2		Rock		Sandstone lens, red (2.5YR 5/6), well cemented, well sorted, FU to FL, subangular to subrounded.
			SP-SM		Poorly graded sand with silt, red (2.5YR 5/6), dry, soft, non plastic, no gravel, grain size range FL to VFU, subangular to subrounded, 10% fines.
			Rock		Sandstone lens, red (2.5YR 5/6), well cemented, well sorted, FU to FL, subangular to subrounded.
10	1PP-BH22-SO-3		SP-SM		Silty sand, light reddish brown (2.5YR 6/3), dry, soft, non plastic, less than 5% gravel, grain size range FL to VFU, max grain size 4 mm, subrounded to rounded, greater than 15% fines.
					Poorly graded sand with gravel, (2.5YR 4/4), dry, soft, non plastic, 20% gravel, 3 to 15 mm, angular to subangular, less than 5% fines.
15					Bottom of hole at 10.0 feet.
20					
25					
30					

Shaw Environmental and Infrastructure Group
2440 Louisiana Blvd NE; Suite 300
Albuquerque, New Mexico 87110
Telephone: 1.505.262.8940
Fax: 1.505.262.8855

BORING NUMBER BH-23

CLIENT USACE
PROJECT NAME Fort Wingate Depot Activity Soil Background Study
PROJECT NUMBER 133366.10
PROJECT LOCATION Fort Wingate Depot Activity, Gallup, New Mexico
DATE STARTED 11/5/09 **COMPLETED** 11/5/09
GROUND ELEVATION (meters amsl) 2313.036
DRILLING CONTRACTOR J.R. Drilling
BOREHOLE DIAMETER (in) 2.0
DRILLING METHOD Geoprobe-direct push
NORTHING 717150.39 **EASTING** 3921219.081
LOGGED BY P. Ostrye
DEPTH TO WATER (ft bgs): NA
ENTERED BY
NOTES

DEPTH (ft)	SAMPLE NUMBER	REMARKS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0	1PP-BH23-S0-1	No Remarks	SM		Silty sand, dark reddish brown (2.5YR 3/4), dry, soft, non plastic, platey, 10% gravels, 0.5 to 7 mm, angular, greater than 15% fines.
5	1PP-BH23-S0-2		SP-SM		Poorly graded sand with silt, reddish brown (2.5YR 4/4), dry, firm, non plastic, 5% gravels, 0.5 to 12 mm, angular, grain size range VFU to VFL, 10% fines. 4-inch white clay lens at 5.5 feet bgs. Very slick when wetted.
10	1PP-BH23-S0-3		SP-SM		Poorly graded sand with silt, reddish brown (2.5YR 4/4), dry, firm, non plastic, no gravel, grain size range VFU to VFL, 10% fines. Same white clay lens as 5.5 ft.
					Bottom of hole at 10.0 feet.
15					
20					
25					
30					

Shaw Environmental and Infrastructure Group
2440 Louisiana Blvd NE; Suite 300
Albuquerque, New Mexico 87110
Telephone: 1.505.262.8940
Fax: 1.505.262.8855

BORING NUMBER BH-24

CLIENT USACE
PROJECT NAME Fort Wingate Depot Activity Soil Background Study
PROJECT NUMBER 133366.10
PROJECT LOCATION Fort Wingate Depot Activity, Gallup, New Mexico
DATE STARTED 11/5/09 **COMPLETED** 11/5/09
GROUND ELEVATION (meters amsl) 2403.409
DRILLING CONTRACTOR J.R. Drilling
BOREHOLE DIAMETER (in) 2.0
DRILLING METHOD Geoprobe-direct push
NORTHING 717958.23 **EASTING** 3921815.581
LOGGED BY P. Ostrye
DEPTH TO WATER (ft bgs): NA
ENTERED BY
NOTES

