Army Draft

RCRA Facility Investigation
Phase 2 Work Plan
Parcel 23

Fort Wingate Depot Activity
McKinley County, New Mexico

October 20, 2015

Contract No. W9126G-11-D-0040
Task Order No. 0004

Prepared for:

US Army Corps
of Engineers ®

United States Army Corps of Engineers
Fort Worth District
P.O. Box 17300
Fort Worth, Texas 76102

Prepared by:

amec foster wheeler

Amec Foster Wheeler Environment & Infrastructure, Inc.
4600 E. Washington Street, Ste. 600
Phoenix, Arizona 85034

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RCRA Facility Investigation
Phase 2 Work Plan
Parcel 23

Fort Wingate Depot Activity
McKinley County, New Mexico

October 20, 2015

Contract No. W9126G-11-D-0040
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Prepared for:

United States Army Corps of Engineers
Fort Worth District
P.O. Box 17300
Fort Worth, Texas 76102

Prepared by:

Amec Foster Wheeler Environment & Infrastructure, Inc.
4600 E. Washington Street, Ste. 600
Phoenix, Arizona 85034

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____
Mr. Steven Smith
United States Army Corps of Engineers

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PREFACE

This Resource Conservation and Recovery Act Facility Investigation Phase 2 Work Plan describes the supplemental field activities that will be conducted within Parcel 23 at Fort Wingate Depot Activity (FWDA), New Mexico. This work plan addresses the requirements of the U.S. Army Corps of Engineers (USACE) Statement of Work Modification 7.

This Work Plan was prepared by Amec Foster Wheeler Environment & Infrastructure, Inc. in October 2015. Mr. Mark Patterson served as the FWDA Defense Base Realignment and Closure Environmental Coordinator and Mr. Steve Smith served as the USACE Project Manager.

____
Julianne Hamilton, PG
Program Manager

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FWDA BEC = Fort Wingate Depot Activity Base Realignment and Closure Environmental Coordinator.
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LIST OF ACRONYMS AND ABBREVIATIONS

°C	degrees Celsius
AOC	Area of Concern
AwM	Approval with Modifications
bgs	below ground surface
CFR	U.S. Code of Federal Regulations
CLS	claystone
COC	chain-of-custody
CSM	conceptual site model
DAF	dilution attenuation factor
DoD	Department of Defense
DRO	diesel range organics
EPA	U.S. Environmental Protection Agency
ft	feet
FWDA	Fort Wingate Depot Activity
GPS	Global Positioning System
HASP	Health and Safety Plan
HSA	hollow stem auger
HWB	Hazardous Waste Bureau
ID	identification
IDW	investigation-derived waste
kg	kilogram
LCS	Laboratory Control Sample
mg	milligram
ml	milliliter
MS	matrix spike
MSD	matrix spike duplicate
NMED	New Mexico Environment Department
NMOSE	New Mexico Office of the State Engineer
NOD	Notice of Disapproval
oz	ounce
PPE	personal protective equipment

LIST OF ACRONYMS AND ABBREVIATIONS (continued)

QA	quality assurance
QC	quality control
QSM	Quality Systems Manual
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
RPD	relative percent difference
SS	sandstone
SSL	Soil Screening Level
SSO	Site Safety Officer
SVOC	semi-volatile organic compound
SWMU	Solid Waste Management Unit
TAL	target analyte list
TPH	total petroleum hydrocarbons
USACE	U.S. Army Corps of Engineers
USGS	U.S. Geological Survey
VI	vapor intrusion
VOA	volatile organic analysis
VOC	volatile organic compound

1.0 INTRODUCTION

This Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Phase 2 Work Plan describes the additional investigation activities to be completed within Parcel 23 at Fort Wingate Depot Activity (FWDA), McKinley County, New Mexico (see Figures 1-1 and 1-2).

This RFI Work Plan has been prepared by the U.S. Army Corps of Engineers (USACE) Fort Worth District for submission to the New Mexico Environment Department's (NMED) Hazardous Waste Bureau (HWB), as required by Section VII.H.1.a of the RCRA Permit (NM 6213820974) for the FWDA, which became effective December 31, 2005 and was revised in April 2014.

1.1 Purpose and Scope

The purpose of this RFI Phase 2 Work Plan is to propose additional investigation at select areas within Parcel 23 as recommended by the Army in the *RCRA Facility Investigation Report, Parcel 23, Revision 1.0, Fort Wingate Depot Activity*, hereafter referred to as the RFI Report, as prepared by the U.S. Geological Survey (USGS, 2015). This Phase 2 Work Plan also addresses NMED comments related to the RFI Report as presented in the Notice of Disapproval (NOD) dated August 19, 2014 (NMED, 2014a) and the Approval with Modifications (AwM) dated August 12, 2015 (NMED, 2015). The additional sampling has been recommended to fill data gaps identified by previous investigations and reviews of previous investigations in order to better characterize the nature and extent of contamination.

1.2 Background Information

The Permit lists one Solid Waste Management Unit (SWMU) and one Area of Concern (AOC) within Parcel 23, as follows:

- SWMU 21 – Central Landfill;
- AOC 73 – Former buildings or structures along Road C-3.

The locations of SWMU 21 and AOC 73 are illustrated in Figure 1-3. Complete background information regarding FWDA and Parcel 23 is provided in numerous documents previously submitted to NMED, including the following:

- Final Historical Information Report, Parcel 23, Fort Wingate Depot Activity (CH2M Hill, 2009);
- Final – NMED Revision, RCRA Facility Investigation Work Plan, Parcel 23, Fort Wingate Depot Activity (hereafter referred to as the RFI Work Plan, CH2M Hill, 2010); and,
- RFI Report (USGS, 2015).

Based on evaluation of relevant data, the RFI Report recommended no further action for AOC 73. One of the comments in the AwM (Comment 5) concerned the comparison of metals analysis data at AOC 73 to background concentrations. Responses to NMED comments contained in the AwM are included as Appendix A. Although all detected concentrations were within background concentrations, NMED noted that samples were collected from AOC 73 using the multi-increment (MI) sampling method, compared to discrete samples collected during the background study

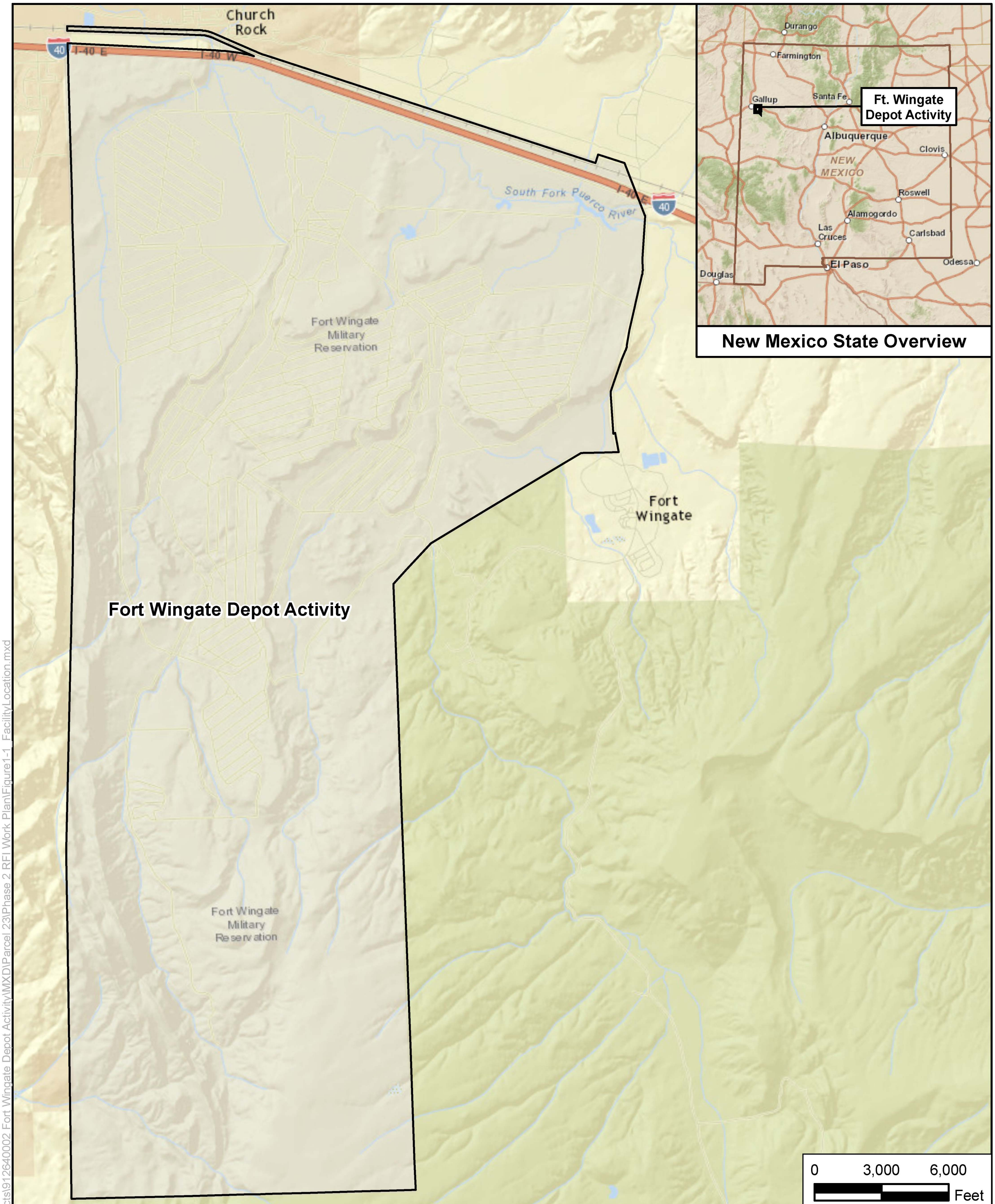
(Shaw, 2010). The Army has reviewed the metals analysis data for the samples collected at AOC 73 during the RFI to determine if there are any concentrations that exceed current SSLs. All analyte concentrations are less than the 2014 NMED risk assessment guidance (NMED, 2014b), and thus an evaluation comparing metals concentrations to naturally occurring background levels is not needed. The Army believes that the low concentrations of metals coupled with the lack of detection of any explosive compounds is sufficient to warrant No Further Action at AOC 73. Therefore, AOC 73 is not included in this RFI Work Plan.

In 1999, all waste and visibly impacted soil below the former Central Landfill was removed and disposed of at an offsite disposal facility (SCIENTECH, 1999a). An additional cell to the south of the original Central Landfill boundary was discovered during the excavation and its contents were also excavated (SCIENTECH, 1999b). The additional area is illustrated in Figure 1-3 and is planned to be added to SWMU 21 as part of a future permit modification. Confirmation sampling was conducted in 1999 immediately following the removal of landfill contents (SCIENTECH, 1999a and 1999b).

A release assessment was conducted in 2000 and included collection of soil boring samples from soils beneath the former landfill (Tetra Tech NUS, 2000). Additional characterization activities were conducted during 2011, in accordance with the NMED approved RFI Work Plan. RFI activities were detailed in the RFI Report submitted to NMED in April 2012. NMED responded to submittal of the RFI Report with a NOD in August 2014 (NMED, 2014a). The RFI Report was revised based on the NOD comments and submitted as Revision 1.0 in February 2015 (USGS, 2015). An AwM was received from NMED in August of 2015 (NMED, 2015).

The investigation activities described in this Phase 2 RFI Work Plan have been developed to address the Army recommendations contained in the RFI Report as well as the comments from NMED in the NOD and AwM. Responses to NMED comments contained in the NOD are included in the RFI Report. Responses to NMED comments contained in the AwM are included in this Work Plan as Appendix A. Responses to several comments from the NOD included in the RFI Report indicate that a Phase 2 Work Plan will be developed to address the comment. This Phase 2 Work Plan specifically addresses the following NOD comments:

- Comment 4: Figure 1-3 depicts the entire excavation area based on field observations and historical aerial photographs.
- Comment 6: Additional sample locations have been added to the north of the excavation area within the arroyo. See Section 3.0.
- Comment 9: Evaluation of potential impacts from the coal burning boiler plant (Building 535) is beyond the scope of this Phase 2 Work Plan. The Army does not believe that any data has been collected from any material used as backfill. Sampling proposed as part of this Phase 2 Work Plan will include collecting samples from fill material (See Section 3.0).
- Comments 11 and 12: A groundwater investigation will be initiated as part of this Phase 2 Work Plan; see Section 4.0.
- Comment 15: Additional soil borings related to the exceedance at soil boring SB08 are included in this Phase 2 Work Plan; see Section 3.0.



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Parcel 23 Phase 2 RFI Work Plan
Fort Wingate Depot Activity
McKinley County, New Mexico

Regional Map

FIGURE
1-1

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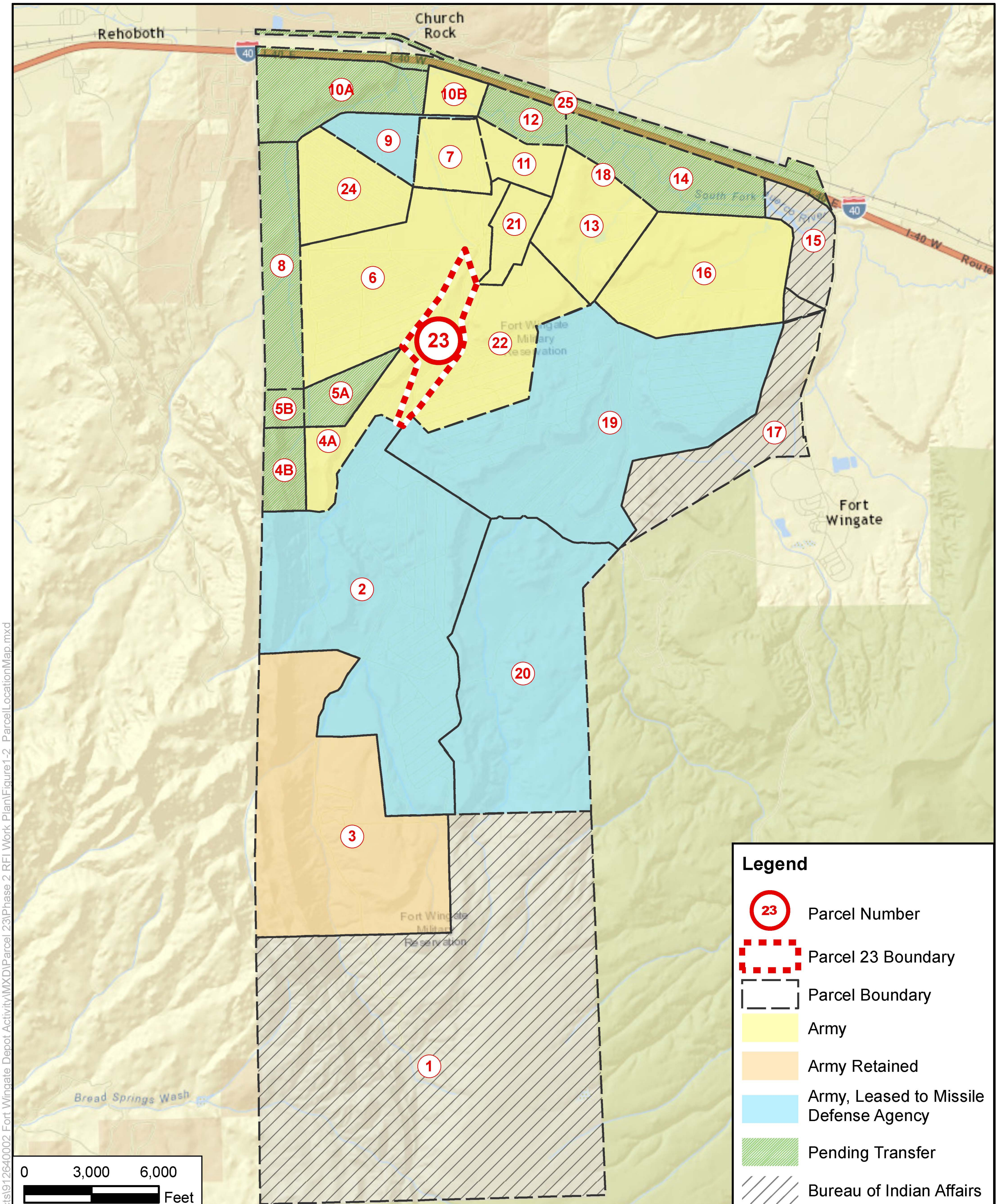

