FINAL
NON TIME-CRITICAL REMOVAL ACTION WORK PLAN FOR RVAAP-34 SAND CREEK DISPOSAL ROAD LANDFILL

FORMER RAVENNA ARMY AMMUNITION PLANT PORTAGE AND TRUMBULL COUNTIES, OH

April 9, 2021

Contract Number: W912QR17C0045

Prepared for:

U.S. ARMY CORPS OF ENGINEERS, LOUISVILLE DISTRICT
600 Dr. Martin Luther King Pl, Room 821
Louisville, KY 40202

Prepared by:
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14. ABSTRACT

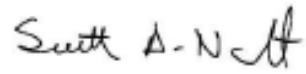
Non Time-Critical Removal Action (NTRCA) outlines the requirements and procedures to be implemented by the Alaniz-Endpoint joint venture team for this task order under the requirements of the Performance Work Statement dated December 2018 and amended on November 21, 2019. Specifically, this NTCRA sets forth details for site preparation, excavation, onsite thermal treatment of soil, transportation, and off-site disposal of soil exceeding clean-up goals at the RVAAP-34 Sand Creek Disposal Road Landfill Area of Concern as required under this contract.

15. SUBJECT TERMS
Remedial design, project organization and responsibilities, excavation and thermal treatment activities, confirmation sampling, site restoration and field documentation.

16. SECURITY CLASSIFICATION OF:			**17. LIMITATION OF ABSTRACT**	**18. NUMBER OF PAGES**	**19a. NAME OF RESPONSIBLE PERSON**
a. REPORT	**b. ABSTRACT**	**c. THIS PAGE**			Nathaniel Peters, Ph.D., PE
U	U	U	U	123	**19b. TELEPHONE NUMBER** *(Include area code)* 502-315-2624

CONTRACTOR STATEMENT OF TECHNICAL REVIEW

Endpoint Consulting, Inc., has completed the preparation of this Non Time-Critical Removal Action Work Plan for RVAAP-34 Sand Creek Disposal Road Landfill at the former Ravenna Army Ammunition Plant. Notice is hereby given that an independent technical review has been conducted that is appropriate to the level of risk and complexity inherent in the project. During the independent technical review, compliance with established policy principles and procedures, utilizing justified and valid assumptions, was verified. This independent technical review included evaluation of data quality objectives; technical assumptions; methods, procedures, and material to be used in analyses; the appropriateness of data used and level of data obtained; and reasonableness of the results, including whether the product meets the customer's needs consistent with law and existing USACE policy.



Scott Nesbit, P.E. — Date: 3-30-2021
Quality Assurance Manager/Independent Technical Review

Tim Naughton, P.E. — Date: 3-30-2021
Director of Operations & Engineering

Significant concerns and explanation of the resolution are documented within the project file.
As noted above, all concerns resulting from independent technical review of the project have been considered.

M. Chris Pestana — Date: 3-30-2021
Program Manager

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FORMER RAVENNA ARMY AMMUNITION PLANT PORTAGE AND TRUMBULL COUNTIES, OHIO

Contract Number: W912QR17C0045

Reviewed and Approved by:

Tim Naughton, P.E.
Director of Operations & Engineering
Endpoint Consulting, Inc.

M. Chris Pestana
Program Manager
Alaniz Associates Corporation

The Alaniz-Endpoint Joint Venture (Alaniz-Endpoint Team) has prepared this report under the direction of USACE Louisville District (LRL). This document should be used only with the approval of USACE LRL. This report is based in part on information provided in other documents and is subject to the limitations and qualifications presented in the referenced documents.

April 2021

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RVAAP-34 Sand Creek Disposal Road Landfill at
Former Ravenna Army Ammunition Plant
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ARNG = Army National Guard
OHARNG = Ohio Army National Guard
Ohio EPA CO = Ohio Environmental Protection Agency, Central Office
Ohio EPA DERR = Ohio Environmental Protection Agency, Division of Environmental Response and Revitalization
Ohio EPA SWDO = Ohio Environmental Protection Agency, Southwest District Office
REIMS = Ravenna Environmental Information Management System
USACE = United States Army Corps of Engineers

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ACRONYMS AND ABBREVIATIONS

ACM	Asbestos Containing Material
ARAQMD	Akron Regional Air Quality Management District
Alaniz	Alaniz Associates Corporation
AOC	Area of Concern
ARNG	Army National Guard
bgs	below ground surface
BMP	Best Management Practice
CIH	Certified Industrial Hygienist
CJAG	Camp James A. Garfield Joint Military Training Center
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
COC	Chemical of Concern
COR	Contracting Officer's Representative
CRM	Cultural Resources Manager
DFFO	Director's Final Findings and Orders
DLA	Defense Logistics Agency
DOT	Department of Transportation
DRMO	Defense Reutilization and Marketing Office
Endpoint	Endpoint Consulting Inc.
F	Fahrenheit
ft	feet
FSA	Field Staging Area
FTL	Field Task Leader
FWCUG	Facility-Wide Cleanup Goal
FWSHP	Facility-Wide Safety and Health Plan
HAZWOPER	Hazardous Waste Operations and Emergency Response
HHRA	Human Health Risk Assessment
HQ	Hazard Quotient
IDW	Investigation-Derived Waste
ISM	Incremental Sampling Methodology
KO	Contracting Officer
LDC	Laboratory Data Consultants
LRL	Louisville District
mg/m^3	milligrams per cubic meter
mg/kg	milligrams per kilogram
MKM	MKM Engineers, Inc
mph	miles per hour
NACA	National Advisory Committee on Aeronautics
NTCRA	Non Time-Critical Removal Action
NVLAP	National Voluntary Laboratory Accreditation Program
OHARNG	Ohio Army National Guard
Ohio EPA	Ohio Environmental Protection Agency

ACRONYMS AND ABBREVIATIONS (CONTINUED)

OSHA	Occupational Safety and Health Administration
PAHs	Polycyclic Aromatic Hydrocarbons
PCB	Polychlorinated Biphenyls
PID	Photoionization Detector
QA	Quality Assurance
QC	Quality Control
RACR	Remedial Action Completion Report
RAO	Remedial Action Objective
RSL	Regional Screening Level
RVAAP	Ravenna Army Ammunition Plant
SAP	Sampling and Analysis Plan
SLERA	Screening Level Ecological Risk Assessment
SSHO	Site Safety and Health Officer
SSHP	Site Specific Safety and Health Plan
SOP	Standard Operating Procedure
TCLP	Toxicity Characteristic Leaching Potential
TRL	Target Risk Level
USACE	United States Army Corps of Engineers
USACE LRL	United States Army Corps of Engineers Louisville District
U.S. Army	United States Department of the Army
USEPA	United States Environmental Protection Agency
VEG	Vapor Energy Generator

1.0 INTRODUCTION

The Alaniz Associates Corporation (Alaniz) and Endpoint Consulting, Inc (Endpoint) Joint Venture (Alaniz-Endpoint Team) has been contracted by the United States Army Corps of Engineers, Louisville District (USACE LRL) to perform a Non Time-Critical Removal Action (NTCRA) at RVAAP-34 Sand Creek Disposal Road Landfill (Sand Creek) area of concern (AOC) at the former Ravenna Army Ammunition Plant (RVAAP), now known as Camp James A. Garfield Joint Military Training Center (CJAG) in Portage and Trumbull Counties, Ohio (Figure 1-1). All work will be overseen by USACE and the Army National Guard (ARNG). This work is being performed in accordance with USACE LRL, Remediation Contract W912QR17C0045, issued on July 31, 2017 and amended on November 21, 2019. In addition, planning and performance of all work elements will be conducted in accordance with the requirements of the Ohio Environmental Protection Agency (Ohio EPA).

The RVAAP Restoration Program has identified several AOCs which require soil remediation for various contaminants, with polycyclic aromatic hydrocarbons (PAHs) being the predominant chemical of concern (COC) at several AOCs targeted for remediation using Endpoint's patented Vapor Energy Generator (VEG) Technology. An onsite pilot study performed by Endpoint at the Atlas Scrap Yard (RVAAP-50) site at CJAG (Former Camp Ravenna) demonstrated the efficiency and effectiveness of the VEG Technology for remediating PAH-contaminated soil to unrestricted reuse levels (Endpoint, 2015). With remediation of PAHs at a total of five AOCs covered under this contract, application of the VEG Technology is considered most feasible and cost-effective if the VEG remediation system is set up at the RVAAP-38 National Advisory Committee on Aeronautics (NACA) Test Area AOC, with PAH-impacted soil from the Sand Creek AOC (and four other AOCs) transported to this location for treatment. Following successful treatment, soil will be returned to each of the AOCs for use as backfill and site restoration. Independent Remedial Design (RD) workplans are under preparation for each of the other AOCs to be remediated under this contract.