DEPTH (ft)	SAMPLE NUMBER	REMARKS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0	1PP-BH24-SO-1	No Remarks	SP		Poorly graded sand, dark reddish brown (2.5YR 3/3), slight moisture, soft, non plastic, no gravels, some mottling, grain size range FU to FL, subangular, 5% fines.
5	1PP-BH24-SO-2		SC-SM		Clayey sand, dark reddish gray (2.5YR 3/1), moist, firm, low to medium plasticity, no gravels, grain size range VFU to VFL, subrounded, greater than 15% fines. Silt/sand increases with depth.
10	1PP-BH24-SO-3		SP-SC		Poorly graded sand with clay, very dark greenish gray (Glay 2 3/10BG), slight moisture, soft, low plasticity, no gravels, some mottling, grain size range FU to FL, max grain size 0.5 mm, 10% fines.
					Bottom of hole at 10.0 feet.
15					
20					
25					
30					

Shaw Environmental and Infrastructure Group
2440 Louisiana Blvd NE; Suite 300
Albuquerque, New Mexico 87110
Telephone: 1.505.262.8940
Fax: 1.505.262.8855

BORING NUMBER BH-25

CLIENT USACE
PROJECT NAME Fort Wingate Depot Activity Soil Background Study
PROJECT NUMBER 133366.10
PROJECT LOCATION Fort Wingate Depot Activity, Gallup, New Mexico
DATE STARTED 11/10/09 **COMPLETED** 11/10/09
GROUND ELEVATION (meters amsl) 2152.985
DRILLING CONTRACTOR J.R. Drilling
BOREHOLE DIAMETER (in) 2.0
DRILLING METHOD Geoprobe-direct push
NORTHING 717543.77 **EASTING** 3926017.955
LOGGED BY P.Ostrye
DEPTH TO WATER (ft bgs): NA
ENTERED BY
NOTES

DEPTH (ft)	SAMPLE NUMBER	REMARKS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0	02PJ-BH25-SO-1		GP		Poorly graded gravels with sand, weak red (10R 4/2), dry, very loose, non plastic, 50% gravels, 3 to 10 mm angular, greater than 15% sands, grain size range FU to FL, subangular, 5% fines.
			Rock		Sandstone, white (7.5YR 8/1), poorly cemented, grain size range FU to FL, angular to subrounded. Gravels grade into decomposing sandstone to 3 ft.
		Sharp contact	SM		Silty sand, dark reddish gray (10R 4/1), dry, very loose, non plastic, no gravels, very blocky, greater than 15% fines.
5	02PJ-BH25-SO-2		SM		Silty sand, pale red (10R 6/2), dry, loose , non plastic, no gravels, grain size range ML to FU, greater than 15% fines. Grades into underlying finer grained silty sand.
		Sharp contact	SM		Silty sand, dusky red (10R 3/2), dry, very hard, non plastic, no gravel, grain size range VFU to VFL, greater than 15% fines.
		Sharp contact	SM		Silty sand, dusky red (10R 3/3), dry, soft, non plastic, no gravel, grain size range FL to VFU, greater than 15% fines.
10	02PJ-BH25-SO-3		SM		Silty sand, dark reddish gray (10R 4/1), dry, very loose, non plastic, no gravels, very blocky, greater than 15% fines. Many white veins running throughout the soil coring at all depths giving soil variable color, but not different characteristics.
					Bottom of hole at 10.0 feet.
15					
20					
25					
30					

Shaw Environmental and Infrastructure Group
2440 Louisiana Blvd NE; Suite 300
Albuquerque, New Mexico 87110
Telephone: 1.505.262.8940
Fax: 1.505.262.8855

BORING NUMBER BH-26

CLIENT USACE
PROJECT NAME Fort Wingate Depot Activity Soil Background Study
PROJECT NUMBER 133366.10
PROJECT LOCATION Fort Wingate Depot Activity, Gallup, New Mexico
DATE STARTED 11/10/09 **COMPLETED** 11/10/09
GROUND ELEVATION (meters amsl) 2132.076
DRILLING CONTRACTOR J.R. Drilling
BOREHOLE DIAMETER (in) 2.0
DRILLING METHOD Geoprobe-direct push
NORTHING 717315.00 **EASTING** 3926057.007
LOGGED BY P. Ostrye
DEPTH TO WATER (ft bgs): NA
ENTERED BY
NOTES