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Parcel 23 Phase 2 RFI Work Plan
Fort Wingate Depot Activity
McKinley County, New Mexico

Parcel Map

FIGURE
1-2

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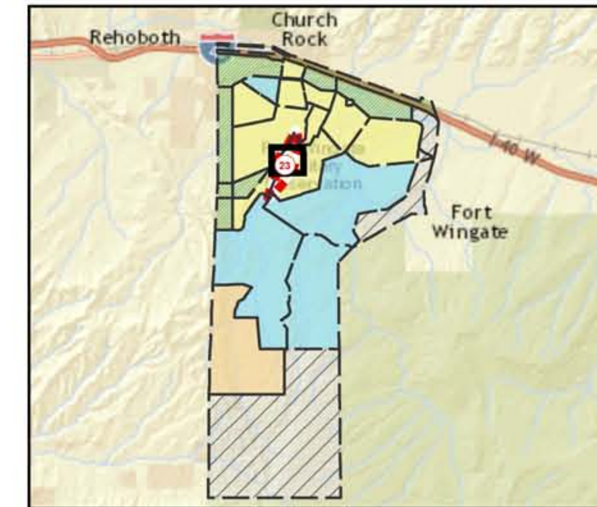

Parcel Map

Legend

- AOC/SWMU Boundary
- Parcel Number
- Parcel 23 Boundary
- Parcel Boundary
- Road

Notes:

AOC Area of Concern
SWMU Solid Waste Management Unit

Aerial Image Source: 2009, CIR

0 75 150 300 Feet

N

Parcel 23 Phase 2 RFI Work Plan
Fort Wingate Depot Activity
McKinley County, New Mexico

Site Location Map
SWMU 21 - Central Landfill and
AOC 73 - Former Buildings or Structures
Along Road C-3

FIGURE **1-3**	Job No.:	912640002
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	Scale:	1" = 300'

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2.0 DESCRIPTION OF INVESTIGATION ACTIVITIES

This section provides general information regarding the planned field activities to be completed as part of this Phase 2 Work Plan. Information related to specific sample locations within SWMU 21 is presented in Sections 3.0 and 4.0.

2.1 Site Safety and Awareness

All work will be accomplished in accordance with Army safety measures. A project-specific Health and Safety Plan (HASP) has been developed for sampling activities at FWDA. The HASP defines the roles and responsibilities of site personnel, establishes proper levels of personal protective equipment (PPE), and describes emergency response and contingency procedures. The associated Activity Hazard Analyses define hazards associated with each type of work activity and how those hazards will be mitigated. The HASP will be reviewed by site personnel prior to performing any site work. In addition, task-specific Activity Hazard Analyses will be reviewed before any new tasks are performed and periodically during daily tailgate safety meetings.

All work will be completed by a supervisor, operators, and technicians that have successfully completed 40-hour Hazardous Waste Operations and Emergency Response training in accordance with 29 *U.S. Code of Federal Regulations* 1910.120. A dedicated Site Safety Officer (SSO) will be on site during all field activities associated with implementation of this Work Plan. The SSO will be responsible for conducting site-specific training, daily tailgate safety meetings, and conducting periodic safety inspections.

2.2 Sampling and Analysis

This section provides general information regarding the methods that will be employed for various sampling activities to be completed during site investigation. A summary of analytical methods, sample containers, preservatives, and holding times is provided in Tables 2-1 and 2-2. The following subsections provide details regarding sample collection and management, quality assurance (QA) and quality control (QC).

2.2.1 Subsurface Soil Sampling

Shallow subsurface samples (up to 3 feet [ft] below ground surface [bgs]) will be collected from the bottom of the borehole using a decontaminated hand auger. Deeper subsurface samples will be collected using Direct-Push Technology or hollow-stem auger (HSA) equipment utilizing decontaminated split spoons, as appropriate. Samples will be collected from the sampling device using a decontaminated stainless steel spoon or disposable plastic trowel.

The liner containing the soil core will be split in half lengthwise using a decontaminated knife. If a sample is to be submitted for analysis of volatile organic compounds (VOCs), the VOC sample will be collected immediately after opening the sampling device by inserting the laboratory-supplied sampling device (EnCore sampler or equivalent) into the soil core; this sample will then be immediately extruded into the appropriate laboratory-supplied sample container(s). Samples for all other analyses will be placed using either a stainless steel spoon/trowel or a disposable scoop directly in laboratory supplied clean containers with a moisture-tight lid. The sample containers will then be placed into a cooler with ice and cooled to less than or equal to six degrees Celsius (≤ºC). Lids will be sealed by labels or custody seals to prevent tampering.

After soil samples are collected (to preserve sample integrity), the remaining lithologic samples will be fully described. After the contents of the sampler are measured, sampled, and described the core will be discarded and handled as Investigation-Derived Waste (IDW) as described in Section 2.10.

All borings will be abandoned by grouting to surface, unless the boring will be completed as a monitoring well (see Section 4.0). For deeper borings (those extending into the water table), rigid tremie pipe will be extended to the bottom of the boring and pump grout through the pipe until undiluted grout flows from the boring at ground surface. For shallow borings (those not penetrating the water table), grout will be poured into the boring from the surface until grout flows from the boring at ground surface. Grout will be composed of 20 parts cement (Portland cement, Type II or V), up to 1 part bentonite, and a maximum of 8 gallons of approved water per 94 pound bag of cement.

2.2.2 Groundwater Sampling

In order to address comments from NMED in the NOD (specifically Comments 11 and 12), a groundwater investigation will be implemented to determine whether leachate migrated from the landfill into groundwater beneath the landfill and/or into groundwater in the adjacent arroyo. The general approach to evaluating whether or not groundwater was impacted by landfill leachate is to drill to the first water-bearing zone, and collect groundwater samples from that zone by means of temporary wells/boreholes. Different approaches will be implemented for wells/boreholes drilled within the landfill areas versus those drilled within the arroyo. All boreholes will be logged using a USACE Drilling Log (Form 1836 and 1836a). All boreholes will also be permitted through the New Mexico Office of the State Engineer (NMOSE). Additional details regarding borehole installation and sampling are provided in Section 4.0.

2.3 Quality Control

In order to attain data of sufficient quality to support project objectives, specific procedures are required to allow evaluation of data quality. The QA/QC procedures and requirements for their evaluation will comply with the Department of Defense (DoD) Quality Systems Manual (QSM), Version 5.0 (DoD, 2013).

2.3.1 Field and Laboratory Quality Control Samples

Evaluation of field sampling procedures and laboratory equipment accuracy and precision requires the collection and evaluation of field and laboratory QC samples. Table 2-2 summarizes the planned QC samples for this project. A description of each QC sample type is provided in the following sections.

2.3.1.1 Quality Control Analyses/Parameters Originated by the Laboratory

Method Blank

Method blanks are used to monitor each preparation or analytical batch for interference and/or contamination from glassware, reagents, and other potential sources within the laboratory. A method blank is a contaminant-free matrix (laboratory reagent water for aqueous samples or Ottawa sand, sodium sulfate, or glass beads [metals] for soil samples) to which all reagents are added in the same amount or proportions as are added to the samples. It is processed through the entire sample preparation and analytical procedures along with the samples in the batch.

There will be at least one method blank per preparation or analytical batch. If a target constituent is found at a concentration that exceeds one half the reporting limit, corrective action must be performed in an attempt to identify and, if possible, eliminate the contamination source. If sufficient sample volume remains in the sample container, samples associated with the blank contamination should be re-prepared and re-analyzed after the contamination source has been eliminated.

Laboratory Control Sample

The Laboratory Control Sample (LCS) will consist of a contaminant-free matrix such as laboratory reagent water for aqueous samples or Ottawa sand, sodium sulfate, or glass beads (metals) for soil samples spiked with known amounts of constituents that come from a source different than that used for calibration standards. Target constituents will be spiked into the LCS. The spike levels will be less than or equal to the midpoint of the calibration range. If LCS results are outside the specified control limits, corrective action must be taken, including sample re-preparation and re-analysis, if appropriate. If more than one LCS is analyzed in a preparation or analytical batch, the results for each LCS must be reported. Any LCS recovery outside QC limits affects the accuracy for the entire batch and requires corrective action.

Matrix Spike/Matrix Spike Duplicate

A sample matrix fortified with known quantities of specific compounds is called a matrix spike (MS). It is subjected to the same preparation and analytical procedures as the native sample. For this project, all target constituents will be spiked into the MS sample. Sample MS recoveries are used to evaluate the effect of the sample matrix on the recovery of the analytes of interest. A matrix spike duplicate (MSD) is a second aliquot of the MS sample, fortified at the same concentration as the MS. The Relative Percent Difference (RPD) between the results of the duplicate matrix spikes measures the precision of sample results.

Project-specific samples will be used by the laboratory for the MS/MSD samples, which will be designated on the chain-of-custody (COC) form. The spike levels will be less than or equal to the midpoint of the calibration range. MS/MSD pairs will be collected at a frequency of five percent. MS/MSDs are required in every analytical batch regardless of the rate of collection and how samples are received at the laboratory.

2.3.1.2 Quality Control Analyses Originated by the Field Team

Field QC samples will be collected to determine the accuracy and precision of the analytical results. The QC sample frequencies are stated in the following subsections.

Equipment Blank

Equipment blanks will be collected to monitor the cleanliness of sampling equipment and the effectiveness of decontamination procedures. Contamination from the sampling equipment can bias the analytical results high or lead to false positive results being reported. Equipment blanks will be prepared by filling sample containers with laboratory-grade contaminant-free water that has been passed through a decontaminated or unused disposable sampling device. The required QC limits for equipment blank concentrations are to be less than the method's reporting limit. Equipment blanks will be collected at a frequency of approximately 5 percent based on the professional judgment of the field team leader and conditions as presented in the field. Samples associated with equipment blanks that have detected target constituents will be assessed during the data validation process. The usability of the associated analytical data will be documented and affected data will be appropriately qualified. Field corrective action to improve equipment decontamination procedures may also be implemented by the field team leader at the request of the project chemist.

Field Duplicate

Field duplicates are collected in the field from a single aliquot of the sample to determine the precision and accuracy of the field team's sampling procedures. Field duplicates will be collected and analyzed at a frequency of 10 percent.

Trip Blank

Trip blanks are used to monitor for contamination during sample shipping and handling, and for cross-contamination through volatile component migration among the collected samples. They are prepared in the laboratory by pouring organic-free water into a volatile organic analysis (VOA) sample container. They are then sealed, transported to the field, and transported back to the laboratory in the same cooler as the volatile component samples. One trip blank sample set (two VOAs) will accompany each volatile component sample cooler.

2.3.2 Data Precision, Accuracy, Representativeness, Comparability and Completeness

Field QA/QC samples and laboratory internal QA/QC samples are collected and analyzed to assess the data's quality and usability. The following subsections discuss the parameters that are used to assess the data quality.

Precision

The precision of laboratory analysis will be assessed by comparing the analytical results between MS/MSD and laboratory duplicate samples. The precision of the field sampling procedures will be assessed by reviewing field duplicate sample results. The RPD will be calculated for the duplicate samples using the equation:

$$\%RPD = \{(S - D)/[(S + D)/2]\} \times 100$$

where:

S = first sample value (original value)
D = second sample value (duplicate value)

The precision criteria for the duplicate samples will be ±50 percent in soil samples.

Accuracy

Accuracy of laboratory results will be assessed for compliance with the established QC criteria using the analytical results of method blanks, reagent/preparation blanks, LCS and MS/MSD samples and surrogate results, where applicable. Laboratory accuracy will be assessed for compliance with the established QC criteria listed in Appendix C of the QSM. The percent recovery of LCSs will be calculated using the equation:

$$\text{Percent Recovery} = (A/B) \times 100$$

where:

A = the analyte concentration determined experimentally from the LCS
B = the known amount of concentration in the sample

Completeness

The data completeness of laboratory analysis results will be assessed for compliance with the amount of data required for decision making. Complete data are data that are not rejected. Data with qualifiers such as “J” or “UJ” are deemed acceptable and can be used to make project decisions as qualified. The completeness of the analytical data is calculated using the equation:

$$\text{Percent Completeness} = [(\text{complete data obtained})/(\text{total data planned})] \times 100$$

The percent completeness goal for this sampling event is 90 percent for each analytical method.

Representativeness

Representativeness is the degree to which sampling data accurately and precisely represent site conditions, and is dependent on sampling and analytical variability and the variability of environmental media at the site. Representativeness is a qualitative “measure” of data quality.

Achieving representative data in the field starts with a properly designed and executed sampling program that carefully considers the project’s overall objectives. Proper location controls and sample handling are critical to obtaining representative samples.

The goal of achieving representative data in the laboratory is measured by assessing accuracy and precision. The laboratory will provide representative data when the analytical systems are in control. Therefore, representativeness is a redundant objective for laboratory systems if sample COC and sample preservation are properly documented, analytical procedures are followed and holding times are met.

Comparability

Comparability is the degree of confidence to which one data set can be compared to another. Comparability is a qualitative "measure" of data quality.

Achieving comparable data in the field starts with a properly designed and executed sampling program that carefully considers the project's overall objectives. Proper location controls and sample handling are critical to obtaining comparable samples.

The goal of achieving comparable data in the laboratory is measured by assessing accuracy and precision. The laboratory will provide comparable data when analytical systems are in control. Therefore, comparability is a redundant QC objective for laboratory systems if proper analytical procedures are followed and holding times are met.