This NTCRA describes the requirements to implement the recommended remedial actions at the Sand Creek AOC, as documented in:

- *Revised Final Remedial Investigation Report for RVAAP-34 Sand Creek Disposal Road Landfill. Ravenna Army Ammunition Plant, Ravenna, Ohio*. February 2017 (USACE, 2017)
- *Engineering Evaluation/Cost Analysis: RVAAP-34 Sand Creek Disposal Road Landfill at Camp James A. Garfield Joint Military Training Center Portage and Trumbull Counties, Ohio*. January (USACE, 2019A)
- *Final Action Memorandum: RVAAP-34 Sand Creek Disposal Road Landfill at Former Ravenna Army Ammunition Plant*, September (USACE, 2019B)

The Engineering Evaluation/Cost Analysis (EE/CA) for this AOC identified site clean-up goals for arsenic as RVAAP background levels (within 95% upper confidence limit) and the revised US Environmental Protection Agency (USEPA) residential soil Regional Screening Levels (RSLs) for PAHs. Four areas within this AOC require remediation. Specifically, soil around sample locations SCss-062M-0001-SO and SCsb-037M-0001-SO/SCsb-037M-0002-SO require excavation of arsenic-impacted soil for subsequent

profiling and off-site disposal. Soil around sample locations SCss-060M-0001-SO and SCsb-049M-0001-SO require excavation and onsite thermal treatment of PAHs in soil to levels below established cleanup goals using the VEG Technology. Soil treated by the VEG Technology and meeting cleanup goals will be returned to the excavation areas, providing unrestricted reuse of the land. The four areas of remediation at this AOC are discussed in more detail in Section 1.3. COCs and relevant cleanup goals, including RVAAP background levels for arsenic in soil and updated USEPA residential soil RSLs for PAHs are discussed further in Section 3.2.

1.1 PURPOSE

As defined in the EE/CA, surface soil, defined as soil within 0-1 foot below ground surface (bgs), in two distinct areas of the Sand Creek AOC contain chemicals with concentrations above established cleanup goals and should be remediated to a level protective of human health. Additionally, two distinct areas of the AOC contain chemicals with concentrations above established cleanup goals at depth intervals 1 - 5 feet, and 5 - 9 feet below bgs, respectively, and should be remediated to a level protective of human health. No COCs were found in sediment or surface water; thus, no remedial actions are required for those media. Based on the fate and transport evaluation, no contaminant migration COCs for soil or sediment were identified as impacting groundwater. Groundwater will be further evaluated under the RVAAP-66 Facility-wide Groundwater Monitoring Program.

The selected remedial alternative for soil at the AOC, as recommended in the EE/CA, is Alternative 2: Excavation with Off-Site Disposal for Soil with Arsenic and Ex-Situ Thermal Treatment for Soil with PAHs to Attain Unrestricted (Residential) Land Use. This scope includes the excavation and off-site disposal of soil at sample locations SCss-062M-0001-SO and SCsb-037M-0001-SO/SCsb-037M-0002-SO and ex-situ thermal treatment of soil excavated at sample locations SCss-060M-0001-SO and SCsb-049M-0001-SO. To this end, this NTCRA work plan details requirements and procedures necessary to implement the selected remedial action alternative, including a plan to excavate and dispose of arsenic-impacted soil above RVAAP background levels and excavation and thermal treatment of PAH-impacted soil exceeding residential RSLs, allowing for unrestricted (i.e., residential) reuse of the AOC.

This work plan provides specific remedial actions that will reduce chemical contamination in soil at the Sand Creek AOC. The remedial action objective (RAO) and established cleanup goals for the AOC are presented in Section 3.0. In summary, the RAO is to prevent resident receptor exposure to soil exceeding established AOC cleanup goals. Once the RAO and AOC cleanup goals are met following the implementation of this NTCRA, soil will be considered protective for Unrestricted (residential) Land Use, which is inherently protective of potential likely future use of this AOC as a military training area (USACE, 2019A).

Specific elements of the remedial actions described in this NTCRA work plan include:

- Excavating contaminated soil exceeding RVAAP background levels for arsenic around sample locations SCss-062M-0001-SO and SCsb-037M-0001-SO/SCsb-037M-0002-SO;

- Excavating contaminated soil exceeding RSLs for PAHs around sample locations SCss-060M-0001-SO and SCsb-049M-0001-SO;
- Profile sampling, transportation, and off-site disposal of the estimated 84.1 in-situ cubic yards of arsenic-impacted soil at an off-site permitted disposal facility;
- Thermally treating an estimated 46.2 in-situ cubic yards of PAH-impacted surface soil using the VEG Technology;
- Conducting confirmation sampling of excavation areas and treated soil to ensure that the goals have been met; and
- Restoring disturbed areas to their original elevation and site conditions.

The aforementioned remediation volumes are based on the in-situ volumes defined in the approved Final Action Memorandum (USACE, 2019B). The excavation pit sidewall and bottom confirmation sampling proposed in this NTCRA will help determine the final volume of soil to be excavated at this AOC. Remediation volumes are further discussed in Section 5.2.1 and 5.2.2.

Remedial activities will be overseen by USACE LRL and implemented by the Alaniz-Endpoint Team. The Alaniz-Endpoint Team (under contract with USACE LRL) is responsible for excavation, thermal treatment of PAH-impacted soil, confirmation sampling, profiling, transportation and disposal of arsenic-impacted soil/vegetation, and restoring excavation sites to pre-remediation conditions using treated soil and approved imported soil as backfill. Implementation of these activities will meet the requirements of the EE/CA, Standard Operating Procedures specified in Appendix I (Sampling and Analysis Plan [SAP]) of the "Final Remedial Design for Soil, Sediment, And Surface Water At RVAAP-42 Load Line 9" (Endpoint, 2021), and the following documents:

- *Facility-Wide Safety and Health Plan for Environmental Investigations* (USACE 2011b); and
- *Site-Specific Health and Safety Plan* (to be prepared under separate cover)

1.2 FACILITY DESCRIPTION

The former RVAAP facility consists of 21,683 acres located in northeastern Ohio within Portage and Trumbull counties, approximately 4.8 km (3 miles) east/northeast of the City of Ravenna and approximately 1.6 km (1-mile) northwest of the City of Newton Falls. It consists of a parcel approximately 17.7 km (11 miles) long and 5.6 km (3.5 miles) wide and is bounded by State Route 5, the Michael J. Kirwan Reservoir, and the CSX System Railroad on the south; Garrett, McCormick, and Berry roads to the west; the Norfolk Southern Railroad on the north; and State Route 534 on the east (see Figure 1-1). The former RVAAP facility was used as a load, assemble, and pack facility for munitions production.

As of September 2013, administrative control of the 21,683-acre facility has been transferred to the United States Property and Fiscal Officer for Ohio and subsequently licensed to the Ohio Army National Guard (OHARNG) for use as a military training site (CJAG).

During the RVAAP operational years, prior to CJAG, the entire 21,683- acre property was a government-owned, contractor-operated industrial facility. The RVAAP Restoration Program encompasses

investigation and cleanup of past activities over the entire 21,683 acres of the former RVAAP; therefore, references to the RVAAP in this document are considered to be inclusive of the historical extent of the former RVAAP and CJAG, unless otherwise specifically stated.

The ARNG is the lead agency for remediation, decisions, and applicable cleanup within the former RVAAP facility. The Ohio EPA is the supporting state regulatory agency. The USACE-LRL is the contracting agency hired by the ARNG and OHARNG and is responsible for implementation and technical oversight of remedial activities. It is important to note that the RVAAP Restoration Program is bound to the Director's Final Findings and Orders (DFFO) issued June 10, 2004 by the Ohio EPA pursuant to the authority vested under Chapters 3734, 3745, and 6111 of the Ohio Revised Code. The objective of the DFFO is to ensure that the public health, safety, and welfare, as well as the environment, are protected from the disposal, discharge, or release of contaminants.

1.3 SITE BACKGROUND

The Sand Creek AOC is located in the central eastern portion of the former RVAAP and was used as an open dump area (Figure 1-2). The operational history of disposal activities at this site is incomplete. Construction and demolition debris type material were delivered to the site and dumped over an embankment located immediately adjacent to Sand Creek. The dump site extended along the embankment for approximately 1,200 feet and varied in width from 20 to 40 feet from the top of the bank to the bottom (Figure 1-3). The size of the defined AOC is approximately 1 acre. The bank slopes from east to west towards Sand Creek at 40 to 60 degrees from the horizontal. There are no records indicating the quantities or materials dumped at the site and the dates of operation for the dump are unknown. Several buildings associated with the former Sand Creek Sewage Treatment Plant are located northeast of the site. Surface water runoff follows the topography of the site and flows in a westerly direction where it enters Sand Creek. A very narrow floodplain occupies the land between the bottom of the embankment and Sand Creek. A former railroad bed bisects the AOC (MKM, 2004).

Since 1989, several remedial investigations, removal actions, and other activities have been conducted at the Sand Creek AOC including:

- Preliminary Assessment (SAIC, 1996);
- Phase I Remedial Investigation (USACE, 1998);
- Removal Action (MKM, 2003);
- After Action Sample Collection (MKM, 2003);
- Final Facility Wide Cleanup Goals for the Ravenna Army Ammunition Plant (SAIC, 2010);
- Digital Geophysical Mapping survey (Shaw, 2011); and
- Phase II Remedial Investigation (USACE, 2017).