DEPTH (ft)	SAMPLE NUMBER	REMARKS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0	02PJ-BH26-SO-1		SP-SM		Poorly graded sand with silt, dusky red (10R 3/3), dry, soft, non plastic, no gravel, slightly blocky, grain size range FU to FL, 10% fines.
	02PJ-BH26-SO-2		SP		Poorly graded sand, pale red (10R 6/2), dry, soft, nonplastic, less than 15% gravel, 1 to 5 mm, 5% fines. Decomposing sandstone.
	02PJ-BH26-SO-3		Rock		Sandstone, white (7.5YR 8/1), well cemented, grain size range FU to FL, angular to subrounded.
5		Bedrock refusal			Bottom of hole at 5.0 feet.
10					
15					
20					
25					
30					

Shaw Environmental and Infrastructure Group
2440 Louisiana Blvd NE; Suite 300
Albuquerque, New Mexico 87110
Telephone: 1.505.262.8940
Fax: 1.505.262.8855

BORING NUMBER BH-27

CLIENT USACE
PROJECT NAME Fort Wingate Depot Activity Soil Background Study
PROJECT NUMBER 133366.10
PROJECT LOCATION Fort Wingate Depot Activity, Gallup, New Mexico
DATE STARTED 11/10/09 **COMPLETED** 11/10/09
GROUND ELEVATION (meters amsl) 2147.682
DRILLING CONTRACTOR J.R. Drilling
BOREHOLE DIAMETER (in) 2.0
DRILLING METHOD Geoprobe-direct push
NORTHING 716119.29 **EASTING** 3926809.552
LOGGED BY P. Ostrye
DEPTH TO WATER (ft bgs): NA
ENTERED BY
NOTES

DEPTH (ft)	SAMPLE NUMBER	REMARKS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0	02PJ-BH27-SO-1		SP-SM		Poorly graded sand with silt, dusky red (10R 3/3), dry, very soft, non plastic, no gravel, grain size range VCU to MU, 10% fines.
	02PJ-BH27-SO-2		Rock		Sandstone, weak red (10R 5/2), well cemented, grain size range FU to FL, sub angular to subrounded.
			SP		Poorly graded sand with gravels, weak red (10R 5/2), dry, very soft, non plastic 15% gravels, 5 to 15 mm, 5% fines.
		Bedrock refusal	SW		Well graded sand with gravel, weak red (10R 4/4), dry, soft, non plastic, 30% gravels, 5% fines. Sandstone gravels.
5					Bottom of hole at 3.9 feet.
10					
15					
20					
25					
30					

Shaw Environmental and Infrastructure Group
2440 Louisiana Blvd NE; Suite 300
Albuquerque, New Mexico 87110
Telephone: 1.505.262.8940
Fax: 1.505.262.8855

BORING NUMBER BH-28

CLIENT USACE
PROJECT NAME Fort Wingate Depot Activity Soil Background Study
PROJECT NUMBER 133366.10
PROJECT LOCATION Fort Wingate Depot Activity, Gallup, New Mexico
DATE STARTED 11/10/09 **COMPLETED** 11/10/09
GROUND ELEVATION (meters amsl) 2151.766
DRILLING CONTRACTOR J.R. Drilling
BOREHOLE DIAMETER (in) 2.0
DRILLING METHOD Geoprobe-direct push
NORTHING 716166.24 **EASTING** 3926703.782
LOGGED BY P. Ostrye
DEPTH TO WATER (ft bgs): NA
ENTERED BY
NOTES

DEPTH (ft)	SAMPLE NUMBER	REMARKS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0	02PJ-BH28-SO-1 02PJ-BH28-SO-2	Bedrock refusal	SP-SM		Poorly graded sand with silt, dusky red (10R 3/3), dry, very soft, non plastic, no gravel, grain size range VCU to MU, 10% fines.
					Bottom of hole at 2.3 feet.
5					
10					
15					
20					
25					
30					

Shaw Environmental and Infrastructure Group
2440 Louisiana Blvd NE; Suite 300
Albuquerque, New Mexico 87110
Telephone: 1.505.262.8940
Fax: 1.505.262.8855