Sensitivity

Sensitivity is the ability of the method or instrument to detect the contaminant of concern and other target compounds at the level of interest. Appropriate sampling and analytical methods will be selected that have QC acceptance limits that support the achievement of established performance criteria. For this project, the performance criteria are the screening levels presented in the NMED Risk Assessment Guidance for Site Investigations and Remediation (NMED, 2014b). The NMED soil screening levels (SSLs) will be used to evaluate contaminant concentrations in soil samples, and the NMED tapwater screening levels will be used to evaluate contaminant concentrations in groundwater samples. If NMED does not have published SSLs or tapwater screening levels, then a U.S. Environmental Protection Agency (EPA) regional screening level (RSL) or tapwater screening level will be used if one is published. Assessment of analytical sensitivity will require thorough data validation. A comparison of the NMED (or EPA) screening criteria to laboratory reporting limits is provided in Table 2-3 and Table 2-4.

2.3.3 Data Verification and Data Review Procedures

Personnel involved in data validation will be independent of any data generation effort. The project chemist will be responsible for the oversight of data verification, review, and validation. Data verification and review will be performed when the data packages are received from the laboratory. Verification will be performed on an analytical-batch basis using the summary results of calibration and laboratory QC, as well as those of the associated field samples. There are five stages of review defined in the EPA Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use:

- Stage 1: Verification and validation based only on completeness and compliance of sample receipt condition checks.
- Stage 2A: Verification and validation based on completeness and compliance checks of sample receipt conditions and ONLY sample-related QC results.
- Stage 2B: Verification and validation based on completeness and compliance checks of sample receipt conditions and BOTH sample-related and instrument-related QC results.
- Stage 3: Verification and validation based on completeness and compliance checks of sample receipt conditions, both sample-related and instrument-related QC results, AND recalculation checks.
- Stage 4: Verification and validation based on completeness and compliance checks of sample receipt conditions, both sample-related and instrument-related QC results, recalculation checks, AND the review of actual instrument outputs.

For this project, 100% of the data packages will undergo data verification and data review; specifically, 90% will undergo Stage 2B and 10% will undergo Stage 4.

2.3.4 Data Assessment

Limitations on data usability will be assigned, if appropriate, as a result of the validation process described earlier. The results of the data validation will be discussed in a separate report so that overall data quality can be verified through the precision, accuracy, representativeness, comparability, and completeness of sample results. Data qualifiers that may be assigned based on the validation process are listed in Table 2-5.

2.4 Chain-of-Custody

COC forms will be completed and will accompany each sample at all times. Data on the COC will include the sample identification (ID) (as described in Section 2.9), depth interval, date sampled, time sampled, project name, project number, and signatures of those in possession of the sample. COC forms will accompany those samples shipped to the designated laboratory so that sample possession information can be maintained. The field team will retain a separate copy of the COC at the field office. Additionally, the sample ID, date and time collected, collection location, and analysis requested will be documented in the field log book as discussed in Section 2.6.

2.5 Packaging and Shipping Procedures

All samples will be shipped by overnight air freight to the laboratory or hand-delivered. Unless otherwise indicated, samples will be treated as environmental samples, shipped in heavy duty coolers, packed in materials to prevent breakage, and preserved with ice in sealed plastic bags. Each shipment will include the appropriate field QC samples (i.e., trip blanks, duplicates, and rinsates).

Corresponding COC forms will be placed in waterproof bags and taped to the inside of the cooler lids. Each cooler shipped from the laboratory containing aqueous sample bottles for VOC analyses will contain a trip blank. The trip blank will stay with the cooler until the cooler is returned to the analytical laboratory. All coolers will be taped shut and a custody seal will be placed over the tape to prevent tampering.

2.6 Sample Documentation

Sample control and tracking information will be recorded in bound dedicated field logbooks and will include the following information: sample number and location, date, sampler's name, method of sampling, sample depth, soil sample physical description, ambient weather conditions, and miscellaneous observations. At the conclusion of each day in the field, the sampling team leader will review each page of the logbook for errors and omissions. He or she will then date and sign each reviewed page.

2.7 Field Instrument Calibration

All field instruments will be calibrated following manufacturer recommended calibration procedures and frequencies. Field instrument calibrations will be recorded in a designated portion of the field logbook at the time of the calibration. Adverse trends in instrument calibration behavior will be corrected.

2.8 Survey of Sample Locations

The location of each sample collected will be surveyed using appropriate instrumentation and procedures to obtain horizontal accuracy of less than 0.1 ft. A Trimble Total Station Global Positioning System (GPS), Trimble Static GPS, or equivalent, will be utilized to document each soil sample location. A North American Datum 1983 Northing and Easting in U.S. Survey Feet will be established for all surveyed points and recorded in a dedicated field notebook. Survey data will be supplied in the Final Report in New Mexico State Plane and Universal Transverse Mercator Index coordinates.

2.9 Sample Identification

During sampling unique sample ID numbers will be assigned to each sample or subsample. Each sample ID number will consist of a combination of the Parcel number, SWMU/AOC number, additional site identifier, source of sample, increment or boring number, type of sample, and depth of sample collection in accordance with the latest version of the FWDA Environmental Information Management Plan (USACE, 2007). Following is an example sample number and a description of the sample identifiers to be used during implementation of this Phase 2 Work Plan.

Example Sample ID: 2321CLANDSB01A-0.5-1.0D-SO

Parcel: 23

SWMU or AOC: in this case SWMU 21

Additional Site Identifier: in this case CLAND (for Central Landfill)

Source of Sample: in this case SB (soil boring)

Increment Number: Samples collected within each SWMU/AOC will be assigned sequential 2-digit or 3-digit numbers (in this case 01)

Depth Identifier: For samples collected at multiple depths at the same sample location, use of an alphabetic letter after the Increment Number will denote the different depths (in this case A)

Depth Range: In ft (in this case 0.5 to 1.0 ft)

Type of Sample: D (discrete)

Matrix: SO (Soil)

QA/QC samples will carry the same sample nomenclature as the parent sample with a unique suffix and numeral (if required) to distinguish individual samples. Equipment rinsate blanks, trip blanks, and field blanks will carry the sample location identifier with an additional designation of TBXX or EBXX (where XX represents the sequence number of the sample). Each blank will have a unique tracking number.

2.10 Investigation-Derived Waste

Four types of IDW may be generated during the sampling of environmental media during the Parcel 23 Phase 2 RFI activities: residual soil volume, decontamination fluids, purge water and excess sample water from monitoring wells, and disposable sampling equipment/PPE. These IDW categories will be managed as follows:

- Limited surface and shallow subsurface soil that remains after required sample volumes have been collected from drive samplers and hand augers will be returned to the hole as allowed by NMED.
- Decontamination fluids will be contained within a temporary decontamination pad area during active sampling and decontamination activities at a site. Volumes of decontamination fluids are anticipated to be small. Accumulated wash and rinse water will be left within the decontamination pad area and allowed to evaporate. In the event of rainfall events, decontamination fluids will be containerized in drums temporarily and allowed to evaporate at a later date, but prior to demobilization for the sampling event. In no circumstance will accumulated fluids be stored on-site following the sampling event.
- Purge water and excess sample water from monitoring wells will be containerized at the sample site in clean buckets and/or tanks with a watertight lid. Depending on the volumes generated, water from multiple wells may be consolidated into one or more containers. At the end of the sampling day, the filled IDW containers will be emptied into one of two low-density polyethylene-lined evaporation tanks. The evaporation tanks are located at the former Building 542 in Parcel 6.
- Used, non-decontaminated disposable sampling equipment or PPE will be placed in polyethylene trash bags and treated as general refuse. Refuse will be placed in suitable facility trash receptacles on a daily basis.

Table 2-1 Summary of Analytical Methods, Sample Containers, Preservation, and Holding Times

Target Analytes	Matrix	Analytical Method (EPA SW846)	Sample Volume/Container	Preservative	Maximum Holding Time (collection until extraction/ extraction until analysis)
Soil Samples					
Volatile Organic Compounds	Soil	8260C with methanol extraction	40-ml VOA Vial	Cool to ≤6°C	14 days
	Water	8260C	3 x 40-mL VOA Vial	HCl to pH<2 Cool to ≤6°C	14 days
Semi-Volatile Organic Compounds	Soil	8270D	4-oz Glass Jar	Cool to ≤6°C	7 days to extraction 40 days to analysis
	Water		1 L Amber Bottle		
TAL Metals / Mercury	Soil	6010C / 7470	4-oz Glass Jar	Cool to ≤6°C	6 months (28 days for Hg)
	Water		1 L Poly Bottle	HNO3 to pH <2 Cool to ≤6°C	
Total Petroleum Hydrocarbons – Diesel Range Organics (extended)	Soil	8015 modified, with methanol extraction	8-oz Glass Jar	Cool to ≤6°C	7 days to extraction 40 days to analysis
	Water	8015B	1 L Amber Bottle		
Explosives	Soil	8330B	8-oz Glass Jar	Cool to ≤6°C	7 days to extraction 40 days to analysis
	Water		2 x 1 L Amber Bottle		

Notes:
°C = degrees Celsius
EPA = U.S. Environmental Protection Agency
Hg = mercury
L = liter
ml = milliliter
oz = ounce
RCRA = Resource Conservation and Recovery Act
TAL = target analyte list
VOA = volatile organic analysis
More than one analysis may be performed from the same sample container, as long as all preservation requirements have been met and there is sufficient sample mass available.

Table 2-2 Quality Control Samples for Precision and Accuracy

Quality Control Type	Precision	Accuracy	Minimum Frequency
Field	Relative Percent Difference (RPD) Goal of ≤ 50%	Duplicate Sample Laboratory Analysis	One every 10 samples (10%)
		Equipment Blank	One per day for reusable equipment
		Trip Blank	One per each cooler containing VOC samples
Laboratory	Matrix Spike/Matrix Spike Duplicate (RPD goal of ≤ 20% for metals, VOCs, and SVOCs, ≥ 30% for all other analyte classes)	Method Blank	One per batch, at least one every 20 samples (rounded up) (5%)
		Laboratory Control Sample or Blank Spike	One per batch, at least one every 20 samples (rounded up) (5%)
		Matrix Spike Percent Recovery (QSM 5.0 Percent Recovery Goals)	One every 20 samples (rounded up) (5%)
		Surrogate Spike (for organics only)	All samples and QC

Notes:
QC = quality control
QSM = Quality Systems Manual
SVOC = semi-volatile organic compound
VOC = volatile organic compound

1 **Table 2-3 Comparison of Soil Remediation Goals to Laboratory Reporting Limits**

Chemical	NMED SSL for Residential	NMED SSL for Construction Worker	EPA Residential RSLs	Limit of Quantitation	Limit of Detection	Detection Limit
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Metals						
Aluminum	78,000	41,400	----	20	10	5
Antimony	31.3	142	----	10	3	1.5
Arsenic	5.6*	5.6*	----	1	0.4	0.2
Barium	15,600	4,390	----	1	0.2	0.1
Beryllium	156	148	----	1	0.2	0.1
Cadmium	70.5	72.1	----	1	0.2	0.1
Calcium	13,000,000	8,850,000	----	100	50	20
Total Chromium	96.6	134	----	1	0.3	0.15
Cobalt	NS	NS	23	1	0.2	0.1
Copper	3,130	14,200	----	1	0.3	0.15
Iron	54,800	248,000	----	20	10	5
Lead	400	800	----	1	0.3	0.15
Magnesium	339,000	155,000	----	100	50	20
Manganese	10,500	464	----	1	0.3	0.15
Mercury	23.8	20.7	----	0.1	0.02	0.01
Nickel	1,560	753	----	1	0.3	0.15
Potassium	1,560,000	1,990,000	----	100	50	20
Selenium	391	1,750	----	1	0.5	0.2708
Silver	391	1,770	----	1	0.3	0.15
Sodium	7,820,000	9,730,000	----	100	50	20
Thallium	0.78	3.54	----	1	0.5	0.25
Vanadium	394	614	----	1	0.25	0.1
Zinc	23,500	106,000	----	2	1	0.614
Low Level SIM Polynuclear Aromatic Hydrocarbons						
Acenaphthene	3,480	15,100	----	0.01	0.0025	0.0013
Anthracene	17,400	75,300	----	0.01	0.0025	0.0013
Benzo(a)anthracene	1.53	240	----	0.01	0.0050	0.0025
Benzo(a)pyrene	0.15	24	----	0.01	0.0025	0.0013
Benzo(b)fluoranthene	1.53	240	----	0.01	0.0025	0.0013
Benzo(k)fluoranthene	15.3	2,310	----	0.01	0.0025	0.0013
Chrysene	153	23,100	----	0.01	0.0050	0.0022
Dibenz(a,h)anthracene	0.15	24	----	0.01	0.0025	0.0013
Fluoranthene	2,320	10,000	----	0.01	0.0025	0.0013
Fluorene	2,320	10,000	----	0.01	0.0025	0.0013

Chemical	NMED SSL for Residential	NMED SSL for Construction Worker	EPA Residential RSLs	Limit of Quantitation	Limit of Detection	Detection Limit
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Indeno(1,2,3-c,d)pyrene	1.53	240	----	0.01	0.0025	0.0013
Naphthalene	49.7	159	----	0.01	0.0025	0.0013
Phenanthrene	1,740	7,530	----	0.01	0.0025	0.0013
Pyrene	1,740	7,530	----	0.01	0.0025	0.0013
Polynuclear Aromatic Hydrocarbons by EPA 8270						
Acenaphthene	3,480	15,100	----	0.33	0.17	0.083
Anthracene	17,400	75,300	----	0.33	0.17	0.083
Benzo(a)anthracene	1.53	240	----	0.33	0.17	0.083
Benzo(a)pyrene	0.15	24	----	0.33	0.17	0.083
Benzo(b)fluoranthene	1.53	240	----	0.33	0.17	0.086
Benzo(k)fluoranthene	15.3	2,310	----	0.33	0.17	0.083
Chrysene	153	23,100	----	0.33	0.17	0.083
Dibenz(a,h)anthracene	0.15	24	----	0.33	0.17	0.083
Fluoranthene	2,320	10,000	----	0.33	0.17	0.13
Fluorene	2,320	10,000	----	0.33	0.17	0.083
Indeno(1,2,3-c,d)pyrene	1.53	240	----	0.33	0.17	0.083
Naphthalene	49.7	159	----	0.33	0.17	0.083
Phenanthrene	1,740	7,530	----	0.33	0.17	0.083
Pyrene	1,740	7,530	----	0.33	0.17	0.16
Semi-Volatile Organic Compounds						
1,2,4-Trichlorobenzene	83	79	----	0.33	0.17	0.083
1,2-Dichlorobenzene	2,150	2,500	----	0.33	0.17	0.083
1,4-Dichlorobenzene	32.8	746	----	0.33	0.17	0.083
2,4,5-Trichlorophenol	6,160	26,900	----	0.33	0.17	0.091
2,4,6-Trichlorophenol	61.6	269	----	0.33	0.17	0.083
2,4-Dichlorophenol	185	807	----	0.33	0.17	0.083
2,4-Dimethylphenol	1,230	5,380	----	0.33	0.17	0.083
2,4-Dinitrophenol	123	538	----	0.67	0.17	0.086
2,4-Dinitrotoluene	17.1	536	----	0.33	0.17	0.083
2,6-Dinitrotoluene	3.56	80.9	----	0.33	0.17	0.083
2-Chloronaphthalene	6,260	28,300	----	0.33	0.17	0.083
2-Chlorophenol	391	1,770	----	0.33	0.17	0.083
2-Methylnaphthalene	NS	NS	230	0.33	0.17	0.083
2-Methylphenol	NS	NS	3,100	0.33	0.17	0.083
2-Nitroaniline	NS	NS	610	0.33	0.17	0.083
2-Nitrophenol	NS	NS	NS	0.33	0.17	0.083
3,3'-Dichlorobenzidine	11.80	410	----	0.33	0.17	0.084