Sampling results from the 2017 RI were combined with applicable results of previous sampling events to

evaluate the nature and extent of contamination, examine contaminant fate and transport, conduct risk assessments, and evaluate potential remedial alternatives. A human health risk assessment (HHRA) and screening level ecological risk assessment (SLERA) were conducted to document COCs that may pose potential risks to human health and the environment resulting from exposure to contamination at the AOC. The HHRA identified COCs based on the exceedances of Resident Receptor Facility-Wide Cleanup Goals (FWCUGs), developed in the *Facility-Wide Human Health Cleanup Goals Report* (USACE, 2010), at a target risk level (TRL) of 1E-05 and hazard quotient (HQ) of 1.

As previously indicated, four independent subareas at the AOC were defined in the EE/CA for potential future remediation, as presented on Figure 1-4. As stated in the EE/CA, elevated levels of arsenic were found residing in soil in the area of sample locations SCss-062M-0001-SO and SCsb-037M-0001-SO/SCsb-037M-0002-SO, while elevated concentrations of PAHs (benzo(a)pyrene and benzo(b)fluoranthene) were found in soil near sample locations SCss-060M-0001-SO and SCsb-049M-0001-SO (see Figure 1-4); arsenic and PAHs are accordingly recognized as the COCs for this AOC (USACE, 2019A). For purposes of this NTCRA work plan, the aforementioned sublocations will be referenced from here on by their respective sample locations: SCss-062M and SCsb-037M for arsenic-impacted soil, and SCss-060M and SCsb-049M for PAH-impacted soil, as shown on Figure 1-4.

The SLERA concluded no additional remedial actions are warranted at the AOC from an ecological perspective. No COCs or contaminants of potential ecological concern were identified in sediment or surface water; therefore, a feasibility study was not warranted for sediment or surface water at the Sand Creek AOC (USACE, 2019A).

AOC clean-up goals for arsenic and two PAHs in surface soil, developed in the EE/CA to support the remedial alternative selection process for soil remediation, are presented in Section 3.2.

1.4 COMMUNITY INVOLVEMENT AND REGULATORY APPROVAL

In accordance with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Section 1179(a) and the National Oil and Hazardous Substance Pollution Contingency Plan Section 300.130(f)(2), the EE/CA was released to the public on May 21, 2019, with documents made available in the Administrative Record maintained at CJAG and in the Information Repositories at Reed Memorial Library in Ravenna, Ohio, and at Newton Falls Public Library in Newton Falls, Ohio (USACE, 2019B). Notices of the availability of the Proposed Plan were sent to newspapers. A 30-day public comment period was held from May 21, 2019 to June 21, 2019, to allow the public to provide comments for consideration. No specific comments were received on the EE/CA from the public during the review period. (USACE, 2019B).

State acceptance considers that all comments received from agencies of the State of Ohio are addressed and the EE/CA is accepted. The primary state agency supporting this investigation is the Ohio EPA. An Action Memorandum was prepared, incorporating public comments on the EE/CA, documenting the final proposed remedy.

FORMER RAVENNA ARMY
AMMUNITION PLANT / CAMP JAMES A. GARFIELD

LEGEND:
- ASPHALT ROAD
- RAILROAD TRACKS
- FENCE LINE
- STREAMS

US Army Corps of Engineers Louisville District

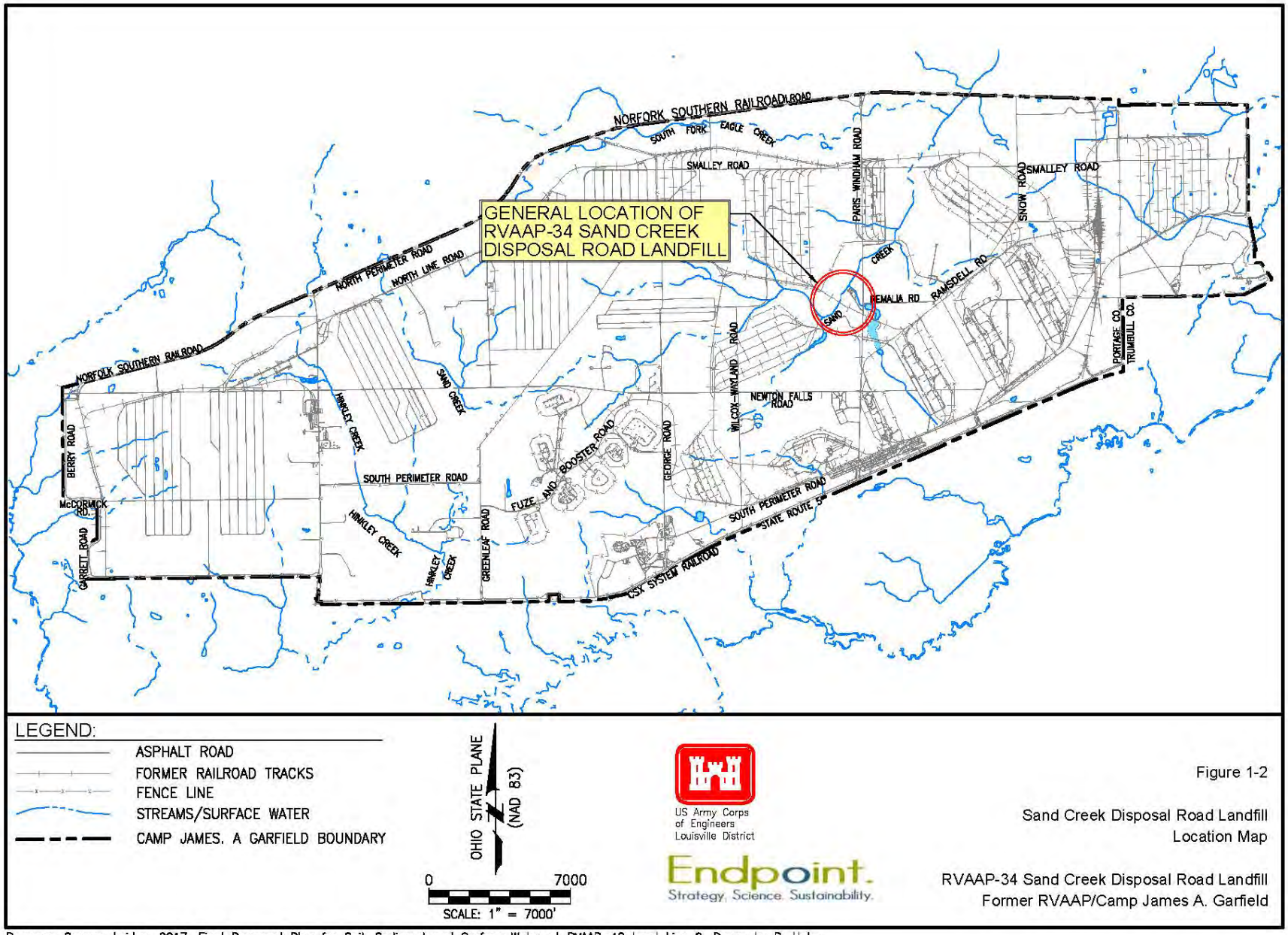
Endpoint. Strategy. Science. Sustainability.

Figure 1-1

Facility Location Map

RVAAP-34 Sand Creek Disposal Road Landfill
Former RVAAP/Camp James A. Garfield

Basemap Source: Leidos, 2017. Final Proposed Plan for Soil, Sediment and Surface Water at RVAAP–42 Load Line 9. Drawn by P. Holm



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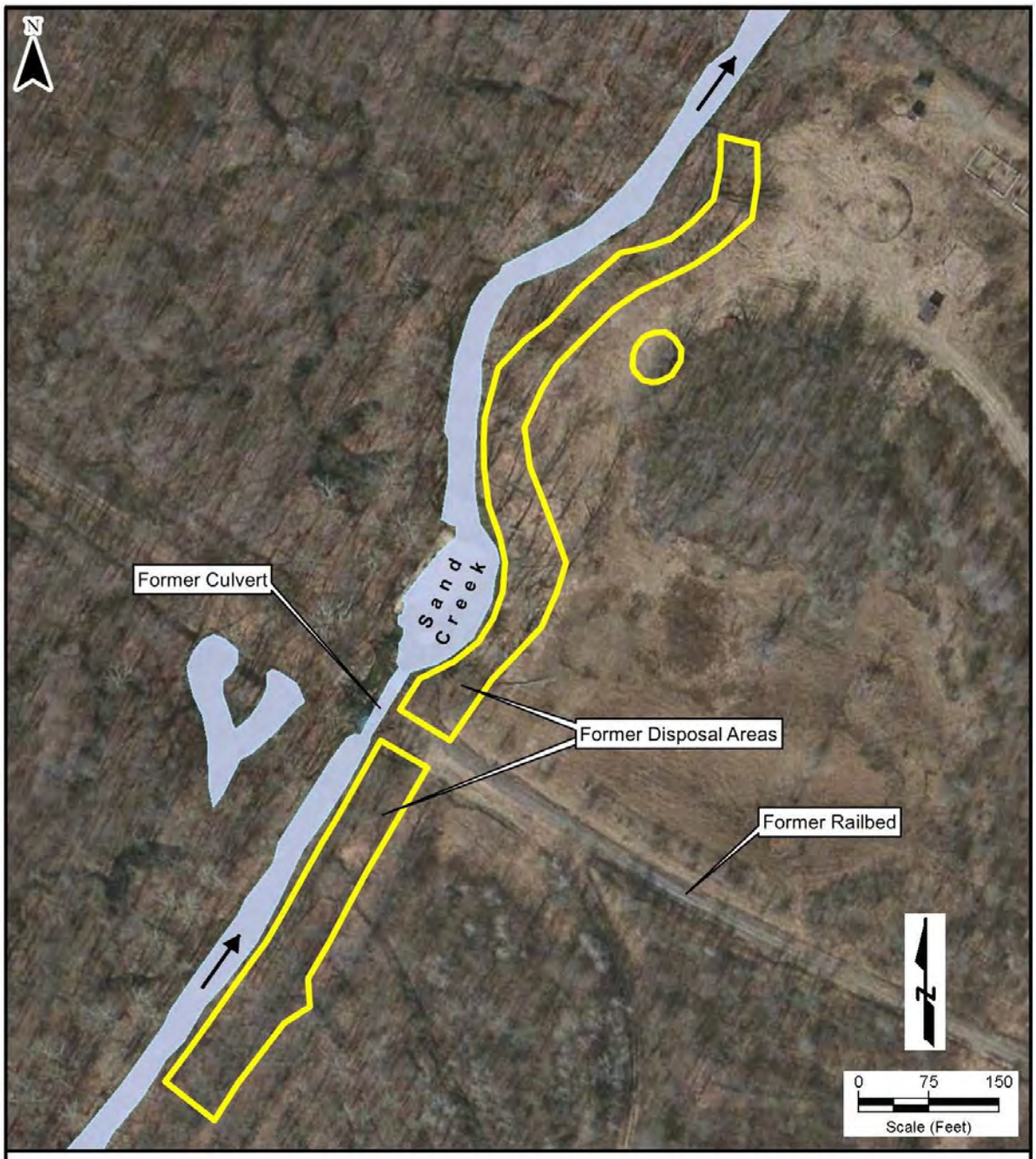