BORING NUMBER BH-29

CLIENT USACE
PROJECT NAME Fort Wingate Depot Activity Soil Background Study
PROJECT NUMBER 133366.10
PROJECT LOCATION Fort Wingate Depot Activity, Gallup, New Mexico
DATE STARTED 11/9/09 **COMPLETED** 11/9/09
GROUND ELEVATION (meters amsl) 2135.429
DRILLING CONTRACTOR J.R. Drilling
BOREHOLE DIAMETER (in) 2.0
DRILLING METHOD Geoprobe-direct push
NORTHING 716147.92 **EASTING** 3926925.78
LOGGED BY P. Ostrye
DEPTH TO WATER (ft bgs): NA
ENTERED BY
NOTES

DEPTH (ft)	SAMPLE NUMBER	REMARKS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0	02PJ-BH29-SO-1		SM		Silty sand, dark reddish brown (5YR 3/2), dry, very soft, non plastic, no gravel, grain size range FL to VFL, greater than 15 % fines.
	02PJ-BH29-SO-2		SP		Poorly grade sand, pale red (10R 6/3), dry, very hard, non plastic, no gravel, grain size range CL to ML, 5% fines. Color grades to red (10R 4/6) at 2 ft. Entire core looks like pulverised sandstone bedrock.
		Bedrock refusal			Bottom of hole at 3.0 feet.
5					
10					
15					
20					
25					
30					

ATLAS LEACHFIELD REPORT FWDA SOIL LOGS.GPJ GINT US.GDT 2/4/10

Shaw Environmental and Infrastructure Group
2440 Louisiana Blvd NE; Suite 300
Albuquerque, New Mexico 87110
Telephone: 1.505.262.8940
Fax: 1.505.262.8855

BORING NUMBER BH-30

CLIENT USACE
PROJECT NAME Fort Wingate Depot Activity Soil Background Study
PROJECT NUMBER 133366.10
PROJECT LOCATION Fort Wingate Depot Activity, Gallup, New Mexico
DATE STARTED 11/9/09 **COMPLETED** 11/9/09
GROUND ELEVATION (meters amsl) 2142.653
DRILLING CONTRACTOR J.R. Drilling
BOREHOLE DIAMETER (in) 2.0
DRILLING METHOD Geoprobe-direct push
NORTHING 716147.81 **EASTING** 3926915.227
LOGGED BY P. Ostrye
DEPTH TO WATER (ft bgs): NA
ENTERED BY
NOTES

DEPTH (ft)	SAMPLE NUMBER	REMARKS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0	02PJ-BH30-SO-1		SM		Silty sand, dark reddish brown (5YR 3/2), dry, very soft, non plastic, no gravel, grain size range FL to VFL, greater than 15 % fines.
	02PJ-BH30-SO-2	Bedrock refusal	SP		Poorly graded sand, pale red (10R 6/3), dry, very hard, non plastic, no gravel, grain size range CL to ML, 5% fines. Color grades to red (10R 4/6) at 2 ft. Entire core looks like pulverised sandstone bedrock.
					Bottom of hole at 3.0 feet.
5					
10					
15					
20					
25					
30					

Shaw Environmental and Infrastructure Group
2440 Louisiana Blvd NE; Suite 300
Albuquerque, New Mexico 87110
Telephone: 1.505.262.8940
Fax: 1.505.262.8855

BORING NUMBER BH-31

CLIENT USACE
PROJECT NAME Fort Wingate Depot Activity Soil Background Study
PROJECT NUMBER 133366.10
PROJECT LOCATION Fort Wingate Depot Activity, Gallup, New Mexico
DATE STARTED 11/6/09 **COMPLETED** 11/6/09
GROUND ELEVATION (meters amsl) 2110.191
DRILLING CONTRACTOR J.R. Drilling
BOREHOLE DIAMETER (in) 2.0
DRILLING METHOD Geoprobe-direct push
NORTHING 715951.33 **EASTING** 3928135.356
LOGGED BY P. Ostrye
DEPTH TO WATER (ft bgs): NA
ENTERED BY
NOTES