Chemical	**NMED SSL for Residential**	**NMED SSL for Construction Worker**	**EPA Residential RSLs**	**Limit of Quantitation**	**Limit of Detection**	**Detection Limit**
	(mg/kg)	**(mg/kg)**	**(mg/kg)**	**(mg/kg)**	**(mg/kg)**	**(mg/kg)**
4,6-Dinitro-2-Methylphenol	4.93	21.5	----	0.67	0.17	0.083
4-Chloro-3-Methylphenol	NS	NS	6,200	0.67	0.17	0.083
4-Chloroaniline	NS	NS	27	0.33	0.17	0.083
4-Methylphenol	NS	NS	6,200	0.33	0.17	0.083
4-Nitroaniline	NS	NS	250	0.33	0.17	0.12
Acetophenone	7,820	35,400	----	0.33	0.17	0.083
Aniline	NS	NS	430	0.67	0.17	0.083
Azobenzene	NS	NS	----	0.33	0.17	0.096
Benzidine	0.0052	0.81	----	2.0	0.87	0.86
Benzoic Acid	NS	NS	250,000	1.3	0.67	0.33
Benzyl Alcohol	NS	NS	6,200	0.33	0.17	0.083
Bis(2-Chloroethoxy)Methane	NS	NS	180	0.33	0.17	0.083
Bis(2-Chloroethyl)Ether	3.11	1.95	----	0.33	0.17	0.083
Bis(2-Chloroisopropyl)Ether	99.3	3,540	----	0.33	0.17	0.083
Bis(2-Ethylhexyl)Phthalate	380	5,380	----	0.33	0.17	0.12
Butylbenzylphthalate	NS	NS	2,800	0.33	0.17	0.083
Dibenzofuran	NS	NS	72	0.33	0.17	0.083
Diethylphthalate	49,300	215,000	----	0.33	0.17	0.083
Dimethylphthalate	NS	NS	----	0.33	0.17	0.083
Di-N-Butylphthalate	6,160	26,900	----	0.33	0.17	0.097
Di-n-Octylphthalate	NS	NS	620	0.33	0.17	0.097
Hexachlorobenzene	3.33	117	----	0.33	0.17	0.083
Hexachlorobutadiene	61.6	269	----	0.33	0.17	0.083
Hexachlorocyclopentadiene	370	867	----	0.33	0.17	0.083
Hexachloroethane	43	188	----	0.33	0.17	0.083
Isophorone	5,610	53,700	----	0.33	0.17	0.083
Nitrobenzene	60	353	----	0.33	0.17	0.083
N-Nitrosodimethylamine	0.023	1.25	----	0.33	0.17	0.083
N-Nitroso-Di-N-Propylamine	NS	NS	0.76	0.33	0.17	0.083
N-Nitrosodiphenylamine	1,090	37,900	----	0.33	0.17	0.15
N-Nitrosopyrrolidine	2.54	89	----	0.33	0.17	0.083
Pentachlorophenol	9.85	346	----	0.67	0.17	0.083
Phenol	18,500	77,400	----	0.33	0.17	0.083
Pyridine	NS	NS	78.00	1.3	0.67	0.33
Volatile Organic Compounds						

Chemical	NMED SSL for Residential	NMED SSL for Construction Worker	EPA Residential RSLs	Limit of Quantitation	Limit of Detection	Detection Limit
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
1,1,1,2-Tetrachloroethane	28.10	659	----	0.25	0.05	0.025
1,1,1-Trichloroethane	14,400	13,600	----	0.25	0.05	0.025
1,1,2,2-Tetrachloroethane	7.98	197	----	0.25	0.05	0.025
1,1,2-Trichloro-1,2,2-Trifluoroethane	50,800	45,300	----	0.25	0.10	0.050
1,1,2-Trichloroethane	2.61	2.30	----	0.25	0.05	0.025
1,1-Dichloroethane	78.6	1,820	----	0.25	0.05	0.025
1,1-Dichloroethene	440	424	----	0.25	0.05	0.025
1,2,3-Trichlorobenzene	NS	NS	49	0.25	0.10	0.050
1,2,3-Trichloropropane	0.05	6.31	----	0.25	0.10	0.050
1,2,4-Trichlorobenzene	82.9	79.1	----	0.25	0.10	0.050
1,2,4-Trimethylbenzene	NS	NS	58	0.25	0.10	0.028
1,2-Dibromo-3-Chloropropane	0.09	5.53	----	0.25	0.10	0.050
1,2-Dibromoethane	0.67	16.3	----	0.25	0.05	0.025
1,2-Dichlorobenzene	2,150	2,500	----	0.25	0.05	0.025
1,2-Dichloroethane	8.32	53.8	----	0.25	0.05	0.025
1,2-Dichloropropane	17.8	25.4	----	0.25	0.05	0.025
1,3,5-Trimethylbenzene	NS	NS	780	0.25	0.10	0.030
1,3-Dichloropropane	NS	NS	1,600	0.25	0.05	0.025
1,4-Dichlorobenzene	32.8	746	----	0.25	0.05	0.025
2,2-Dichloropropane	NS	NS	NS	0.25	0.10	0.050
2-Butanone (MEK)	37,400	91,700	----	0.50	0.25	0.13
2-Chlorotoluene	1,560	7,080	----	0.25	0.10	0.041
2-Hexanone	NS	NS	200	0.50	0.25	0.15
4-Chlorotoluene	NS	NS	1,600	0.25	0.10	0.034
4-Methyl-2-Pentanone (MIBK)	5,810	20,200	----	0.50	0.25	0.14
Acetone	66,300	242,000	----	0.50	0.25	0.16
Benzene	17.8	142	----	0.25	0.05	0.025
Bromobenzene	NS	NS	290	0.25	0.05	0.025
Bromochloromethane	NS	NS	150	0.25	0.05	0.025
Bromodichloromethane	6.19	143	----	0.25	0.05	0.025
Bromoform	NS	NS	670	0.25	0.10	0.050
Bromomethane	17.7	17.9	----	0.50	0.10	0.090
Carbon Disulfide	1,550	1,620	----	0.25	0.05	0.025
Carbon Tetrachloride	10.7	202	----	0.25	0.05	0.027
Chlorobenzene	378	412	----	0.25	0.05	0.025

Chemical	NMED SSL for Residential	NMED SSL for Construction Worker	EPA Residential RSLs	Limit of Quantitation	Limit of Detection	Detection Limit
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Chloroethane	NS	NS	14,000	0.25	0.10	0.065
Chloroform	5.9	134	----	0.25	0.05	0.025
Chloromethane	41.1	235	----	0.25	0.10	0.050
cis-1,2-Dichloroethene	156	708	----	0.25	0.05	0.025
Dibromochloromethane	13.9	340	----	0.25	0.05	0.025
Dibromomethane	57.9	53.9	----	0.25	0.05	0.025
Dichlorodifluoromethane	182	161	----	0.25	0.10	0.060
Ethylbenzene	75.1	1,770	----	0.25	0.05	0.025
Hexachlorobutadiene	61.6	269	----	0.25	0.10	0.050
Isopropylbenzene	2,360	2,740	----	0.25	0.10	0.032
m,p-Xylenes	764	696	----	0.50	0.10	0.050
Methyl Tert-Butyl Ether	975	24,200	----	0.25	0.05	0.025
Methylene Chloride	409	1,210	----	0.50	0.25	0.10
Naphthalene	49.7	159.00	----	0.50	0.10	0.050
n-Butylbenzene	NS	NS	3,900	0.25	0.10	0.035
n-Propylbenzene	NS	NS	3,300	0.25	0.10	0.033
o-Xylene	805	736	----	0.25	0.05	0.025
Sec-Butylbenzene	NS	NS	7,800	0.25	0.10	0.034
Styrene	7,260	10,200	----	0.25	0.10	0.050
Tert-Butylbenzene	NS	NS	7,800	0.25	0.10	0.031
Tetrachloroethene	111.00	120.00	----	0.25	0.05	0.025
Toluene	5,230.00	14,000.00	----	0.25	0.05	0.025
Trans-1,2-Dichloroethene	295.00	305.00	----	0.25	0.05	0.025
Trichloroethene	6.77	6.90	----	0.25	0.05	0.025
Trichlorofluoromethane	1,230.00	1,130.00	----	0.25	0.10	0.055
Vinyl Acetate	2,560.00	2,300.00	----	0.25	0.10	0.065
Vinyl Chloride	0.74	161.00	----	0.25	0.10	0.070
Explosives EPA 8330B (ALS)						
1,3,5-Trinitrobenzene	NS	NS	2,200	0.04	0.008	0.0040
1,3-Dinitrobenzene	NS	NS	6.3	0.04	0.008	0.0040
2,4-Dinitrotoluene	17.1	80.9	----	0.04	0.008	0.0044
2,6-Dinitrotoluene	3.56	277	----	0.04	0.008	0.0051
2,4,6-Trinitrotoluene (TNT)	36	161	----	0.04	0.008	0.0022
2-Amino-4,6-Dinitrotoluene	NS	NS	150	0.04	0.008	0.0046
2-Nitrotoluene	6.16	26.9	----	0.04	0.01	0.0028
3-Nitrotoluene	31.6	319	----	0.04	0.008	0.0038
4-Amino-2,6-Dinitrotoluene	NS	NS	150	0.04	0.008	0.0046

Chemical	NMED SSL for Residential	NMED SSL for Construction Worker	EPA Residential RSLs	Limit of Quantitation	Limit of Detection	Detection Limit
	(mg/kg)	**(mg/kg)**	**(mg/kg)**	**(mg/kg)**	**(mg/kg)**	**(mg/kg)**
4-Nitrotoluene	247	1,080	----	0.04	0.008	0.0035
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	60.4	1,010	----	0.04	0.008	0.0035
Methyl-2,4,6-trinitrophenylnitramine (Tetryl)	156	706	----	0.04	0.008	0.0022
Nitrobenzene	60.4	353	----	0.04	0.008	0.0038
Nitroglycerin	6.16	26.90	----	0.2	0.08	0.053
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	3,850	17,400	----	0.04	0.008	0.0051
Pentaerythritol Tetranitrate (PETN)	NS	NS	130	0.2	0.08	0.053
Total Petroleum Hydrocarbons – Diesel Range Organics (extended)						
DRO	1,000	NS	----	10	5.0	2.5
RRO	1,000	NS	----	20	5.0	2.5

Table 2-4 Comparison of Tapwater Screening Levels to Laboratory Reporting Limits

Chemical	NMED Tapwater Screening Level	EPA Tapwater RSL	Limit of Quantitation	Limit of Detection	Detection Limit
	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
TAL Metals					
Aluminum	19,900	----	200	100	50
Antimony	7.26	----	100	30	15
Arsenic	0.51	----	10	5	3
Barium	3,280	----	10	2	1
Beryllium	12.4	----	10	1	0.5
Cadmium	6.24	----	10	2	1
Calcium	NS	NS	1,000	500	200
Total Chromium	5.59	----	10	3	1.5
Cobalt	NS	6.00E+00	10	2	1
Copper	79	----	10	3	1.5
Iron	13,800	----	200	100	50
Lead	NS	1.50E+01	10	3	1.7
Magnesium	NS	NS	1,000	500	200
Manganese	2,020	----	10	3	1.5
Mercury	0.63	----	0.5	0.1	0.054
Nickel	372	----	10	3	1.5
Potassium	NS	NS	1,000	500	200
Selenium	98.7	----	10	5	2.5
Silver	81.2	----	10	3	1.5
Sodium	NS	NS	1,000	500	200
Thallium	0.2	----	10	5	2.5
Vanadium	63.1	----	10	2	1
Zinc	5,960	----	20	10	7
Low Level SIM Polynuclear Aromatic Hydrocarbons					
Acenaphthene	535	----	0.50	0.10	0.050
Anthracene	1,720	----	0.50	0.10	0.050
Benzo(a)anthracene	0.34	----	0.50	0.20	0.094
Benzo(a)pyrene	0.034	----	0.50	0.10	0.050
Benzo(b)fluoranthene	0.34	----	0.50	0.10	0.050
Benzo(k)fluoranthene	3.43	----	0.50	0.10	0.050
Chrysene	34.3	----	0.50	0.20	0.060
Dibenz(a,h)anthracene	0.16	----	0.50	0.10	0.050
Fluoranthene	802	----	0.50	0.10	0.050
Fluorene	288	----	0.50	0.10	0.050
Indeno(1,2,3-c,d)pyrene	0.34	----	0.50	0.10	0.050

Chemical	NMED Tapwater Screening Level	EPA Tapwater RSL	Limit of Quantitation	Limit of Detection	Detection Limit
	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
Naphthalene	1.65	----	0.50	0.10	0.050
Phenanthrene	170	----	0.50	0.10	0.050
Pyrene	117	----	0.50	0.10	0.050
Polynuclear Aromatic Hydrocarbons by EPA 8270					
Acenaphthene	535	----	10	5.0	2.5
Anthracene	1,720	----	10	5.0	2.5
Benzo(a)anthracene	0.34	----	10	5.0	2.5
Benzo(a)pyrene	0.034	----	10	5.0	2.5
Benzo(b)fluoranthene	0.34	----	10	5.0	2.6
Benzo(k)fluoranthene	3.43	----	10	5.0	2.5
Chrysene	34.3	----	10	5.0	2.5
Dibenz(a,h)anthracene	0.16	----	10	5.0	2.5
Fluoranthene	802	----	10	5.0	2.5
Fluorene	288	----	10	5.0	2.5
Indeno(1,2,3-c,d)pyrene	0.34	----	10	5.0	2.5
Naphthalene	1.65	----	10	5.0	2.5
Phenanthrene	170	----	10	5.0	2.5
Pyrene	117	----	10	5.0	2.5
Semi-Volatile Organic Compounds					
1,2,4-Trichlorobenzene	3.98	----	10	5.0	2.5
1,2-Dichlorobenzene	302	----	10	5.0	2.5
1,4-Dichlorobenzene	4.81	----	10	5.0	2.5
2,4,5-Trichlorophenol	1,170	----	10	5.0	2.5
2,4,6-Trichlorophenol	11.9	----	10	5.0	2.5
2,4-Dichlorophenol	45.3	----	10	5.0	2.5
2,4-Dimethylphenol	354	----	10	5.0	2.6
2,4-Dinitrophenol	38.8	----	20	5.0	2.5
2,4-Dinitrotoluene	2.37	----	10	5.0	2.5
2,6-Dinitrotoluene	0.48	----	10	5.0	2.5
2-Chloronaphthalene	733	----	10	5.0	2.5
2-Chlorophenol	91	----	10	5.0	2.5
2-Methylnaphthalene	NS	36	10	5.0	2.5
2-Methylphenol	NS	930	10	5.0	2.5
2-Nitroaniline	NS	190	10	5.0	2.5
2-Nitrophenol	NS	NS	10	5.0	2.5
3,3'-Dichlorobenzidine	1.24	----	10	5.0	2.5
4,6-Dinitro-2-Methylphenol	1.51	----	20	5.0	2.5