Basemap Source: USACE, 2019. Engineering Evaluation/Cost Analysis: RVAAP-34 Sand Creek Disposal Road Landfill. January

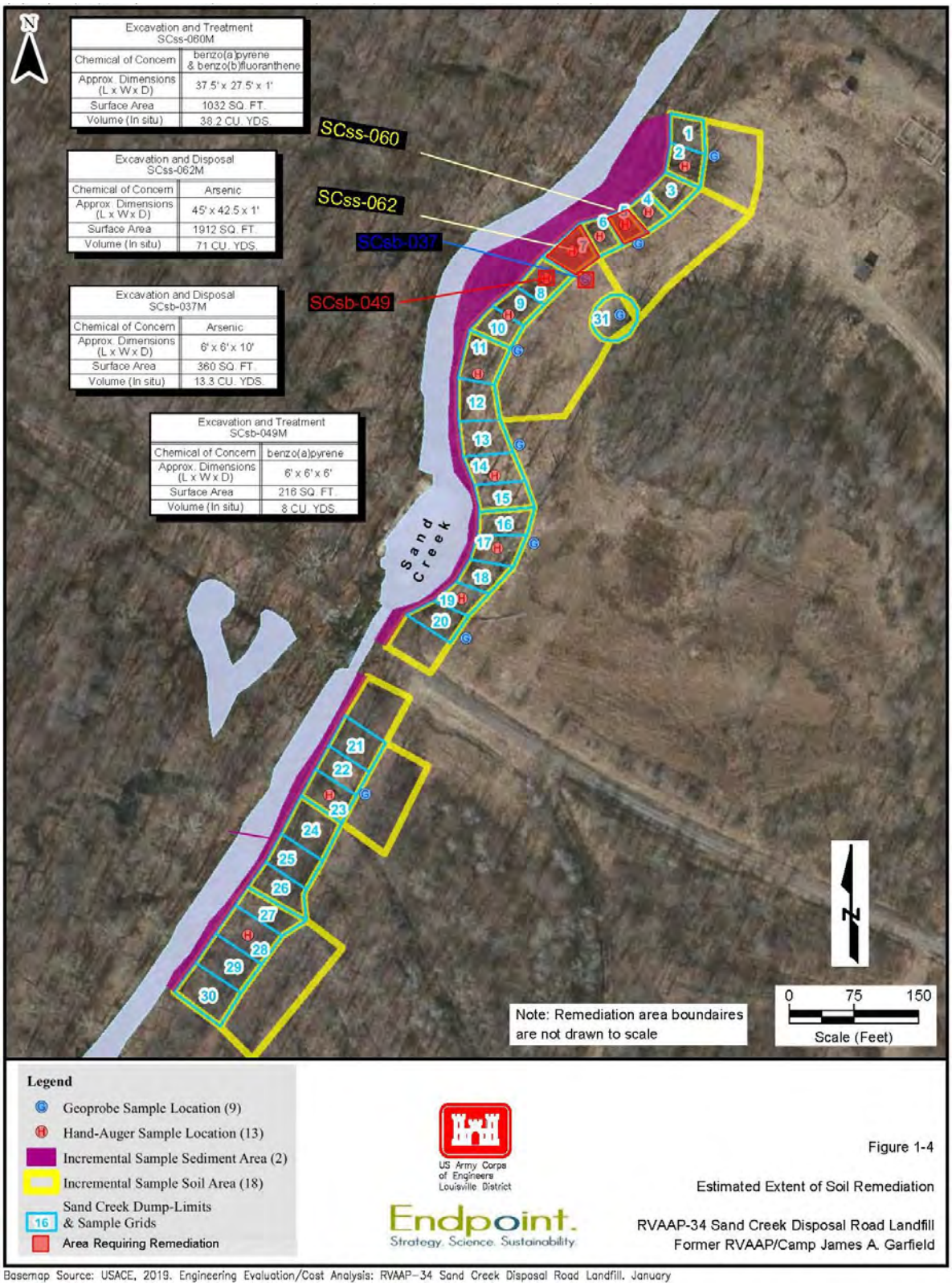


Figure 1-4

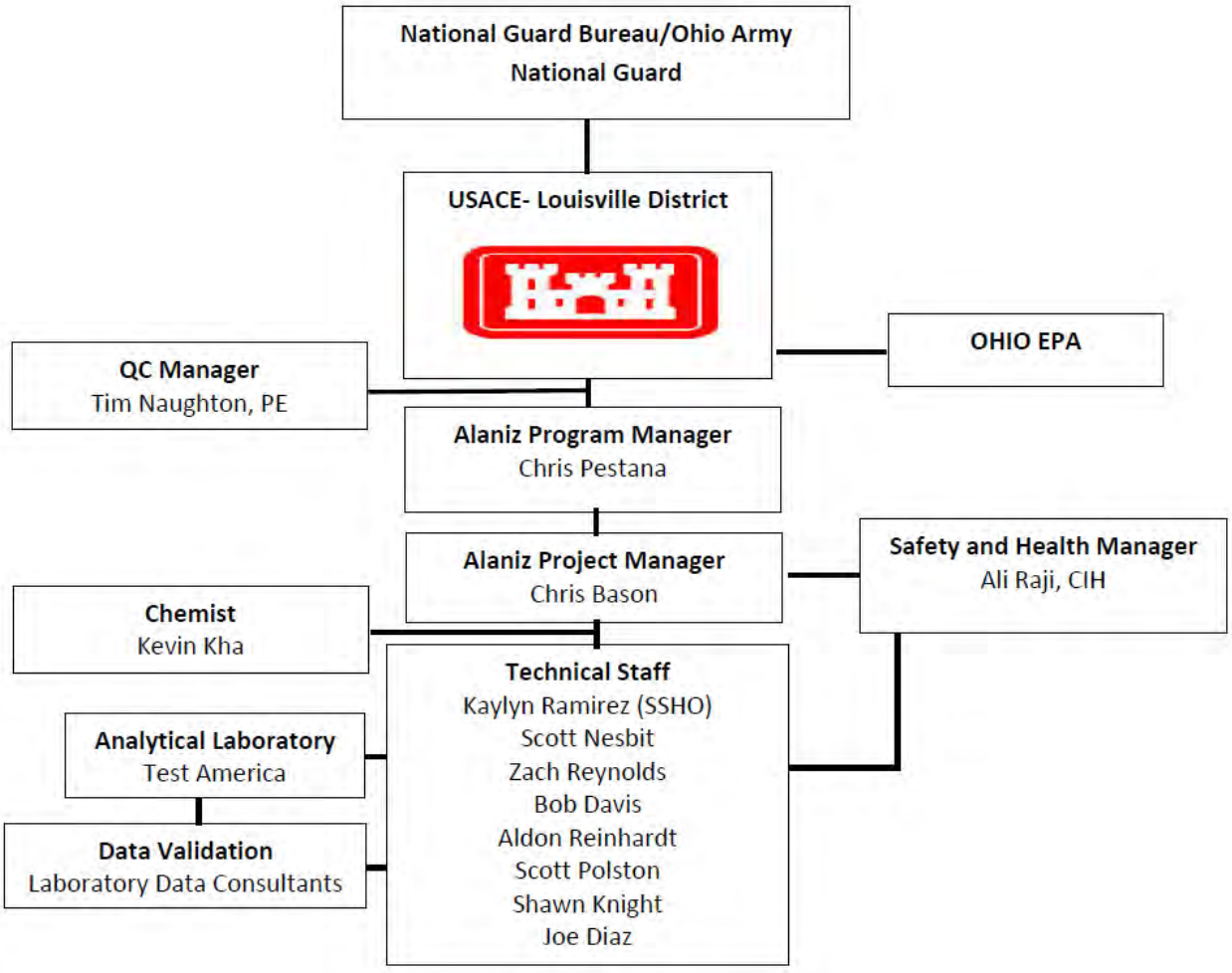
Estimated Extent of Soil Remediation

RVAAP-34 Sand Creek Disposal Road Landfill
Former RVAAP/Camp James A. Garfield

Basemap Source: USACE, 2019. Engineering Evaluation/Cost Analysis: RVAAP-34 Sand Creek Disposal Road Landfill. January