DEPTH (ft)	SAMPLE NUMBER	REMARKS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0	02DS-BH31-SO-1	No Remarks	SP		Poorly graded sand, red (2.5YR 5/6), dry, very soft, non plastic, 10% gravels, max size 8 mm, grain size range CU to ML, angular to well rounded, 10% fines. Very uniform.
5	02DS-BH31-SO-2		SW		Well graded sand with gravel, reddish brown (2.5YR 5/4), dry, very soft, non plastic, gravel size range 1-13 mm, angular to subrounded, 20% gravels, grain size range VCU to ML, angular to well rounded, 5% fines.
10	02DS-BH31-SO-3		SP		Poorly graded sand, red (2.5YR 5/6), dry, very soft, non plastic, 10% gravels, max size 8 mm, grain size range CU to ML, angular to well rounded, 10% fines.
					Bottom of hole at 10.0 feet.
15					
20					
25					
30					

Shaw Environmental and Infrastructure Group
2440 Louisiana Blvd NE; Suite 300
Albuquerque, New Mexico 87110
Telephone: 1.505.262.8940
Fax: 1.505.262.8855

BORING NUMBER BH-32

CLIENT USACE
PROJECT NAME Fort Wingate Depot Activity Soil Background Study
PROJECT NUMBER 133366.10
PROJECT LOCATION Fort Wingate Depot Activity, Gallup, New Mexico
DATE STARTED 11/6/09 **COMPLETED** 11/6/09
GROUND ELEVATION (meters amsl) 2076.785
DRILLING CONTRACTOR J.R. Drilling
BOREHOLE DIAMETER (in) 2.0
DRILLING METHOD Geoprobe-direct push
NORTHING 715846.91 **EASTING** 3929566.64
LOGGED BY P. Ostrye
DEPTH TO WATER (ft bgs): NA
ENTERED BY
NOTES

DEPTH (ft)	SAMPLE NUMBER	REMARKS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0	05ADS-BH32-SO-1	No Remarks	SP		Poorly graded sand, red (2.5YR 4/6), dry, very soft, non plastic, no gravel, grain size range ML to FL, angular to subrounded, 5% fines.
5	05ADS-BH32-SO-2		SP-SM		Poorly graded sand with silt, dark reddish brown (2.5YR 3/4), dry, firm, non plastic, no gravel, slightly platey, some mottling, grain size range FU to VFU, 10% fines.
10	05ADS-BH32-SO-3				Bottom of hole at 10.0 feet.
15					
20					
25					
30					

Shaw Environmental and Infrastructure Group
2440 Louisiana Blvd NE; Suite 300
Albuquerque, New Mexico 87110
Telephone: 1.505.262.8940
Fax: 1.505.262.8855

BORING NUMBER BH-33

CLIENT USACE
PROJECT NAME Fort Wingate Depot Activity Soil Background Study
PROJECT NUMBER 133366.10
PROJECT LOCATION Fort Wingate Depot Activity, Gallup, New Mexico
DATE STARTED 11/6/09 **COMPLETED** 11/6/09
GROUND ELEVATION (meters amsl) 2066.94
DRILLING CONTRACTOR J.R. Drilling
BOREHOLE DIAMETER (in) 2.0
DRILLING METHOD Geoprobe-direct push
NORTHING 715824.76 **EASTING** 3930087.911
LOGGED BY P. Ostrye
DEPTH TO WATER (ft bgs): NA
ENTERED BY
NOTES

DEPTH (ft)	SAMPLE NUMBER	REMARKS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0	08DS-BH33-SO-1	No Remarks	SP-SM		Poorly graded sand with silt, weak red (10R 5/4), dry, soft to firm, non plastic, no gravels, platey, grain size range VFU to VFL, 10% fines. Silt/clay content increases with depth.
5	08DS-BH33-SO-2		SP-SM		Poorly graded sand with silt, red (10R 4/6), dry, firm, non plastic, no gravels, platey, grain size range VFU to VFL, 10% fines.
10	08DS-BH33-SO-3		SM		Poorly graded sand with silt, weak red (10R 4/4), dry, firm, non plastic, no gravels, platey, grain size range VFU to VFL, 15% fines.
					Bottom of hole at 10.0 feet.
15					
20					
25					
30					

Shaw Environmental and Infrastructure Group
2440 Louisiana Blvd NE; Suite 300
Albuquerque, New Mexico 87110
Telephone: 1.505.262.8940
Fax: 1.505.262.8855