Chemical	**NMED Tapwater Screening Level**	**EPA Tapwater RSL**	**Limit of Quantitation**	**Limit of Detection**	**Detection Limit**
	(µg/L)	**(µg/L)**	**(µg/L)**	**(µg/L)**	**(µg/L)**
4-Chloro-3-Methylphenol	NS	1,400	10	5.0	2.5
4-Chloroaniline	NS	0.36	10	5.0	4.2
4-Methylphenol	NS	1,900	10	5.0	2.5
4-Nitroaniline	NS	3.8	10	5.0	2.5
Acetophenone	1,920	----	10	5.0	2.5
Aniline	NS	13	20	10	5.3
Azobenzene	NS	0.12	10	5.0	2.5
Benzidine	0.0011	----	40	20	10
Benzoic Acid	NS	75,000	100	40	20
Benzyl Alcohol	NS	2,000	10	5.0	2.5
Bis(2-Chloroethoxy)Methane	NS	59	10	5.0	2.5
Bis(2-Chloroethyl)Ether	0.14	----	10	5.0	2.5
Bis(2-Chloroisopropyl)Ether	9.76	----	10	5.0	2.5
Bis(2-Ethylhexyl)Phthalate	55.6	----	10	5.0	2.5
Butylbenzylphthalate	NS	NS	10	5.0	2.5
Dibenzofuran	NS	7.9	10	5.0	2.5
Diethylphthalate	14,800	----	10	5.0	2.5
Dimethylphthalate	NS	NS	10	5.0	2.5
Di-N-Butylphthalate	NS	900	10	5.0	2.5
Di-n-Octylphthalate	NS	200	10	5.0	2.5
Hexachlorobenzene	0.49	----	10	5.0	2.5
Hexachlorobutadiene	2.95	----	10	5.0	2.5
Hexachlorocyclopentadiene	27.8	----	10	5.0	2.5
Hexachloroethane	6.8	----	10	5.0	2.5
Isophorone	779	----	10	5.0	2.5
Nitrobenzene	1.4	----	10	5.0	2.5
N-Nitrosodimethylamine	0.0049	----	10	5.0	2.5
N-Nitroso-Di-N-Propylamine	NS	0.011	10	5.0	2.5
N-Nitrosodiphenylamine	121	----	10	5.0	2.5
N-Nitrosopyrrolidine	0.37	----	10	5.0	2.5
Pentachlorophenol	0.4	----	20	5.0	2.5
Phenol	5,760	----	10	5.0	2.5
Pyridine	NS	20	40	20	2.5
Volatile Organic Compounds					
1,1,1,2-Tetrachloroethane	5.72	----	1.0	0.20	0.10
1,1,1-Trichloroethane	8,000	----	1.0	0.20	0.10
1,1,2,2-Tetrachloroethane	0.76	----	1.0	0.20	0.11

Chemical	NMED Tapwater Screening Level	EPA Tapwater RSL	Limit of Quantitation	Limit of Detection	Detection Limit
	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
1,1,2-Trichloro-1,2,2-Trifluoroethane	55,000	----	1.0	0.30	0.17
1,1,2-Trichloroethane	0.42	----	1.0	0.20	0.10
1,1-Dichloroethane	27.5	----	1.0	0.20	0.10
1,1-Dichloroethene	284	----	1.0	0.20	0.10
1,2,3-Trichlorobenzene	NS	7	1.0	0.30	0.15
1,2,3-Trichloropropane	0.01	----	2.0	0.50	0.25
1,2,4-Trichlorobenzene	3.98	----	1.0	0.30	0.15
1,2,4-Trimethylbenzene	NS	----	1.0	0.20	0.11
1,2-Dibromo-3-Chloropropane	0.0034	----	2.0	0.50	0.25
1,2-Dibromoethane	0.075	----	1.0	0.20	0.10
1,2-Dichlorobenzene	302	----	1.0	0.20	0.10
1,2-Dichloroethane	1.71	----	1.0	0.20	0.10
1,2-Dichloropropane	4.37	----	1.0	0.20	0.10
1,3,5-Trimethylbenzene	NS	120	1.0	0.20	0.13
1,3-Dichloropropane	NS	370	1.0	0.20	0.10
1,4-Dichlorobenzene	4.81	----	1.0	0.20	0.10
2,2-Dichloropropane	NS	NS	1.0	0.20	0.16
2-Butanone (MEK)	5,560	----	10	4.0	2.0
2-Chlorotoluene	23.3	----	1.0	0.20	0.12
2-Hexanone	NS	38	10	4.0	2.3
4-Chlorotoluene	NS	250	1.0	0.20	0.11
4-Methyl-2-Pentanone (MIBK)	1,240	----	10	4.0	2.1
Acetone	14,100	----	10	5.0	2.6
Benzene	4.54	----	1.0	0.20	0.10
Bromobenzene	NS	62	1.0	0.20	0.10
Bromochloromethane	NS	83	1.0	0.20	0.11
Bromodichloromethane	1.34	----	1.0	0.20	0.10
Bromoform	NS	3.3	1.0	0.30	0.15
Bromomethane	7.54	----	1.0	0.30	0.16
Carbon Disulfide	810	----	1.0	0.50	0.25
Carbon Tetrachloride	4.53	----	1.0	0.20	0.10
Chlorobenzene	77.6	----	1.0	0.20	0.10
Chloroethane	NS	NS	1.0	0.50	0.27
Chloroform	2.29	----	1.0	0.20	0.10
Chloromethane	20.3	----	1.0	0.30	0.15
cis-1,2-Dichloroethene	36.5	----	1.0	0.20	0.10
Dibromochloromethane	1.68	----	1.0	0.20	0.10

Chemical	NMED Tapwater Screening Level	EPA Tapwater RSL	Limit of Quantitation	Limit of Detection	Detection Limit
	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
Dibromomethane	8	----	1.0	0.20	0.10
Dichlorodifluoromethane	197	----	1.0	0.30	0.15
Ethylbenzene	14.9	----	1.0	0.20	0.10
Hexachlorobutadiene	2.95	----	1.0	0.30	0.22
Isopropylbenzene	447	----	1.0	0.20	0.10
m,p-Xylenes	193	----	2.0	0.40	0.21
Methyl Tert-Butyl Ether	143	----	1.0	0.20	0.13
Methylene Chloride	106	----	2.0	1.0	0.50
Naphthalene	1.65	----	2.0	1.0	0.50
n-Butylbenzene	NS	1,000	1.0	0.30	0.17
n-Propylbenzene	NS	660	1.0	0.30	0.13
o-Xylene	193	----	1.0	0.20	0.10
Sec-Butylbenzene	NS	2,000	1.0	0.30	0.13
Styrene	1,210	----	2.0	1.0	0.50
Tert-Butylbenzene	NS	690	1.0	0.20	0.13
Tetrachloroethene	40.3	----	1.0	0.20	0.15
Toluene	1,090	----	1.0	0.20	0.10
Trans-1,2-Dichloroethene	93.2	----	1.0	0.20	0.10
Trichloroethene	2.82	----	1.0	0.20	0.10
Trichlorofluoromethane	1,140	----	1.0	0.30	0.15
Vinyl Acetate	409	----	2.0	0.50	0.25
Vinyl Chloride	0.2	----	1.0	0.20	0.12
Explosives EPA 8330B (EMAX)					
1,3,5-Trinitrobenzene	NS	590	1.0	0.20	0.10
1,3-Dinitrobenzene	NS	2	1.0	0.20	0.10
2,4-Dinitrotoluene	2.37	----	1.0	0.20	0.12
2,6-Dinitrotoluene	0.48	----	1.0	0.20	0.10
2,4,6-Trinitrotoluene (TNT)	9.8	----	1.0	0.40	0.16
2-Amino-4,6-Dinitrotoluene	NS	39	1.0	0.20	0.10
2-Nitrotoluene	1.74	----	1.0	0.20	0.11
3-Nitrotoluene	3.13	----	1.0	0.40	0.16
4-Amino-2,6-Dinitrotoluene	NS	39	1.0	0.20	0.20
4-Nitrotoluene	42.4	----	1.0	0.20	0.10
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	7.02	----	1.0	0.40	0.16
Methyl-2,4,6-trinitrophenylnitramine (Tetryl)	39.4	----	1.0	0.20	0.10
Nitrobenzene	1.4	----	1.0	0.20	0.10

Chemical	**NMED Tapwater Screening Level**	**EPA Tapwater RSL**	**Limit of Quantitation**	**Limit of Detection**	**Detection Limit**
	(µg/L)	**(µg/L)**	**(µg/L)**	**(µg/L)**	**(µg/L)**
Nitroglycerin	1.96	----	125	62.5	33
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	1,000	----	1.0	0.20	0.10
Pentaerythritol Tetranitrate (PETN)	NS	19	125	62.5	31
Total Petroleum Hydrocarbons – Diesel Range Organics (extended)					
DRO	NS	100	500	100	50
RRO	NS	800	500	100	50

Table 2-5 Data Validation Flags

Flag	Interpretation
R	The sample results are rejected because of serious deficiencies in the ability to analyze the sample and meet QC criteria. The presence or absence of the constituent cannot be verified.
NJ	The analysis indicates the presence of a constituent that has been tentatively identified and the associated numerical value represents its approximate concentration.
UJ	The constituent was not detected above the reported sample quantification limit. However, the reported quantification limit is approximate and may or may not represent the actual limit of quantification necessary to accurately and precisely measure the constituent in the sample.
U	The constituent was analyzed for but was not detected above the reported sample quantification limit.
J	The constituent was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

Note: Flags are listed in order of severity, from most severe (R) to least severe (J).

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3.0 SOIL SAMPLING AND ANALYSIS AT SWMU 21 – CENTRAL LANDFILL

Data from previous sampling events conducted after the removal of landfill contents were reviewed as part of the preparation of this Work Plan for comparison to current NMED remediation guidance (NMED, 2014b). Confirmation samples collected during the 1999 removal activities from the additional removal area to the south of the original SWMU 21 boundary (SCIENTECH, 1999b) were not surveyed. The Army believes that the sampling conducted during the 2000 release assessment and 2011 RFI sampling were conducted in the same general vicinity as the sampling conducted in 1999. Therefore, based on the lack of reliable location data, the samples collected from the additional area in 1999 (SCIENTECH, 1999b) were not included in the analysis.

Sample locations and analytes which exceed the NMED residential SSLs are summarized in Tables 3-1 through 3-3 and illustrated in Figure 3-1. There was one detection of arsenic and several detections of thallium above the NMED Residential SSL during the 1999 sampling event (SCIENTECH, 1999a). However, during the 2000 and 2011 sampling events, arsenic levels were within the range of background concentrations and thallium was not detected above the SSL in any of the samples. Thallium was detected in the laboratory blank during the 1999 sampling effort, and the detection limit for thallium was above the residential SSL, suggesting that earlier detections of thallium may have been because of laboratory contamination or error. Concentrations of several semi-volatile organic compounds (SVOCs) were detected slightly above the residential SSL during the 1999 and 2000 confirmation sampling at a relatively high frequency [13 out of 27 samples (48%) in 1999 and 13 out of 43 samples (30%) in 2000]. However, SVOCs were detected above the residential SSL in only one sample (out of 42 collected) during the 2011 sampling event at a depth interval of 17-18 ft bgs (9-10 ft below the bottom of the former landfill).

Planned sample locations and depths are listed in Table 3-4; planned sample locations are illustrated in Figure 3-2. A description of each sample location is presented below. All samples will be analyzed for SVOCs, VOCs, extended diesel-range organics (DRO), target analyte list (TAL) metals, and explosives.

- Additional sampling will be conducted in the arroyo north of the landfill to assess potential contamination from surface water runoff or leachate migration. Two shallow soil borings (10 ft total depth) will be conducted in the arroyo, one 25 ft northwest and one 50 ft northwest of the northern border of the former landfill (soil boring ID numbers 2321CLAND-SB11 and 2321CLAND-SB12). Samples will be collected from the 1-2 ft, 3-4 ft, 5-6 ft, and 9-10 ft bgs depth intervals. These samples specifically address Comment 6 from NMED contained in the NOD.
- No data exists regarding soils used for backfill after removal of the landfill contents. In order to fill this data gap, samples will be collected from soils overlaying the native soil. A total of ten (10) shallow soil borings will be conducted within the boundaries of the former landfill (soil boring ID numbers 2321CLAND-SB13 through 2321CLAND-SB22). Samples will be collected from the 1-2 ft, 3-4 ft, 5-6 ft, and 9-10 ft bgs depth intervals. These samples specifically address Comment 9 from NMED contained in the NOD.

- In order to better define the vertical and lateral extent of impacted soils, a total of nine (9) step-out soil borings will be installed laterally to previous sampling locations where analytes were detected above NMED Residential SSLs. These samples correspond to soil boring ID numbers 2321CLAND-SB23 through 2321CLAND-SB32. Samples will be collected from the depth intervals corresponding to 1-2 ft, 3-4 ft, 5-6 ft, and 9-10 ft below the depth of backfill.
- Based on recommendations in the RFI Report, soil borings will be installed at a distance of 25 ft to the north, east, and west of previous sample ID 2321CLAND-SB08. Samples will be collected at depths corresponding to 3-4 ft above, 1-2 ft above, 0, 1-2 ft below, and 3-4 ft below relative to the 17-18 ft depth bgs at location SB08. Sample locations will be surveyed in order to accurately apply elevation correction factors for terrain slope.