2.0 PROJECT ORGANIZATION AND RESPONSIBILITIES

This section presents the project management structure and key personnel responsibilities that will be used to implement the activities covered in this NTCRA work plan. ARNG is the lead agency for remediation, decisions, and applicable cleanup within the former RVAAP facility. The Ohio EPA is the supporting state regulatory agency. The USACE-LRL is the contracting agency hired by the ARNG and OHARNG and is responsible for implementation and technical oversight of remedial activities. The Alaniz-Endpoint Team is the primary contractor responsible for implementing this NTCRA work plan. The organizational structure and key personnel for this project is summarized below.



2.1 USACE CONTRACTING OFFICER/CONTRACTING OFFICER'S REPRESENTATIVE

Mr. Aaron Sanford will serve as the Contracting Officer (KO). The KO will ensure performance of all necessary actions for effective contracting, ensure compliance with the contract terms, and will safeguard the interests of the United States in the contractual relationship. The KO is ultimately responsible for the final determination of the adequacy of the contractor's performance.

Dr. Nathaniel Peters II, will serve as the Contracting Officer's Representative (COR). The COR is responsible for technical administration of the contract and will assure proper Government surveillance of the contractor's performance.

2.2 USACE PROJECT MANAGER

Mr. Steve Kvaal will serve as the project manager for USACE LRL and will coordinate and communicate with ARNG and OHARNG.

2.3 OHIO ENVIRONMENTAL PROTECTION AGENCY

The Ohio EPA is the regulatory agency for this project and will review project documents and ensure that the work plan and NTCRA are completed in accordance with work plan and regulatory requirements.

2.4 CONTRACTOR PROGRAM MANAGER

Mr. Chris Pestana will serve as Program Manager for the Alaniz-Endpoint Team. He will ensure the Alaniz-Endpoint Team has access to necessary corporate resources that will exceed the quality objectives for this contract. As Program Manager, Mr. Pestana will be responsible for the overall management of the contract including cost and schedule.

2.5 CONTRACTOR PROJECT MANAGER

Mr. Chris Bason will serve as the Project Manager. Mr. Bason will be executing tasks to meet scope, schedule and budget constraints, working closely with Mr. Pestana and the quality assurance (QA) manager, Mr. Tim Naughton.

2.6 CONTRACTOR QUALITY ASSURANCE MANAGER

Mr. Tim Naughton, PE, will serve as Quality Assurance Manager for the Alaniz-Endpoint Team. In this capacity, Mr. Naughton is responsible for the overall technical quality of the contract work, and will also serve as the main point-of-contact for program coordination with USACE LRL and stakeholders, including supporting USACE LRL as Regulatory Specialist and liaison as deemed necessary by USACE LRL. Mr. Naughton will be supported by Endpoint Project Engineer, Kaylyn Ramirez, EIT.

2.7 FIELD TASK LEADER

Mr. Zach Reynolds will serve as the Field Task Leader (FTL), responsible for performing and/or overseeing soil sampling defined in the SAP (Endpoint, 202). He has over 10 years of experience in performing soil sampling, including serving the same role on over 10 other USACE projects involving sampling in support of implementing the VEG Technology.

2.8 SITE SAFETY AND HEALTH OFFICER

Ms. Kaylyn Ramirez will serve as the Site Safety and Health Officer (SSHO), ensuring preparation and implementation, on a daily basis, of protocols and procedures in the site-specific Safety and Health Plan (SSHP) prepared as an addendum to the Facility Wide Safety and Health Plan (FWSHP) and implementation of related procedures on a daily basis during field activities. Ms. Ramirez is formally trained as an SSHO, serving the same role on other USACE contracts involving the use of the VEG Technology. She holds a certificate for 40-hour training under USACE's EM 385.1.1 program, in addition to 40-hr and related 8-hr refresher certificates for the Occupational Safety and Health Administration (OSHA) hazardous waste operator (Hazardous Waste Operations and Emergency Response [HAZWOPER]) program.

2.9 CORPORATE SAFETY OFFICER/CERTIFIED INDUSTRIAL HYGIENIST (CIH)

Mr. Ali Raji, CIH, of Endpoint will serve as the corporate safety officer for the Alaniz-Endpoint Team and will ensure the work performed is planned appropriately and executed in a safe manner. Mr. Raji has previously served in that capacity on several USACE contracts performed by Endpoint. Mr. Raji will also serve as risk assessor on the project.

2.10 DATA VALIDATION CHEMIST

Serving as the Data Validation Chemist, Kevin Kha will ensure data reported by the laboratory is usable for its intended purpose. In this capacity, Mr. Kha and Laboratory Data Consultants (LDC) will work closely with the Department of Defense- and National Environmental Laboratory Accreditation Program certified Eurofins/Test America Laboratories in Savanah, Georgia, to be used throughout the remediation process. Mr. Kha and LDC have served in this capacity on numerous USACE projects, including several projects involving soil remediation using the VEG Technology for USACE.

3.0 REMEDIAL ACTION OBJECTIVE AND CLEANUP GOALS

This section describes the RAO and cleanup goals for the selected remedial action. The RAO specifies requirements to be achieved by the remedial action in order to protect human health and the environment under current and reasonably anticipated future land use scenarios. Correspondingly, cleanup goals are the numerical concentrations required to achieve the RAO for each COC.

3.1 REMEDIAL ACTION OBJECTIVE

The RAO for the Sand Creek AOC is to prevent Resident Receptor (adult and child) exposure to soil with concentrations above:

1. RVAAP background level for arsenic at sample locations SCss-062M and SCsb-037M; and,
2. Residential soil RSLs for PAHs (i.e., benzo(a)pyrene and benzo(b)fluoranthene) at sample locations SCss-060M and SCsb-049M.

As previously indicated, the selected remedial action for the aforementioned locations, as defined in the Final EE/CA for this AOC, is Alternative 2: Excavation with Off-site Disposal for Soil with Arsenic (and Ex-situ Thermal Treatment for Soil with PAHs to attain Unrestricted (Residential) Land Use.

No remedial actions are required for sediment or surface water. Groundwater will be further evaluated under the RVAAP-66 Facility-wide Groundwater Monitoring Program.

3.2 REMEDIAL ACTION CLEANUP GOALS

The numerical criteria to be used for decision-making relative to the COCs established in the EE/CA will correspond to the RVAAP background level for arsenic (USACE, 2010), and the June 2017 USEPA residential soil RSLs for PAHs. Table 3-1 summarizes the cleanup goals for the relevant COCs at this AOC, further incorporating remediation depths, locations, and volumes. Estimated remediation volumes for each Area are discussed in Section 5.2.1.

Table 3-1. Summary of Soil COCs, Cleanup Goals, and Remediation Volumes

Area	Chemical of Concern	AOC Cleanup Goal[1, 2] (mg/kg)	Maximum Depth[3] (ft bgs)	Excavated Disturbed Area[3] (sq ft)	Volume (in-situ) (cubic yards)
SCss-062M	Arsenic	20.1	1	1,912	71
SCsb-037M	Arsenic	20.1	10	36	13
SCss-060M	Benzo(a)pyrene	1.1	1	1032	38
	Benzo(b)fluoranthene	11			
SCsb-049M	Benzo(a)pyrene	1.1	6	36	8
				Total	130

[1] Cleanup goal for arsenic based on a background surface soil value of 15.4 and subsurface value of 19.8 mg/kg.
[2] Cleanup goals for Benzo(a)pyrene and Benzo(b)fluoranthene based on a TRL = $1x10^{-5}$ and HQ=1.0
[3] Excavation area and depth defined in the Final Action Memorandum (USACE 2019B)
mg/kg = milligrams per kilogram
RSL = USEPA Residential Soil Regional Screening Level (June 2017)
ft bgs = feet below ground surface
UCL = Upper Confidence Limit
HQ = Hazard Quotient
TRL = Target Risk Level

4.0 CONSTRUCTION MOBILIZATION

This section describes site preparation and general construction activities required to implement this NTCRA.

4.1 SITE PREPARATION

Site preparation activities consist of several elements designed to streamline work flow and prevent migration of contaminated soil during construction, including:

- Utility Clearance;
- Groundwater Well Protection;
- Site Access and Control; and
- Vegetation and Debris Site Clearing.

Given that the implementation of remedial activities at the CJAG are being performed under the CERCLA process, no air discharge permits will be necessary from county-level jurisdiction. All work will be performed in compliance with current Ohio state air quality rules and regulations.