BORING NUMBER BH-34

CLIENT USACE
PROJECT NAME Fort Wingate Depot Activity Soil Background Study
PROJECT NUMBER 133366.10
PROJECT LOCATION Fort Wingate Depot Activity, Gallup, New Mexico
DATE STARTED 11/6/09 **COMPLETED** 11/6/09
GROUND ELEVATION (meters amsl) 2060.204
DRILLING CONTRACTOR J.R. Drilling
BOREHOLE DIAMETER (in) 2.0
DRILLING METHOD Geoprobe-direct push
NORTHING 715590.24 **EASTING** 3930474.113
LOGGED BY P. Ostrye
DEPTH TO WATER (ft bgs): NA
ENTERED BY
NOTES

DEPTH (ft)	SAMPLE NUMBER	REMARKS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0	08DS-BH34-SO-1	No Remarks	SP		Poorly graded sand, reddish brown (2.5YR 5/4), dry, very soft, non plastic, 5% gravel, max size 10 mm, grain size range ML to FU, angular to rounded, 5% fines. Roots down to 4 ft.
5	08DS-BH34-SO-2				
10	08DS-BH34-SO-3				Bottom of hole at 10.0 feet.
15					
20					
25					
30					

Shaw Environmental and Infrastructure Group
2440 Louisiana Blvd NE; Suite 300
Albuquerque, New Mexico 87110
Telephone: 1.505.262.8940
Fax: 1.505.262.8855

BORING NUMBER BH-35

CLIENT USACE
PROJECT NAME Fort Wingate Depot Activity Soil Background Study
PROJECT NUMBER 133366.10
PROJECT LOCATION Fort Wingate Depot Activity, Gallup, New Mexico
DATE STARTED 11/6/09 **COMPLETED** 11/6/09
GROUND ELEVATION (meters amsl) 2059.259
DRILLING CONTRACTOR J.R. Drilling
BOREHOLE DIAMETER (in) 2.0
DRILLING METHOD Hand Auger
NORTHING 715319.95 **EASTING** 3931176.158
LOGGED BY P. Ostrye
DEPTH TO WATER (ft bgs): NA
ENTERED BY
NOTES

DEPTH (ft)	SAMPLE NUMBER	REMARKS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0	08DS-BH35-SO-1	No Remarks	SM		Silty sand, weak red (2.5YR 4/2), dry, firm, non plastic, no gravels, platey, grain size VFL, greater than 15% fines. 0 to 3 ft grades into 4 to 10 ft description.
5	08DS-BH35-SO-2		SP		Poorly graded sand, brown (7.5YR 5/3), dry, very soft, non plastic, no gravels, grain size range FU to FL, angular to rounded, 5% fines.
10	08DS-BH35-SO-3				Bottom of hole at 10.0 feet.
15					
20					
25					
30					

Shaw Environmental and Infrastructure Group
2440 Louisiana Blvd NE; Suite 300
Albuquerque, New Mexico 87110
Telephone: 1.505.262.8940
Fax: 1.505.262.8855

BORING NUMBER BH-36

CLIENT USACE
PROJECT NAME Fort Wingate Depot Activity Soil Background Study
PROJECT NUMBER 133366.10
PROJECT LOCATION Fort Wingate Depot Activity, Gallup, New Mexico
DATE STARTED 11/6/09 **COMPLETED** 11/6/09
GROUND ELEVATION (meters amsl) 2050.115
DRILLING CONTRACTOR J.R. Drilling
BOREHOLE DIAMETER (in) 2.0
DRILLING METHOD Geoprobe-direct push
NORTHING 715805.51 **EASTING** 3931609.473
LOGGED BY P. Ostrye
DEPTH TO WATER (ft bgs): NA
ENTERED BY
NOTES