Table 3-1 Sample Locations and Analytes Exceeding NMED SSLs – 1999 Sampling Effort

Analyte	NMED Residential SSL	Sample Identification Number 61699CTB E507	61699CTB E553	61699CTB E554	61699CTB E555	61699CTB E556	61699CTB E559	61699CTB E560	61699CTB 562	61699CTB E565	61699CTB E566	61699CTB E567	61699CTB E568	61699CTB E569
Arsenic	4.25	**16**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Thallium	0.782	NA	**10**	<8.9	<8.9	<8.9	<8.9	<8.9	**11**	<8.9	<8.9	<8.9	**9.2**	<8.9
Benzo(a)anthracene	1.53	0.160	0.69	**2.1**	**1.6**	**3.7**	0.17	2.1	ND	0.18	**1.9**	1.10	0.68	0.5
Benzo(a)pyrene	0.15	0.082	**0.57**	**2.1**	**1.3**	**3.4**	**0.18**	**1.9**	ND	**0.17**	**1.7**	**0.88**	**0.56**	**0.47**
Benzo(b)fluoranthene	1.53	0.11	0.68	**2.6**	**1.7**	**3.8**	0.21	2.1	ND	0.19	**1.9**	1.20	0.55	0.44
Dibenzo(a,h)anthracene	0.15	ND	0.11	**0.43**	**0.22**	**0.6**	0.075	0.370	ND	ND	**0.27**	ND	**0.17**	0.095
Indeno(1,2,3-cd)pyrene	1.53	ND	0.44	**1.7**	1.0	**3.0**	0.20	1.5	ND	0.15	1.3	0.75	0.54	0.34

Table 3-2 Sample Locations and Analytes Exceeding NMED SSLs – 2000 Sampling Effort

Analyte	NMED Residential SSL	Sample Identification Number CMAIN05	CMAIN07	CMAIN08	CMAIN10	CMAIN11	CMAIN12	CMAIN14	CMAIN16	CMAIN19	CMAIN20	CMAIN21	CMAIN22	CMAIN24
Benzo(a)anthracene	1.53	1.22	0.956	**3.21**	**6.89**	0.611	0.474	**9.88**	**14.6**	**4.7**	**1.71**	0.997	**6.26**	0.762
Benzo(a)pyrene	0.15	**1.26**	**0.991**	**3.3**	**6.89**	**0.603**	**0.424**	**9.99**	**14.6**	**4.77**	**1.71**	**1.02**	**5.35**	**0.726**
Benzo(b)fluoranthene	1.53	0.984	0.667	**2.24**	**4.76**	0.495	0.37	**7.09**	**11.1**	**3.54**	1.28	0.815	**4.36**	0.646
Dibenzo(a,h)anthracene	0.15	**0.227**	ND	**0.579**	**1.54**	ND	ND	**1.29**	**2.92**	**0.659**	**0.281**	ND	**0.879**	ND
Indeno(1,2,3-cd)pyrene	1.53	1.12	0.888	**3.23**	**7.41**	0.44	ND	**6.94**	**15.2**	**3.12**	1.36	0.788	**4.65**	ND
2,4,6-Trinitrotoluene	36	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**69**	ND	ND

Table 3-3 Sample Locations and Analytes Exceeding NMED SSLs – 2011 Sampling Effort

Analyte	NMED Residential SSL	Sample Identification Number 2321CLAND-SB08
Benzo(a)anthracene	1.53	**9**
Benzo(a)pyrene	0.15	**6.7**
Benzo(b)fluoranthene	1.53	**12**
Indeno(1,2,3-cd)pyrene	1.53	**3.2**

Notes:
Bold indicates level exceeds NMED Residential SSL
All concentrations in milligram per kilogram (mg/kg)
NMED Residential SSL concentrations from *Risk Assessment Guidance for Site Investigations and Remediation*, NMED 2014b

Table 3-4 Summary of Samples to be Collected from Soil Borings at SWMU 21 – Central Landfill

<table>
<tr><th>Soil Boring ID Number</th><th>Target Soils</th><th>Sample Depth Interval (ft)</th><th>Sample Analyses</th></tr>
<tr><td>2321CLAND-SB11</td><td rowspan="2">Arroyo</td><td rowspan="12">1-2, 3-4, 5-6, and 9-10 bgs</td><td rowspan="24">VOCs - 8260C with Methanol Extraction
SVOCs - 8270D
DRO extended - 8015 Modified with Methanol Extraction
TAL metals - 6010C/7471B
Explosives – 8330B</td></tr>
<tr><td>2321CLAND-SB12</td></tr>
<tr><td>2321CLAND-SB13</td><td rowspan="10">Backfill</td></tr>
<tr><td>2321CLAND-SB14</td></tr>
<tr><td>2321CLAND-SB15</td></tr>
<tr><td>2321CLAND-SB16</td></tr>
<tr><td>2321CLAND-SB17</td></tr>
<tr><td>2321CLAND-SB18</td></tr>
<tr><td>2321CLAND-SB19</td></tr>
<tr><td>2321CLAND-SB20</td></tr>
<tr><td>2321CLAND-SB21</td></tr>
<tr><td>2321CLAND-SB22</td></tr>
<tr><td>2321CLAND-SB23</td><td rowspan="12">Native Soil</td><td rowspan="9">1-2, 3-4, 5-6, and 9-10 below depth of backfill</td></tr>
<tr><td>2321CLAND-SB24</td></tr>
<tr><td>2321CLAND-SB25</td></tr>
<tr><td>2321CLAND-SB26</td></tr>
<tr><td>2321CLAND-SB27</td></tr>
<tr><td>2321CLAND-SB28</td></tr>
<tr><td>2321CLAND-SB29</td></tr>
<tr><td>2321CLAND-SB30</td></tr>
<tr><td>2321CLAND-SB31</td></tr>
<tr><td>2321CLAND-SB32</td><td rowspan="3">3-4 above, 1-2 above, 0, 1-2 below, and 3-4 below, relative to the 17-18 ft depth bgs at SB08</td></tr>
<tr><td>2321CLAND-SB33</td></tr>
<tr><td>2321CLAND-SB34</td></tr>
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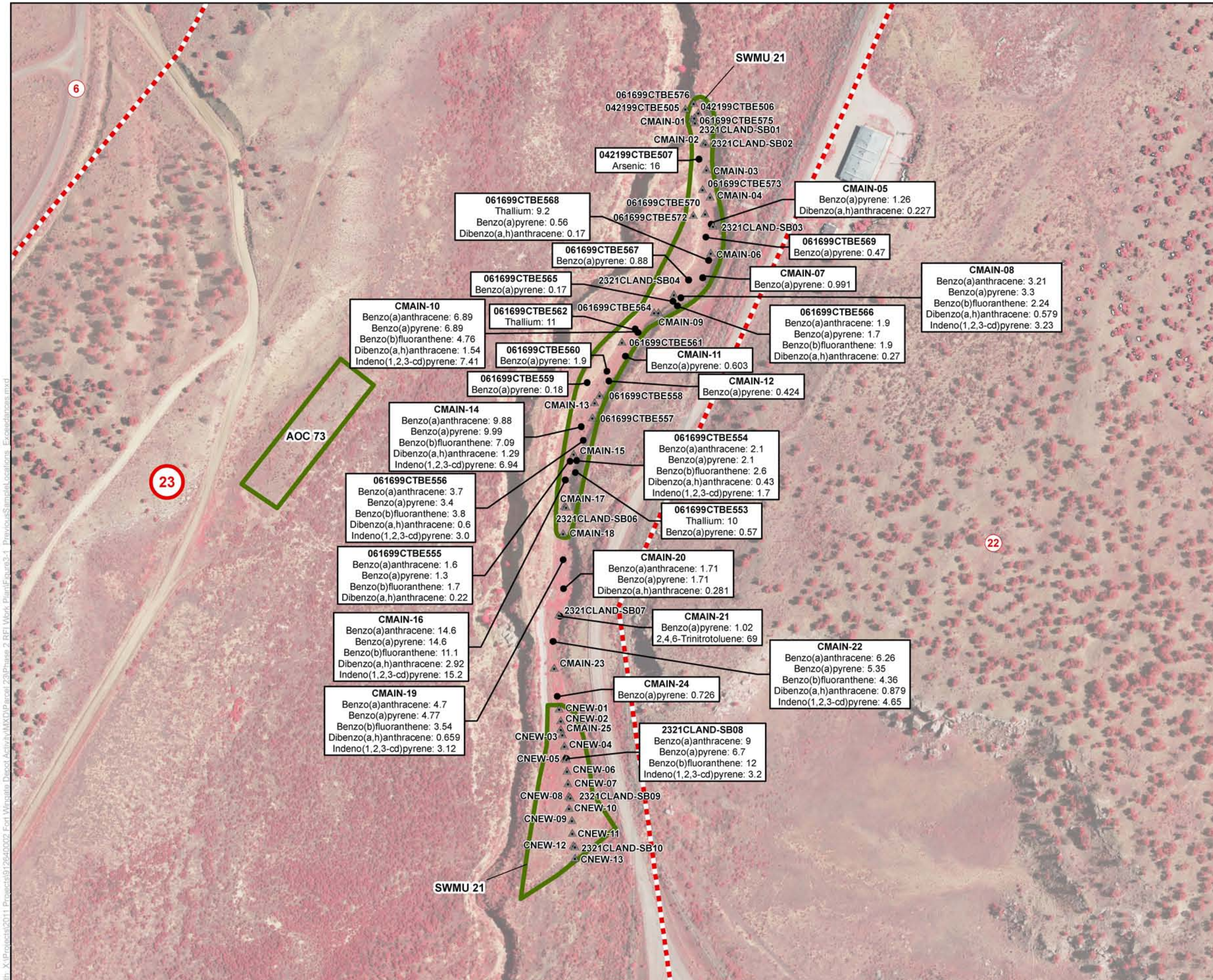

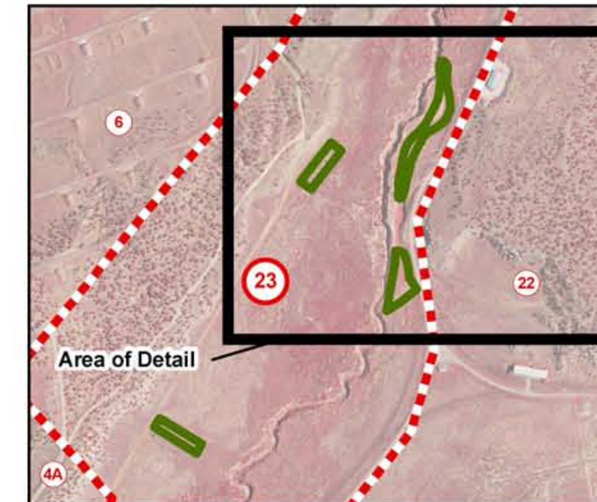

Parcel 23 Detail

Legend

- ▲ Previous Sample Location
- ● Previous Sample Location with Analytes Exceeding NMED Residential SSL Criteria as Listed:
  - Arsenic - 5.6 mg/kg*
  - Benzo(a)anthracene - 1.53 mg/kg
  - Benzo(a)pyrene - 0.15 mg/kg
  - Benzo(b)fluoranthene - 1.53 mg/kg
  - Dibenzo(a,h)anthracene - 0.15 mg/kg
  - Indeno(1,2,3-cd)pyrene - 1.53 mg/kg
  - 2,4,6-Trinitrotoluene - 36 mg/kg
  - Thallium - 0.782 mg/kg
- AOC / SWMU Boundary
- (23) Parcel Number
- Parcel 23 Boundary

Notes:

AOC	Area of Concern
mg/kg	Milligrams per Kilogram
NMED	New Mexico Environment Department
SSL	Soil Screening Levels
SWMU	Solid Waste Management Unit
*	Arsenic value based on *Evaluation of Background Levels for Arsenic in Soil, Fort Wingate Depot Activity, New Mexico* (NMED 2013)

Sample Identification Explanation:

23 21 CLAND SB 08
Parcel # / SWMU # / Additional Site Identifier / Source of Sample / Increment #

Aerial Image Source: 2009, CIR

0 50 100 200 Feet

N

Parcel 23 Phase 2 RFI Work Plan
Fort Wingate Depot Activity
McKinley County, New Mexico

Previous Sample Locations with Analytes Exceeding NMED Residential SSLs

FIGURE 3-1

Job No.:	912640002
PM:	JH
Date:	1/4/2016
Scale:	1" = 200'

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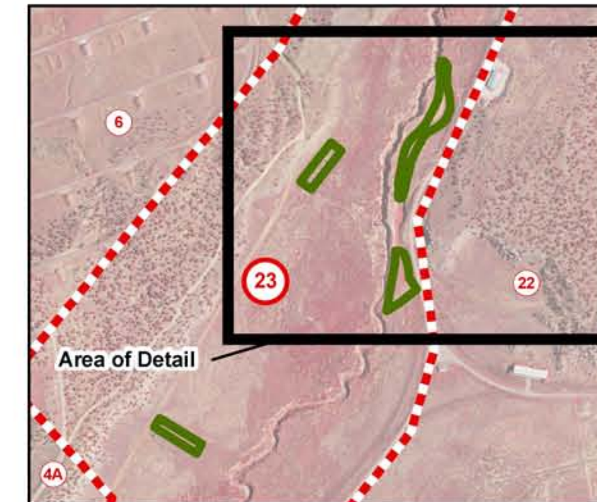
Path: X:\Projects\2011 Projects\912640002 Fort Wingate Depot Activity\MXD\Parcel 23\Phase 2 RFI Work Plan\Figure3-1_PreviousSampleLocations_Exceedances.mxd



Parcel 23 Detail

Legend

- Proposed Phase 2 Soil Boring Location
- Previous Sample Locations with Analytes Exceeding NMED Residential SSL Criteria
- AOC/SWMU Boundary
- Parcel Number
- Parcel 23 Boundary

Notes:

AOC	Area of Concern
NMED	New Mexico Environment Department
SSL	Soil Screening Levels
SWMU	Solid Waste Management Unit

Sample Identification Explanation:

23	21	CLAND	SB	13
Parcel #	SWMU #	Additional Site Identifier	Source of Sample	Increment #

Aerial Image Source: 2009, CIR

0 50 100 200 Feet

N

Parcel 23 Phase 2 RFI Work Plan
Fort Wingate Depot Activity
McKinley County, New Mexico

Proposed Phase 2
Soil Boring Locations

FIGURE
3-2

Job No.:	912640002
PM:	JH
Date:	1/4/2016
Scale:	1" = 200'

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4.0 GROUNDWATER BOREHOLE SAMPLING AND ANALYSIS AT SWMU 21 – CENTRAL LANDFILL

As stated in Section 2.2.2, the objective of the groundwater investigation is to determine whether leachate migrated from the landfill into groundwater beneath the landfill and/or into groundwater in the adjacent arroyo. A total of six (6) boreholes will be drilled in order to investigate groundwater in the vicinity of SWMU 21. Three (3) boreholes will be drilled beneath the area of the former landfill and three (3) additional boreholes will be drilled within the arroyo to the west of the former landfill (or as close as practical if not accessible to drilling equipment). Proposed locations for the boreholes are illustrated in Figure 4-1. One borehole will be drilled in the vicinity of SB08. Two additional boreholes will be drilled within the original SWMU 21 boundary. The three boreholes within the arroyo will be located as follows: one approximately 150 ft downstream from the north end of the landfill; one near the center of the landfill; and one about 150 ft downstream from the south end of the landfill.

The general approach to evaluating whether or not groundwater was impacted by landfill leachate is to drill to the first water-bearing zone, and collect groundwater samples from that zone by means of temporary wells/boreholes. Different approaches will be implemented for wells/boreholes drilled within the landfill areas versus those drilled within the arroyo. All samples collected from wells/boreholes will be analyzed for VOCs, SVOCs, total petroleum hydrocarbons (TPH) – DRO, TAL metals, mercury, and explosives.

4.1 Boreholes Drilled within the Landfill

The geology beneath the landfill is alluvium, underlain by mudstone/claystone (CLS) or sandstone (SS) of the Petrified Forest formation, Painted Desert member. The depth to the Painted Desert formation in the landfill is approximately 40 ft bgs. If there is no groundwater beneath the landfill, and the unit beneath the alluvium is a CLS, this information will be sufficient to conclude that vertical migration to a lower water-bearing zone is not possible. If the unit beneath the alluvium is a SS, then there is the potential for vertical migration of leachate into the SS; therefore, additional drilling will be conducted to investigate a deeper water-bearing zone.

Boreholes will be drilled into the alluvium with a hollow-stem auger to a depth of 50 ft bgs, 10 ft below the water table, or until encountering the Painted Desert member (whichever is first). Subsurface soil sampling will begin at the bottom of the landfill backfill (beginning of native soil) with samples collected at 5 ft intervals. If groundwater is encountered, a temporary well will be constructed and groundwater samples will be collected.