4.1.1 Utility Clearance

Prior to initiating excavation activities, the Alaniz-Endpoint Team will notify the CJAG Joint Military Training Center Department of Public Works and Utilities to allow sufficient time for OHARNG concurrence of the absence of known utilities in the excavation areas. In addition, utility clearance will be performed by a private utility contractor to ensure no utilities exist within the footprint of the excavation areas. All field activities, including excavation activities, will be supported by a SSHP incorporating activity hazard analyses, to be prepared under separate cover.

In the event an unmarked utility is discovered during remedial activities, all work will stop immediately and the ARNG/OHARNG Representative, USACE COR, and the Alaniz-Endpoint Team Project Manager will be notified. The aforementioned parties will discuss and develop any required actions. Remedial activities will not resume until approval by the ARNG/OHARNG has been granted.

4.1.2 Groundwater Well Protection

Three groundwater wells have been installed in the Sand Creek AOC within the planned work area. The wells include:

- SCLmw-001 located in the planned 1-foot deep excavation around SCss-060,
- SCLmw-002 located adjacent to the planned 1-foot deep excavation around SCss-062, and,
- SCLmw-003 located Southeast of the planned excavation areas.

All groundwater wells will be located prior to starting work and protected by covering with an empty 55-gallon drum that is clearly marked with caution tape.

4.1.3 Site Access and Site Control

Facility Access and Control

All personnel and vehicles will enter CJAG through the main entrance at 8451 State Route 5, Ravenna, OH 44266. Entering personnel and vehicles are subject to search and inspection. Access rosters for all personnel entering the site will be submitted to the CJAG Environmental Office 48 hours in advance of scheduled field work for appropriate coordination with the CJAG Range Operations. Sample Contractor Access Request Forms are provided in Attachment A. All personnel with prior approval to enter CJAG must provide a government-issued identification (e.g., driver's license, passport) upon entering.

All field activities will be coordinated with CJAG Range Control on a daily basis (i.e., notification at the start and end of the work day, planned work locations and number of field personnel). Site work hours will be from 0700-1600 on weekdays. Work occurring on holidays or weekends must receive prior approval.

All Alaniz-Endpoint Team personnel will comply with all Ohio and CJAG traffic rules, including not exceeding the posted speed limit of 35 miles per hour (mph) during daylight hours and 25 mph at night while on CJAG main roads, except for the area near the CJAG Main Gate and training areas where they will observe a of 20 mph limit. Project access roads will have a speed limit of 10 mph. At no time will the CJAG main roads be blocked by Alaniz-Endpoint Team personnel during remediation activities. Prior to initiating any activity that will obstruct traffic flow of CJAG main roads, approval will be obtained from CJAG Range Control, the ARNG/OHARNG Representative, and the Alaniz-Endpoint Team Project Manager.

Site Access

The Sand Creek AOC project site will be accessed from Paris Windham Rd, as shown on Figure 4-1. The Alaniz-Endpoint Team will maintain hauling roads (e.g., keep free of excess mud/debris) to allow hauling trucks and heavy equipment to travel safely and efficiently. The haul route will be assessed prior to mobilization and will be hardened as necessary with aggregate base rock to minimize dust generation and site disturbance.

All workers, supervisors and site visitors must provide appropriate training records, as specified in the SSHP (to be submitted under separate cover), before entering the site. HAZWOPER certificates for all on site personnel will be provided to the ARNG and OHARNG representatives. Prior to entering the work area, site visitors/workers must receive a site-specific health and safety training from the SSHO.

Site Control

Prior to the start of work, the excavation boundaries within the AOC will be surveyed by a licensed surveyor

and marked with white paint and flags, based on the approximate excavation dimensions shown on Figure 1-4 and benchmarks (i.e., coordinates) used for historical sampling. Additional mobilization activities to be implemented include:

- Installation of temporary fencing to secure the excavation areas and temporary equipment/materials storage locations, site access/egress points, signs, barricades and warning tape for prohibited areas. The excavation pits will be fenced during off hours to ensure that all work areas remain safe and secure;
- Mobilization of equipment trailers, equipment/materials storage area, and connection to temporary utilities;
- Establishing equipment/personnel decontamination areas and work zones. Further detail regarding decontamination procedures is discussed in Section 5.4;
- Setup of equipment storage areas; and
- Mobilization of sanitary facilities for site workers and visitors.

Anticipated locations and boundaries for the above-referenced items are displayed on the Design Drawings included as Attachment B.

4.1.4 Vegetation and Debris Site Clearing

Herein, above-ground vegetation and debris refer to vegetation (i.e., trees, bushes, etc.) and debris or solid waste (i.e., large rocks, brick, concrete, metal debris, etc.) that have not been in contact with contaminated soil. Following coordination with the OHARNG and USACE LRL, the excavation areas will be surveyed to determine whether surrounding areas will require clearing of trees, bushes, other large vegetation and potential above-ground debris, to facilitate equipment access and surface soil removal activities. In addition, vegetation along the haul route may require trimming to allow sufficient space for large haul trucks/equipment to travel along the access roads within this AOC. Any required vegetation clearing involving trees or branches with a 3-inch diameter will be removed between October 1st and March 31st. A vegetation removal plan will be submitted under separate cover to ARNG for review that details all vegetation clearing activities to be performed within all AOCs to be remediated under this contract. Vegetation clearing will be performed by the Alaniz-Endpoint Team prior to March 31, 2021.

The extent of anticipated vegetation clearing is provided on the Drawings in Attachment B. A power rake attached to a loader will be used to strip open areas covered in grass/weeds. A chainsaw and/or bush hog will be used to clear larger brush and trees. No removal of debris or solid waste is anticipated at this AOC; however, in the event that large debris or solid waste is discovered and requires disposal, 55-gallon drums or a roll-off bin will be utilized to temporarily store the waste prior to disposal. Prior to clearing vegetation, the approximate extent of the excavation areas will be marked in the field to determine the extent of vegetation clearing required. Above-ground vegetation that is removed from the AOC will be chipped/mulched onsite by the Alaniz-Endpoint team. The mulch will be temporarily stockpiled at the AOC and evenly spread across the site. Any removed vegetation that has been in contact with or is comingled with impacted soil (i.e., tree stumps or roots) shall be separated from above-ground vegetation and disposed

or thermally treated.

4.2 STORMWATER POLLUTION PREVENTION

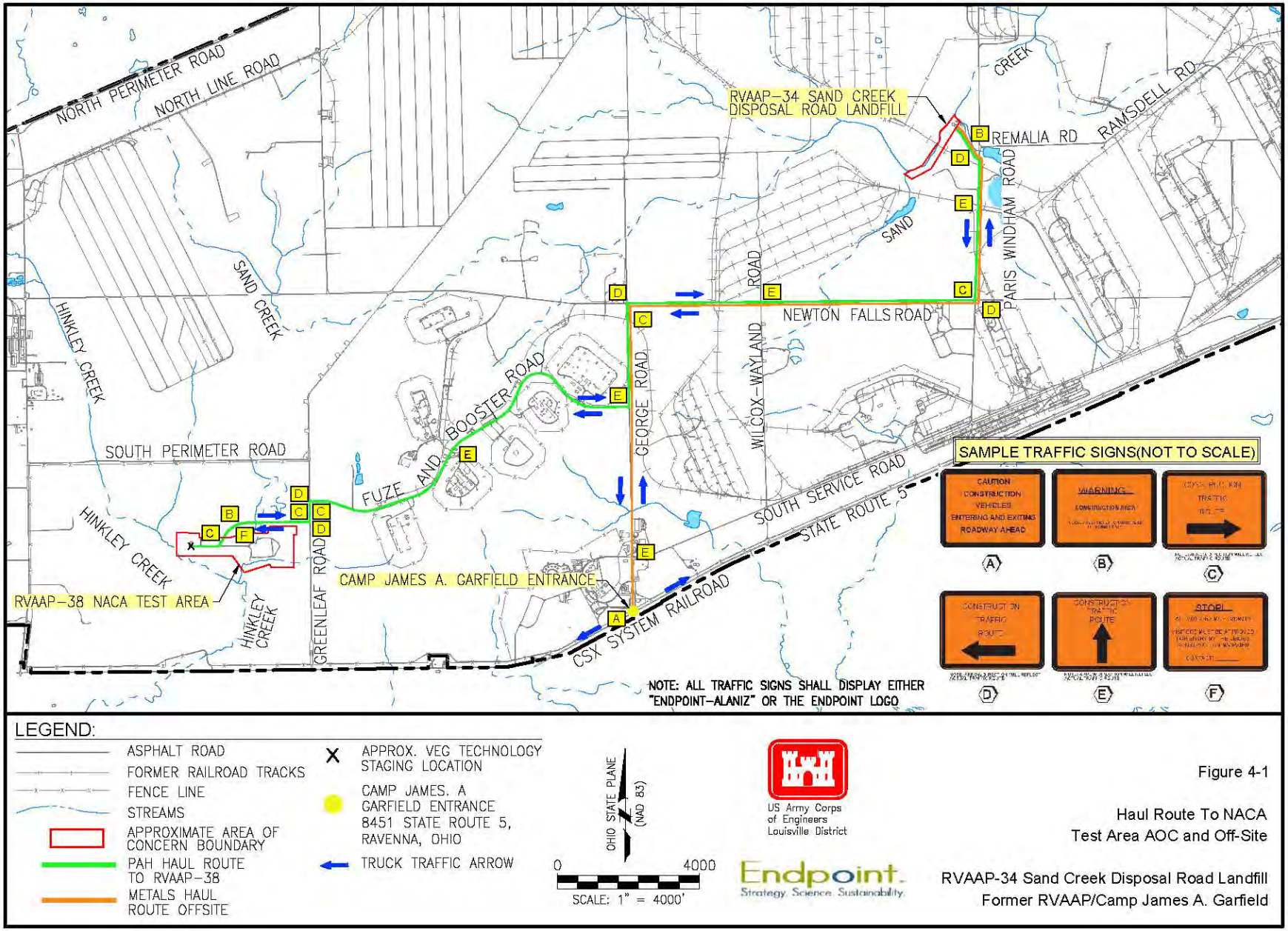
Planned excavations at the Sand Creek Disposal AOC are being performed under the DFFO. The total area of construction, including staging, for the four excavation areas at the Sand Creek Disposal AOC is approximately 0.2 acres. There are no other excavations or soil disturbances planned within ½ mile of this AOC under the DFFO. The total project area is below the 1-acre threshold requiring coverage with Ohio EPA Permit No. OHC000005 or the procurement of an individual National Pollutant Discharge Elimination System Permit for stormwater discharges. However, the project will be performed in accordance with the requirements for a Storm Water Pollution Prevention Plan per Ohio EPA Permit No. OHC000005, including the implementation of best management practices (BMPs) that are the minimum criteria for the overall control of soil and sediment erosion and storm water runoff during construction activities.