DEPTH (ft)	SAMPLE NUMBER	REMARKS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0	08DS-BH36-SO-1	No Remarks	SP-SM		Poorly graded sand with silt, reddish brown (5YR 5/4), dry soft, non plastic, no gravel, 10% fines.
			SP		Poorly graded sand, brown (7.5YR 5/4), dry, very soft, non plastic, no gravel, 5% fines.
5	08DS-BH36-SO-2				
			SM		Silty sand, reddish brown (5YR 4/3), dry, soft to firm, slight plasticity, no gravel, 15% fines.
10	08DS-BH36-SO-3				Bottom of hole at 10.0 feet.
15					
20					
25					
30					

Shaw Environmental and Infrastructure Group
2440 Louisiana Blvd NE; Suite 300
Albuquerque, New Mexico 87110
Telephone: 1.505.262.8940
Fax: 1.505.262.8855

BORING NUMBER BH-37

CLIENT USACE
PROJECT NAME Fort Wingate Depot Activity Soil Background Study
PROJECT NUMBER 133366.10
PROJECT LOCATION Fort Wingate Depot Activity, Gallup, New Mexico
DATE STARTED 11/6/09 **COMPLETED** 11/6/09
GROUND ELEVATION (meters amsl) 2054.687
DRILLING CONTRACTOR J.R. Drilling
BOREHOLE DIAMETER (in) 2.0
DRILLING METHOD Geoprobe-direct push
NORTHING 715824.62 **EASTING** 3930834.23
LOGGED BY P. Ostrye
DEPTH TO WATER (ft bgs): NA
ENTERED BY
NOTES

DEPTH (ft)	SAMPLE NUMBER	REMARKS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0	08DS-BH37-SO-1	No Remarks	SP		Poorly graded sand, red (10R 4/8), dry, soft, non plastic, no gravel, grain size range FU to VFU, 5% fines.
			SP-SM		Poorly graded sand with silt, dark gray (5YR 4/1), slight moisture, firm, non plastic, no gravel, 10% fines.
5	08DS-BH37-SO-2		SM		Silty sand, reddish gray (5YR 5/2), dry, soft, non plastic, no gravels, 15% fines.
10	08DS-BH37-SO-3				Bottom of hole at 10.0 feet.
15					
20					
25					
30					

Shaw Environmental and Infrastructure Group
2440 Louisiana Blvd NE; Suite 300
Albuquerque, New Mexico 87110
Telephone: 1.505.262.8940
Fax: 1.505.262.8855

BORING NUMBER BH-38

CLIENT USACE
PROJECT NAME Fort Wingate Depot Activity Soil Background Study
PROJECT NUMBER 133366.10
PROJECT LOCATION Fort Wingate Depot Activity, Gallup, New Mexico
DATE STARTED 11/6/09 **COMPLETED** 11/6/09
GROUND ELEVATION (meters amsl) 2039.539
DRILLING CONTRACTOR J.R. Drilling
BOREHOLE DIAMETER (in) 2.0
DRILLING METHOD Geoprobe-direct push
NORTHING 715728.00 **EASTING** 3933032
LOGGED BY P. Ostrye
DEPTH TO WATER (ft bgs): NA
ENTERED BY
NOTES

DEPTH (ft)	SAMPLE NUMBER	REMARKS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0	08DS-BH38-SO-1	No Remarks	SM		Silty sand, red (10R 4/6), dry, soft to firm, non plastic, no gravel, peds, greater than 15% fines.
			SM		Silty sand, red (10R 4/6), dry, firm, non plastic, no gravel, platey, greater than 15% fines.
5	08DS-BH38-SO-2				
			SC-SM		Clayey sand, weak red (10R 4/4), dry, soft to firm, low plasticity, no gravel, greater than 15% fines.
			SM		Silty sand, red (10R 4/6), dry, firm, non plastic, no gravel, platey, greater than 15% fines.
10	08DS-BH38-SO-3				
					Bottom of hole at 10.0 feet.
15					
20					
25					
30					

ATLAS LEACHFIELD REPORT FWDA SOIL LOGS.GPJ GINT US.GDT 2/4/10

Appendix E
Complete Soil Analytical Results
(See "Appendices" folder on this compact disc)

Appendix F
Laboratory Data Reports
(See "Appendices" folder on this compact disc)

Appendix G
Automated Data Review
(See "Appendices" folder on this compact disc)

Appendix H
Environmental Data Management System
(See "Appendices" folder on this compact disc)