In the event that the Painted Desert member is encountered prior to reaching 50 ft bgs, and the Painted Desert member is determined to be SS, drilling will continue to a depth of 75 ft into the SS unit, or 10 ft below the water table (whichever is first). Drilling into SS will be performed using air-rotary, air-hammer, air-rotary casing hammer, or sonic. No drilling fluids will be used. A temporary casing will be installed in the alluvium to keep alluvial material from caving into the SS borehole.

Temporary wells within the landfill will be covered and left in place until groundwater sample analytical results are reviewed and evaluated. If samples do not indicate contamination from landfill leachate the temporary wells will be abandoned. If, however, samples indicate that contamination from landfill leachate is present, the temporary well will be converted to a groundwater monitoring well. Monitoring wells will be constructed in accordance with *NMED Ground Water Quality Bureau Monitoring Well Construction and Abandonment Guidelines* (Revision 1.1, NMED 2011).

4.2 Boreholes Drilled within the Arroyo

In the arroyo, groundwater will most likely be present. The depth to groundwater is not known, nor is there any information for a depth to the Painted Desert member. Groundwater samples will be collected from the arroyo by means of temporary wells/boreholes, at the first water-bearing zone, which is assumed to be in the alluvium. The borehole will be advanced to a depth of 100 ft bgs, 10 ft below the water table, or until encountering the Painted Desert member (whichever is first). The composition of the Painted Desert member will be determined (whether SS or CLS). If a CLS underlies the alluvium, vertical migration of leachate is unlikely. If a SS underlies the alluvium, groundwater is in contact with the SS, and vertical migration into the SS is suspected. In either case, drilling deeper into the SS or CLS will not be performed. Subsurface soil samples will be collected at the surface, at 2 ft bgs, at 5 ft bgs, and then at 5-ft intervals to the top of the water table. Because there will be no permanent monitoring wells constructed in the arroyo, the boreholes/wells will be abandoned immediately after collecting all required groundwater samples.

4.3 Temporary Well Construction and Abandonment

Temporary wells will be constructed with a filter-pack, 2-inch diameter screen, and casing. Temporary wells drilled into SS do not require a screen or filter-pack unless there is a need, such as borehole stabilization problems. Development will be performed by pumping until the groundwater is sufficiently clear to collect groundwater samples. Boreholes drilled within the landfill will be abandoned if sample results indicate no impact; boreholes drilled within the arroyo will be abandoned immediately following groundwater sample collection.

Temporary boreholes will be abandoned following NMOSE guidance and regulations. For temporary wells completed in SS, the SS borehole will be plugged prior to removing the temporary casing in the alluvium. The casing will be removed as the bentonite slurry is pumped into the borehole. If the casing cannot be removed, it will be cut bgs and abandoned in place.

Table 4-1 Summary of Samples to be Collected from Groundwater Boreholes at SWMU 21 – Central Landfill

Groundwater Borehole ID Number	Maximum Depth	Sample Depth Interval (ft)	Sample Analyses
2321CLAND-GB01	50 ft bgs, 10 ft below the water table, or until encountering the Painted Desert member (whichever is first)	0-1, 2-3, and 5-6 ft bgs, and at 5 ft intervals thereafter to final depth	VOCs - 8260C SVOCs - 8270D DRO extended - 8015B TAL metals - 6010C/7471B Explosives – 8330B
2321CLAND-GB02			
2321CLAND-GB03			
2321CLAND-GB04	100 ft bgs, 10 ft below the water table, or until encountering the Painted Desert member (whichever is first)		
2321CLAND-GB05			
2321CLAND-GB06			

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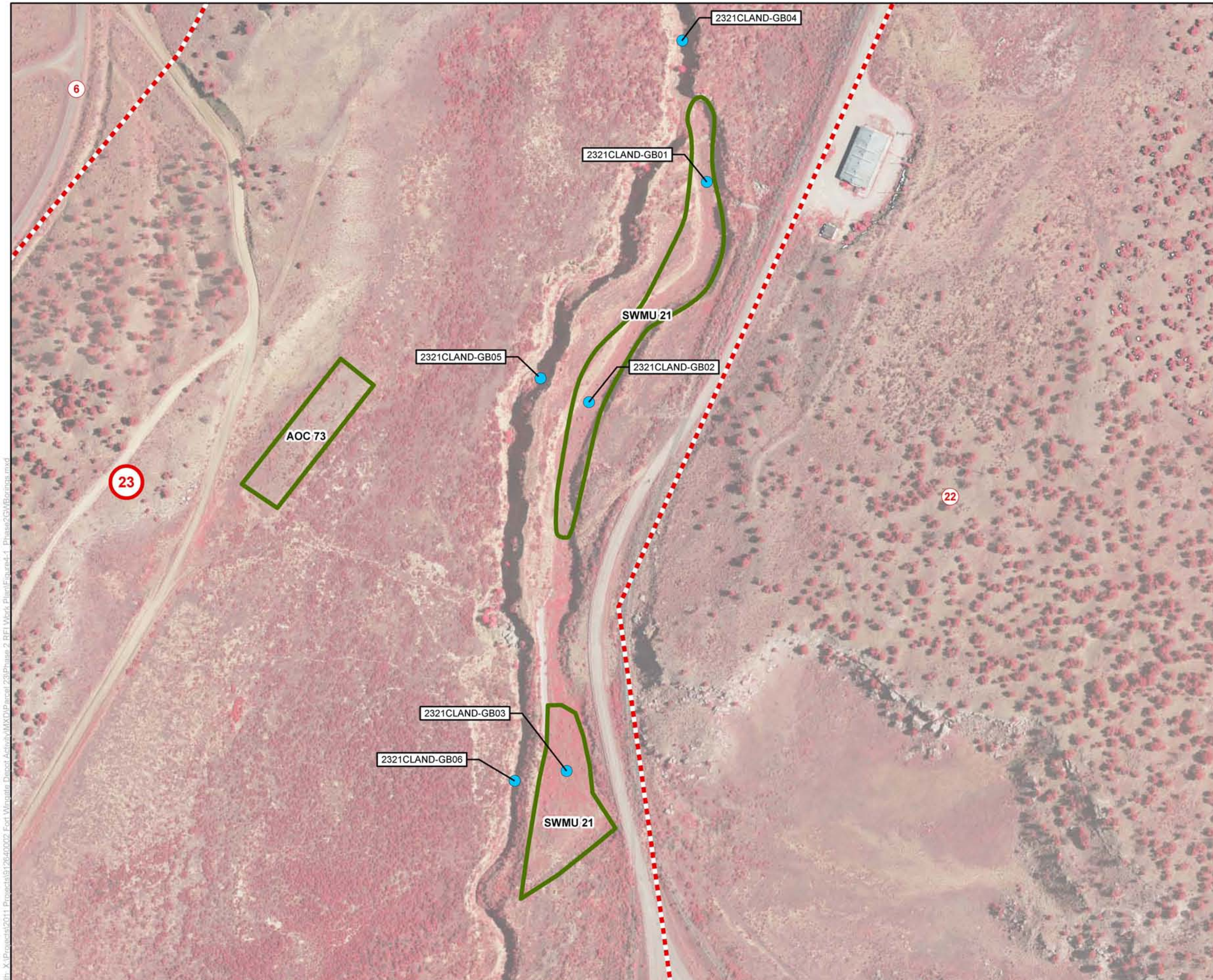

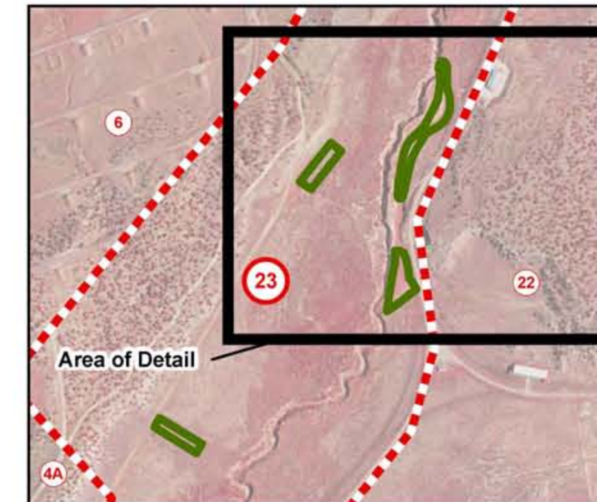

Parcel 23 Detail

Legend

- Proposed Phase 2 Groundwater Boring Location
- AOC/SWMU Boundary
- Parcel Number
- Parcel 23 Boundary

Notes:

AOC Area of Concern
SWMU Solid Waste Management Unit
Sample Identification Explanation:
23 (Parcel #) 21 (SWMU #) CLAND (Additional Site Identifier) GB (Source of Sample) 01 (Increment #)
Aerial Image Source: 2009, CIR

0 50 100 200 Feet

N

Parcel 23 Phase 2 RFI Work Plan
Fort Wingate Depot Activity
McKinley County, New Mexico

Proposed Phase 2
Groundwater Boring Locations

FIGURE **4-1**	Job No.:	912640002
	PM:	JH
	Date:	10/19/2015
	Scale:	1" = 200'

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5.0 POST-IMPLEMENTATION REPORTING

All activities conducted as part of this Phase 2 RFI Work Plan will be documented in a brief Phase 2 RFI Letter Report. The final report will contain, at a minimum, a detailed schedule of completed activities, a summary of analytical data, and an evaluation comparing analytical results to the appropriate screening levels, including an evaluation of cumulative risk. The approach to be used in the cumulative risk evaluation is described in the following sections, and is based on the requirements contained in the NMED Risk Assessment Guidance for Site Investigations and Remediation (NMED, 2014b).

5.1 Conceptual Site Exposure Model

Site investigations are conducted within the context of a conceptual site model (CSM). The purpose of the CSM is to describe complete exposure pathways through which receptors may be exposed to site-related contamination. The NMED Risk Assessment Guidance for Site Investigations and Remediation (NMED, 2014b) identifies five elements that must be present for an exposure pathway to be complete: (1) source, (2) mechanism of contaminant release, (3) a receiving or contact medium, (4) a potential receptor, and (5) a route of exposure. If any one of these five elements is missing, then the exposure pathway is incomplete. Based on the summary of RFI investigation results described in previous sections, potential receptors accessing the site could potentially be exposed to chemicals released from historical activities conducted at Fort Wingate and remaining in the subsurface.

At SWMU 21, the potential source of exposure is residual contamination in surface and subsurface soil, and potentially in groundwater, from a historical landfill. No buildings or other structures are present within SWMU 21. The site is currently vacant and current land use is as an out-of-use military installation undergoing remediation. The FWDA RCRA permit requires that future residential land use be evaluated, which could include both adult and child receptors. The southern portion of SWMU 21 could support future residential structures and thus construction workers who would construct the residential development will also be evaluated. Future commercial/industrial exposure is possible in the southern portion of SWMU 21, but will not be quantitatively evaluated because the evaluation of residential use is considered protective of possible future commercial/industrial use. The northern portion of SWMU 21 is located within an arroyo and thus it is unlikely that any structures would be built in this area, but it will also be evaluated for potential future residential and construction worker use as a conservative measure. Cattle grazing is not considered a reasonably likely future use because SWMU 21 is separated into two non-contiguous areas that are each less than 2 acres in size. The northern portion of SWMU 21 also falls within an arroyo and this physical setting further limits future use for cattle grazing.

The primary media of concern being addressed by this work plan are surface and subsurface soils. Shallow groundwater is also potentially a media of concern, where it is encountered. Thus the cumulative risk evaluation will address potential exposures to contaminants in soil and groundwater. For soil, direct contact (including dermal contact, incidental ingestion, and inhalation of dust or particulates) with surface and subsurface soil will be evaluated for residential receptors and construction workers. For groundwater, direct contact (including dermal contact, ingestion, and inhalation of volatiles during household use) with drinking water will be evaluated for residential receptors only; construction workers typically bring their own drinking water to job sites. There also is the potential for indirect exposure from soil and/or groundwater impacts through vapor intrusion, or from soil contamination that leaches to groundwater. The vapor intrusion pathway is incomplete in the northern portion of SWMU 21 within the arroyo because there are no current structures and the physical setting makes it unlikely for structures to be built in the future. The vapor intrusion pathway is potentially complete in the southern portion of SWMU 21. Areas where the SS is present underlying the alluvium beneath the landfill have the potential for soil contamination to leach to groundwater, while CLS retards leachate. Therefore, the soil-leaching-to-groundwater pathway will only be considered complete where SS, rather than CLS, is present under the alluvium beneath the landfill.

A diagram illustrating the preliminary CSM described above is provided as Figure 5-1 and presents the five elements described in Section 1.2.1 of the NMED Risk Assessment Guidance for Site Investigations and Remediation (NMED, 2014b) that must be present for an exposure pathway to be complete. The preliminary CSM and potentially complete exposure pathways presented in this work plan may be updated following completion of the Phase 2 RFI.

5.2 Cumulative Risk Evaluation

The potential for unacceptable health risks from exposure to remaining FWDA-related contamination will be evaluated for potentially complete pathways as defined by the CSM. The evaluation of cumulative risk will progress through a series of steps as described in the following paragraphs.

The first step is to conduct a metals background evaluation. The maximum concentration of each metal will be compared to the established FWDA background level (Shaw Environmental, 2010; Table 8-1). Metals with maximum concentrations greater than the FWDA background level will be included in the cumulative risk evaluation. Metals with maximum concentrations less than the FWDA background level will be eliminated from further evaluation. For arsenic, the screening value, as documented in a letter from NMED dated December 18, 2013 (NMED, 2013), is the background value of 5.6 mg/kg, which is greater than the NMED residential SSL of 4.25 mg/kg. However, if the background value of 5.6 mg/kg is exceeded, the site range of detections will be considered as compared to the background range of 0.2 to 11.2 mg/kg. If the site range falls within the background range of arsenic, then no additional action is required and the arsenic concentrations may be considered representative of background levels. If the arsenic value is determined to be present above background levels, then NMED SSLs will be used to determine potential health risks.