Erosion and sediment controls will be installed before beginning activities that have the potential to disturb soil and cause erosion and will be maintained for the duration of the excavation and restoration activities. These control features will be removed only after vegetation is established and disturbed areas are stabilized. Erosion and the transportation of sediment from storm water upgradient of each excavation will be controlled using silt fencing.

Management of runoff from excavation areas at Sand Creek AOC is not anticipated to be an issue given the small size of the work areas and limited time frame in which work will be performed.
BMPs, established, sweeping of haul routes as needed, and visually inspecting trucks prior to leaving areas with impacted soil, will be employed during implementation of this NTCRA work plan. BMPs to be used during the remedial activities at the excavation areas are discussed in Section 5.3. Inspection of the stormwater, BMPs, and erosion and sedimentation controls will be conducted in accordance with Section 9.4.2 and documented on the Stormwater Control Inspection Form (see Attachment A).

To further minimize the potential for erosion and sediment run-off, work will be limited during periods of severe weather, as determined by the Alaniz-Endpoint Team Project Manager.

The treatment of the contaminated soil will be conducted at the NACA site. The transportation of the contaminated soil will be on existing roads and these are not disturbed areas. The stockpile area for temporary storage of the contaminated soil and treated soil is approximately 15,000 square feet and the staging area is approximately 5,000 square feet.


NORTH PERIMETER ROAD
NORTH LINE ROAD
RVAAP-34 SAND CREEK DISPOSAL ROAD LANDFILL
REMALIA RD
RAMSDELL RD
PARIS WINDHAM ROAD
NEWTON FALLS ROAD
WILCOX-WAYLAND ROAD
GEORGE ROAD
BOOSTER ROAD
FUZE AND
SAND CREEK
HINKLEY CREEK
SOUTH PERIMETER ROAD
SOUTH SERVICE ROAD
STATE ROUTE 5
CSX SYSTEM RAILROAD
GREENLEAF ROAD
CAMP JAMES A. GARFIELD ENTRANCE
RVAAP-38 NACA TEST AREA
SAMPLE TRAFFIC SIGNS(NOT TO SCALE)
CAUTION CONSTRUCTION VEHICLES ENTERING AND EXITING ROADWAY AHEAD
WARNING CONSTRUCTION AREA
CONSTRUCTION TRAFFIC ROUTE
STOP
NOTE: ALL TRAFFIC SIGNS SHALL DISPLAY EITHER "ENDPOINT-ALANIZ" OR THE ENDPOINT LOGO
LEGEND:
ASPHALT ROAD
FORMER RAILROAD TRACKS
FENCE LINE
STREAMS
APPROXIMATE AREA OF CONCERN BOUNDARY
PAH HAUL ROUTE TO RVAAP-38
METALS HAUL ROUTE OFFSITE
APPROX. VEG TECHNOLOGY STAGING LOCATION
CAMP JAMES. A GARFIELD ENTRANCE 8451 STATE ROUTE 5, RAVENNA, OHIO
TRUCK TRAFFIC ARROW
OHIO STATE PLANE (NAD 83)
0
4000
SCALE: 1" = 4000'
US Army Corps of Engineers Louisville District
Endpoint. Strategy. Science. Sustainability.
Figure 4-1
Haul Route To NACA Test Area AOC and Off-Site
RVAAP-34 Sand Creek Disposal Road Landfill
Former RVAAP/Camp James A. Garfield

5.0 EXCAVATION ACTIVITIES

This section describes remedial activities to be performed, including:

- Land Survey;
- Excavation;
- Best Management Practices; and
- Equipment Decontamination.

5.1 LAND SURVEY

The Alaniz-Endpoint Team will have the initial and final excavation boundaries surveyed by a registered surveyor. The survey will establish initial and final horizontal and vertical limits of the excavation area.

5.2 EXCAVATION

The excavation process will be conducted in a manner that minimizes contaminated soil handling. Conventional earth moving equipment such as excavators, front-end loaders, and haul trucks will be utilized to reduce site worker's exposure to contaminated soil and increase efficiency. All excavation work will be performed with a track-mounted backhoe. Alaniz will serve as the excavation contractor, holding a Class A – General Engineering Contractor license with OSHA HAZWOPER trained personnel. OSHA Excavation Safety Standards will be followed during the excavation activities. All activities will follow the requirements outlined in the SSHP.

The following excavation activities are discussed in more detail below:

- SCss-062M and SCsb-037M – Arsenic-Impacted Soil;
- SCss-060M and SCsb-049M – Ex-Situ Thermal Treatment of PAHs in Soil Using the VEG Technology
- Asbestos Containing Materials
- Unforeseen Materials

5.2.1 Arsenic-Impacted Soil

Excavation Limits, Volumes and Waste Profiling

The excavations around SCss-062M and SCsb-037M encompass an approximate surface area of 1,912 square feet (sf) and 360 sf, respectively. The estimated in-situ volume of soil that exceeds background levels for arsenic (20.1 mg/kg at 95% UCL) in these excavations is 71 cubic yards and 13 cubic yards, respectively. The excavation at SCss-062M will be excavated to a depth of 1-foot. The excavation at SCsb-

037M will be excavated to a depth of 10-feet bgs, with soil benched or sloped at a ratio of 1:1, as needed, to prevent sidewall failure. The approximate limits of these excavations are presented in Figure 1-4.

Arsenic-impacted soil removed from these excavations, along with any potential impacted topsoil vegetation (i.e., COC-impacted vegetation) or debris, will be loaded directly into haul trucks for transportation and disposal at an approved off-site disposal facility (based on the approved waste profile) in accordance with Sections 5.2.1 and 7.0 herein.

Waste profile soil samples will be collected in-situ prior to commencing excavation activities at these areas and submitted to a fixed-based laboratory for analysis. The results of the analysis will be used to prepare the waste disposal profile of the arsenic-impacted soil for disposal at an appropriate landfill ([Waste Management American Landfill for non-hazardous] or [US Ecology of Ohio or US Ecology Michigan Disposal Inc for hazardous soil]). Waste profile sampling and analysis will be in accordance with Section 6.1.1 and the Sampling and Analysis Plan (Endpoint, 2021).

Soil Stockpiling and Transportation

As previously indicated, arsenic-impacted soil from excavations at SCss-062M and SCsb-037M (and any co-mingled topsoil vegetation and/or debris) will be loaded directly into haul trucks and transported directly to an approved off-site disposal facility (see Section 7.5). In the event that impacted soil needs to be stockpiled at the AOC (e.g., the haul truck is inoperable), the soil will be stockpiled within the limits of their respective excavations.

Care will be taken to avoid over filling the hauling trucks or spilling contaminated surface soil over the sides of the truck. Additional precautions will be employed, such as positioning haul trucks over plastic sheeting/tarps, to capture any surface soil that was spilled during loading. Haul trucks will be inspected per requirements discussed in Section 5.3.2.

Disposal of Arsenic-Impacted Soil

Approximately 84 cubic yards (ex-situ) of arsenic-impacted soil from the Sand Creek Disposal AOC will be transported to an off-site permitted disposal facility under the appropriate manifest. If impacted soil is deemed hazardous waste, the soil will be transported by an approved Defense Reutilization Marking Office (DRMO) (or Defense Logistics Agency [DLA] Disposition Services) transporter to an approved DRMO hazardous waste disposal facility.