The second step is to evaluate cumulative risks and hazards by comparing the maximum concentration of each detected compound to the appropriate NMED screening criteria (or to EPA screening criteria when no NMED value is published). Evaluating the maximum concentration of each detected compound provides an assessment of the worst-case exposure for a given receptor and provides a conservative estimate of the potential health risks. Exceptions are for lead and TPH which will each be evaluated separately and not be included in the cumulative risk estimates because: (1) lead has not been correlated with the typical carcinogenic or noncarcinogenic toxicity values that characterize other chemicals, and (2) potential risks/hazards associated with TPH will be accounted for in the cumulative risk evaluation by the aggregate toxicity of individual underlying chemicals in the mixture (i.e. volatile and semi-volatile compounds) that are also analyzed. The screening criteria selected for use will be based on the receptor and potentially complete exposure pathway as identified in the CSM and described below:

- Direct soil contact evaluation – Future residential receptors and construction workers will be evaluated. Each receptor will be evaluated independently using the appropriate NMED SSLs (or EPA RSLs) so it is clear which chemicals are contributing to health risks for each receptor type.
- Vapor Intrusion (VI) pathway evaluation – This pathway will be evaluated only where: (1) volatile compounds are suspected, (2) volatile compounds were analyzed for and detected in soil or groundwater, and (3) at sites where current or future structures could be occupied by human receptors. For example, it is unlikely that structures would be built in the northern portion of SWMU 21 that is within the arroyo and thus the VI pathway is incomplete for this part of SWMU 21.
- A volatile compound is defined in Section 2.5 of the NMED 2014 Risk Assessment Guidance for Site Investigations and Remediation (NMED, 2014b) as one with a Henry's law constant of 1×10^{-5} atm-m^3/mole (or more) and a molecular weight of 200 g/mole or less. If no volatile compounds that meet these criteria are detected, then the pathway will be considered incomplete. If volatile compounds are detected, then additional review of the data will be conducted to determine if there is a significant potential for vapor intrusion to occur. Multiple lines of evidence may be used to qualitatively assess the potential for vapor intrusion, such as a the number of volatile compounds detected, isolated detections, detections limited to a specific area, decreasing concentration trends, physical-chemical characteristics of the detected compounds, or other technical arguments. A written evaluation of the lines of evidenced used to assess the VI pathway will be provided in the Phase 2 RFI Letter Report.
- Soil leaching to groundwater evaluation – This pathway will only be considered complete for SWMU 21 if the CLS is absent below the alluvium beneath the landfill. If groundwater is encountered and samples are collected, these groundwater data will be evaluated through comparison to the NMED tapwater screening levels to evaluate the potential threat to groundwater quality. If groundwater is not encountered (and the CLS is absent), then site-specific dilution attenuation factor (DAF)-based SSLs will be calculated and used to evaluate the potential threat to groundwater quality. We anticipate calculating SSLs based on a site-specific/site-wide DAF of 529 that has previously been submitted to NMED and is expected to be approved.

The soil leaching to groundwater pathway evaluation will be conducted separately from other evaluations so it is clear which compounds contribute to potential health risks via this pathway. A separate risk evaluation table will be prepared where this pathway is potentially complete. The analysis will evaluate each chemical individually. If no chemicals exceed their respective screening criteria, either in soil or groundwater, then the soil leaching to groundwater pathway will not be considered a significant exposure pathway and no further evaluation would be needed for this pathway.

The individual risk or hazard quotient for each compound is calculated by dividing the concentration by the screening value (and for carcinogens that value is multiplied by 1×10^{-5}). The individual ratios are then summed to estimate the cumulative risk or total hazard index for each receptor evaluated. One sum is calculated for carcinogenic compounds and one sum is calculated for noncarcinogenic compounds. The cumulative risks and hazards will be compared to the target criteria of 1×10^{-5} for carcinogenic compounds and 1 for noncarcinogenic compounds. If both individual and cumulative risks are less than target criteria, then no further action is required. For lead and TPH, the comparison will be made to the appropriate NMED SSL (or EPA RSL) for the receptor and exposure pathway being evaluated. If there are no exceedances, then no further action for lead or TPH is required.

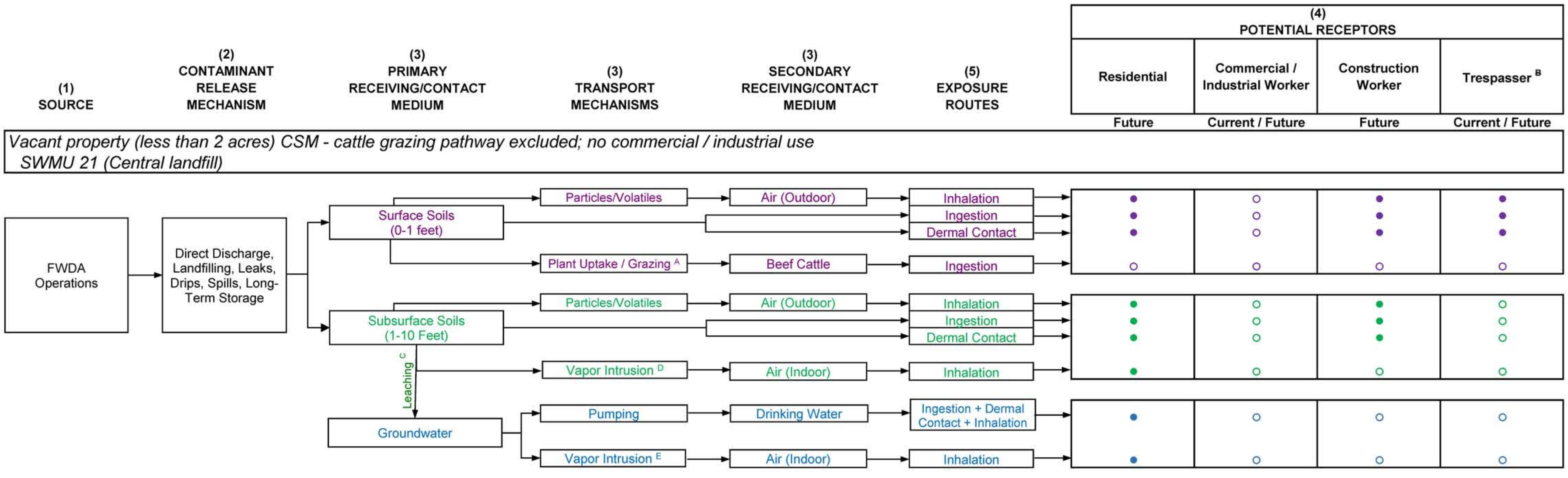
If there are exceedances, then the risk evaluation moves to its third step. In this step, a variety of data review and evaluation is conducted in preparation to re-evaluate cumulative health risks. The data review/evaluation could include one or more of the following tasks, if appropriate for the data set:

1. Calculate a 95% UCL of the mean to use in the risk evaluation, if sufficient data are available to support a UCL calculation. ProUCL will be used to calculate UCLs and the output for any UCLs incorporated into the risk evaluation will be included as an appendix to the Phase 2 RFI Letter Report. The 95% UCL will be used as the alternative to the maximum concentration in the re-evaluation of cumulative risk.

2. Identify the concentrations that contribute significantly to unacceptable health risks. This data review will allow an alternate maximum concentration to be selected from the existing data set to represent a post-removal action maximum concentration in the re-evaluation of cumulative risk. It will also help to define the extent of a future corrective measure (i.e. removal action). For lead and TPH, this step is a sample-by-sample comparison to identify the concentrations that exceed their respective screening criteria, and thus what sample locations should be included in a future removal action.

The fourth step in the process is to re-calculate cumulative risks and hazards using the alternate maximum concentrations defined in the preceding step, and segregating the assessment of total hazards by toxic endpoint if appropriate. If the cumulative risks and hazards are less than the target criteria, and a future soil removal action was not defined during the refined data evaluation, then no further evaluation is required. If the cumulative risks and hazards are greater than the target criteria, then the process is repeated (additional data evaluation and re-evaluation of cumulative risks) to define an appropriate soil removal action.

The results of the cumulative risk evaluation will be presented in the Phase 2 RFI Letter Report, and will include tables showing the cumulative risk calculations and appendices presenting the relevant backup documentation.



Notes: The numbers appearing at the top of each column are taken from the 5 elements that make up a complete exposure pathway in the NMED 2014 risk guidance.

- ● Potentially complete exposure pathway.
- ○ Incomplete exposure pathway.

[A] The beef ingestion pathway is not complete for AOCs / SWMUs smaller than 2 acres in size, or that don't support suitable conditions for grazing.
[B] The residential receptor or the commercial/industrial receptor is considered protective of a trespasser, so the trespasser is not quantitatively evaluated.
[C] Evaluate the soil leaching to groundwater pathway only if groundwater is not encountered; use site-specific DAF-based NMED SSLs to evaluate soil data.
[D] The vapor intrusion pathway in soil will be evaluated qualitatively and may require collection of soil-gas data to complete the risk evaluation.
[E] The vapor intrusion pathway for groundwater is only considered potentially complete for the southern portion of SWMU 21. The vapor instrusion pathway is not considered complete for the northern portion of SWMU 21 because it is within an arroyo where future structures are unlikely to be constructed.

Parcel 23 Phase 2 RFI Work Plan
Fort Wingate Depot Activity
McKinley County, New Mexico

FWDA Preliminary Conceptual Site Models for Human Receptors

FIGURE **5-1**

Job No.:	912640002
PM:	JH
Date:	10/20/2015
Scale:	NTS

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6.0 SCHEDULE

A summary of the expected schedule for conducting the Phase 2 RFI activities at Parcel 23 is presented below. Days listed are days following NMED approval of this Work Plan and Army notice to proceed.

- 30 days – Provide 30 day notice to NMED
- 60 days – Initial mobilization to conduct investigation
- 120 days – Submittal of Army Draft Phase 2 Report
- 165 days – Submittal of Final Phase 2 Report

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7.0 REFERENCES

CH2M Hill, 2009. *Final Historical Information Report, Parcel 23*. CH2M Hill, 27 April 2009.

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New Mexico Environment Department (NMED), 2011. *New Mexico Environment Department Groundwater Quality Bureau Monitoring Well Construction and Abandonment Guidelines, Revision 1.1*. New Mexico Environment Department, March 2011.

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NMED, 2014a. Letter from the New Mexico Environment Department to Mark Patterson (FWDA, BRAC Coordinator) and Steve Smith (USACE FWDA Program Manager) *Re: Disapproval, Final RCRA Facility Investigation Report, Parcel 23, Fort Wingate Depot Activity, McKinley County, New Mexico, EPA ID# NM6213820974, HWB-FWDA-12-002*. New Mexico Environment Department, August 19, 2014.

NMED, 2014b. *Risk Assessment Guidance for Site Investigations and Remediation*. New Mexico Environment Department, December 2014.

NMED, 2015. Letter from the New Mexico Environment Department to Mark Patterson (FWDA, BRAC Coordinator) and Steve Smith (USACE FWDA Program Manager) *Re: Approval with Modifications, Final RCRA Facility Investigation Report, Parcel 23, Revision 1.0, Fort Wingate Depot Activity, McKinley County, New Mexico, EPA ID# NM6213820974, HWB-FWDA-12-002.* New Mexico Environment Department, August 12, 2015.

SCIENTECH, Inc., 1999a. *Chemical Quality Control Summary Report for the Landfill Closure: Removal and Disposal of Group "C" and Central Landfills, Fort Wingate, New Mexico*. August 1999.

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USGS, 2015. *Final RCRA Facility Investigation Report, Parcel 11, Revision 1.0, Fort Wingate Depot Activity*. U.S.G.S. New Mexico Water Science Center, 28 February 2015.

Appendix A
Responses to NMED comments contained in the Approval with Modifications dated August 12, 2015

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USACE RESPONSE TO NMED APPROVAL WITH MODIFICATIONS DATED AUGUST 12, 2015 REGARDING THE FINAL RCRA FACILITY INVESTIGATION REPORT, PARCEL 23, REVISION 1.0

Item	Comment	Response
1	The Permittee must submit a Phase II Work Plan as stated in the response to NMEDs Disapproval, dated August 19, 2014. The Permittee's response letter was dated February 28, 2015 and is included in Attachment A of this Report. The Phase II Work Plan must be written and submitted in accordance with Section VII.H.1.b of the Permit prior to conducting any field activity. The work plan must describe in detail the proposed soil sampling activities and include figures identifying the proposed soil boring locations.	A Phase II Work Plan will be submitted to NMED for review and approval will be obtained from NMED prior to initiation of field activities.
2	In future responses to Disapprovals the Permittee must reference the Permittee's response letter comments in the applicable sections of the Report where future work is being proposed; otherwise it appears that comments in the disapproval were not addressed. The Permittee is required to provide a response letter that cross-references NMEDs comments and demonstrates where changes have been made to the revised document.	The Army will attempt to provide a more detailed Response to Comments in future document revisions.
3	The Permittee must use the 2014 NMED Risk Assessment Guidance as updated for the work proposed performed in the Phase II Work Plan.	The Army will incorporate the NMED Risk Assessment Guidance dated December 2014 into the Phase II Work Plan.
4	In Section 3.6.2, the Permittee proposed to install three additional borings at SWMU 21 in an effort to evaluate the horizontal extent of contamination near soil boring SB08. The proposed method is acceptable; however, a survey must be conducted in order to accurately apply correction factors for terrain slope in order to ensure that the proposed depth of 17-18 feet-below ground surface (ft-bgs), relative to soil boring 08 (SB08) to equal the baseline ground surface depth of 0 feet. NMED recommends that samples be collected at two-and-one-half-foot intervals for the upper ten feet and at five foot intervals from the surface thereafter. This recommendation stems from the exceedances in the "clean fill" and the fact that residential risk is applicable to 10 ft-bgs. The method proposed by the Permittee would not provide data to determine an acceptable risk for the first 10 ft-bgs as proposed in this Report.	The Army does not believe that any data has been collected regarding backfill material ("clean fill") overlying the native soils that comprised the floor of the excavation. All soil samples collected during the 1999 confirmation sampling, 2000 Release Assessment, and 2011 RFI were collected from native soils. In order to remain consistent with the RFI Report recommendations, samples related to soil boring SB08 will be collected as planned. However, the Phase II Work Plan will address sampling of the first 10 ft bgs, including backfill materials, at intervals throughout the entire length of the former landfill. In addition, soil samples will be collected from groundwater investigation boreholes, one of which is located in the vicinity of SB08.

Item	Comment	Response
5	In Section 4.6.2, the Permittee recommends no further corrective action for AOC 73. NMED concurs with this recommendation pending an evaluation of the data collected for a soil background study based on incremental (IM) samples. The approved 2010 Shaw soil background study conducted at FWDA represents grab samples, which are discrete sample data. Discrete sample results provide a measure of the distribution of concentrations in relatively small volumes of soil in a specified area, where IM samples provides measure of the distribution of mean concentrations, each of which is an estimate of the population mean for the entire decision unit. Due to the differences in attributes, a comparison of IM results to discrete background data cannot be conducted. Comparison of an IM estimate of the mean to a discrete sample collected from soil representing background is likely to lead to decision errors in which one incorrectly concludes that the contaminant distribution on site is consistent with background conditions (refer to Chapter 4 ITRC Incremental Sampling Methodology: http://www.itrcweb.org/). Submit a Phase II Work Plan to conduct a soil background study for IM data for comparison to the site IM data.	The Army has reviewed the metals analysis data for the samples collected at AOC 73 during the RFI to determine if there are any concentrations that exceed current SSLs. All analyte concentrations are less than the 2014 NMED Residential SSLs, and thus an evaluation comparing metals concentrations to naturally occurring background levels is not needed. The Army believes that the low concentrations of metals coupled with the lack of detection of any explosive compounds is sufficient to warrant No Further Action at AOC 73.
6	The Permittee must submit a Phase II Work Plan to address comments contained in NMED's Disapproval dated August 19, 2014 and must address all comments contained in this Approval with Modifications. The Phase II Work Plan must be submitted on or before November 30, 2015.	See Comment 1. The Phase II Work Plan will be submitted in accordance with Permit requirements, including the Permit schedule requirements.