5.2.2 Ex-Situ Thermal Treatment of PAHs in Soil using the VEG Technology

Excavation Limits and Volumes

The excavations around SCss-060M and SCsb-049M encompass an approximate surface area of 1,032 sf and 216 sf, respectively. The estimated in-situ volume of soil that exceed residential soil RSLs for PAHs (benzo(a)pyrene and benzo(b)fluoranthene) in these excavations is 38 cubic yards and 8 cubic yards,

respectively. The excavation at SCss-060M will be excavated to a depth of 1-foot. The excavation at SCsb-049M will be excavated to a depth of 6-feet bgs, with soil benched or sloped at a ratio of 1:1, as needed, to prevent sidewall failure. The approximate limits of these excavations are presented in Figure 1-4.

Impacted soil and potential topsoil vegetation/debris will be loaded directly into haul trucks, transported to RVAAP-38 NACA VEG Treatment Area (see Section 5.2.2), and treated using the VEG Technology, in accordance with procedures in Section 5.2.4.

Soil Stockpiling and Transportation

PAH-impacted soil from SCss-060M and SCsb-049M will be thermally treated using the VEG Technology. As previously mentioned in Section 1.0, the VEG remediation system will be staged at the RVAAP-38 NACA Test Area AOC for the duration of the project. Therefore, PAH-impacted soil and any potential co-mingled topsoil vegetation/debris from the Sand Creek AOC will be loaded directly into haul trucks, covered with tarps and transported from the AOC to the NACA VEG Treatment Area following the haul route provided on Figure 4-1. In the event that impacted soil requires stockpiling at the AOC (e.g., the haul truck is inoperable), the soil will be stockpiled within the limits of the excavation.

Care will be taken to avoid over filling the hauling trucks or spilling contaminated surface soil over the sides of the truck. Additional precautions will be employed, such as positioning haul trucks over plastic sheeting/tarps, to capture any surface soil that was spilled during loading. Haul trucks will be inspected per requirements discussed in Section 5.3.2.

At the NACA VEG Treatment Area, impacted soil will be unloaded on top of impermeable plastic sheeting/tarps within the designated stockpiling area to minimize contact between impacted and native soil at the ground surface (see Drawings in Attachment B). Any large solid waste (brick, concrete, other metal waste) which may be easily separated from soil will be removed and temporarily stored in a roll-off bin prior to separating the soil into 100 cubic yard stockpiles. To ensure native soil beneath the plastic sheeting/tarps are not impacted, soil sampling beneath the stockpiling area will be performed at the end of all remedial activities and compared to native soil samples collected prior to stockpiling contaminated soil (see Section 6.4). Sandbags will be used to secure tarps if necessary. In addition, all exposed surface soil stockpiles will be covered at the end of each workday and during periods of severe weather.

Each AOC, or individual excavation areas within each AOC, will be assigned a sub-area within the designated stockpiling area located at the NACA VEG Treatment Area, as shown on the Drawings in Attachment B. Stockpiles will be placed in grid pattern that will generally follow the grid pattern below, oriented in the north-south direction with additional grid cells added should additional soil stockpiles be necessary:

R1C1	R1C2	R1C3	R1C4
R2C1	R2C2	R2C3	R2C4
R3C1	R3C2	R3C3	R3C4

Each stockpile will be labeled and covered prior to and after thermal treatment to minimize dust generation and cross-contamination between treated and un-treated stockpiles. Contaminated tarps previously in contact with pre-treated soil will be disposed of (in accordance with Section 7.0 herein) and replaced with new, clean tarps prior to covering treated soil stockpiles, minimizing potential cross-contamination. The ultimate fate of each treated stockpile (i.e., returned to the AOC and used as clean backfill or subjected to another round of thermal treatment) will be determined based on the results of post-treatment soil sampling. Detailed sampling procedures are specified in Section 4.2.2 of the SAP (Endpoint, 2021) and summarized briefly in Section 6.3 herein.

VEG Thermal Treatment Process

As previously implemented at a pilot-test scale at the RVAAP-50 Atlas Scrap Yard Site (Endpoint, 2015), the VEG Technology employs a low-temperature, indirect-fire (i.e., no incineration) approach to thermal treatment of PAHs in soil. At the core of the VEG treatment system is a highly efficient, patented mobile vapor energy generator, which initially utilizes propane, air, and water to generate steam at temperatures upward of 1,800 degrees (^{o}) Fahrenheit (F). A 4,000-gallon tank for storing water from a municipal source, a propane tank and a portable 100-kilowatt diesel generator will be maintained onsite (see Drawings in Attachment B) in support of steam generation, with ambient atmospheric air provided as the necessary air source.

The steam created through the VEG's vapor generator is in turn placed into contact with the impacted soil within a fully enclosed and sealed treatment chamber. Depth of soil within the treatment chamber is approximately 2.5 feet. Over time and as the steam comes into full contact with the soil, the steam serves to eliminate the soil moisture, thereby raising soil temperatures from ambient levels to the target temperature range of 500 to 700 ^{o}F, shown to be adequate for desorption of PAHs (and other fuels) from soil. Soil temperatures will be measured after the soil is discharged from the treatment chamber by inserting thermocouples in the soil, or using a hand-held infrared thermometer, demonstrating that soil has reached target treatment temperatures. It should be noted that the input steam temperature, target soil treatment temperature, and duration of treatment at the target soil treatment temperature to achieve the desired treatment for a similar soil types were previously identified during the pilot test performed at the RVAAP-50 Atlas Scrap Yard Site (Endpoint, 2015). During this pilot test the aforementioned parameters were determined to be approximately 1,400 ^{o}F (input steam temperature), 650 ^{o}F (target soil treatment temperature), and a treatment duration of 22 minutes; these parameters will be refined for Sand Creek AOC treatment as part of the first few days of thermal treatment of soil from this AOC.

Upon reaching target soil temperatures and as PAHs transition from solid phase adsorbed to soil to vapor phase, PAH concentrations remaining adsorbed to soil are significantly reduced or fully eliminated, rendering the soil adequate for reuse pending the results of post-treatment sampling outlined in Section 6.0 herein. Concurrent to the desorption process, a vacuum system internal to the sealed treatment chamber extracts and captures the PAH-laden vapors removed from the soil, where they are subjected to thermal oxidation for elimination of PAHs within a temperature range of 1300 ^{o}F to 1500 ^{o}F. The destruction efficiency of semi-volatile organic compounds within this range is 99.9%. It should be noted that prior to thermal oxidation, the PAH-laden vapors are routed through a designated enclosed filtration chamber, where the interaction between the carbon inherent to the PAH-laden vapors, steam, and hydrogen combine to form a synthetic gas (syngas), comprised largely of hydrogen, which is routed to the thermal oxidizer to supplement propane as a renewable source of fuel for ongoing treatment operations. Following treatment, thermally oxidized vapors will be discharged to the atmosphere.

Thermally oxidized vapors will be subject to routine sampling (hourly sampling using a photoionization detector [PID] to sample the influent (pre-oxidation) and effluent (post-oxidation) PAH concentrations, and bi-weekly sampling via polyurethane foam sorbent samples sent to the laboratory for analysis using USEPA Method Toxics Organics 13 (TO-13) to demonstrate a target destruction efficiency of 99%. The PID will be calibrated to isobutylene, which is close to the midpoint ionization point for most organic compounds and is not flammable or toxic at low concentrations used in calibration. In order to adapt the results for PAH readings, a response factor of 0.4 will be multiplied to the PID reading to obtain the corrected value for PAHs. In addition to the system controls gathering operating information via continuous automated datalogging, PID and thermocouple measurements will be recorded by an Alaniz-Endpoint Technician hourly during operation to confirm that the system is operating properly.

Additional information regarding the VEG technology can be found in the "*Implementation Report for Bench- and Pilot-Scale Testing Ex-Situ Thermal Treatment of Polycyclic Aromatic Hydrocarbons in Soils," (Endpoint, 2015) and* at http://www.endpoint-inc.com/wp-content/uploads/2012/06/VEG-Soil-Remediation-Technology-2015.pdf.

Thermal Treatment of Surface Soil

As previously indicated, two excavations at the Sand Creek AOC are characterized by an estimated 46 cubic yards (in-situ) of PAH-impacted soil near locations SCss-060M and SCsb-049M (see Figure 1-4) targeted for thermal treatment using the VEG Technology. The ex-situ VEG system will be staged at the western end of the NACA VEG Treatment Area (Figure 4-1 and Attachment B), where excavated soil will be stockpiled in accordance with this section. Anticipated staging areas for the VEG system and related equipment is shown on the Drawings in Attachment B. In the case that staging areas require modification, all changes will be coordinated with and approved by OHARNG and USACE LRL.

Soil treatment and VEG operation will be performed using the following procedure:

- Stockpiles containing impacted soil, along with any co-mingled topsoil vegetation, will be

uncovered and placed into the VEG treatment chamber using a front-end loader and sealed with a thermal vapor cap.

- After sealing the chamber, the system operator will turn on the system, initiating the flow of water, followed by the flow of propane to the igniter.
- Heated steam will be injected to the VEG treatment chamber through a manifold to distribute heat to all soil within the chamber. Vapors will be captured from the chamber via a collector manifold.
- The pile temperature will be monitored utilizing thermocouples within the chamber recording their data to a datalogger. The VEG system will be monitored by an operator who will record operating parameters of the system (e.g., temperature and PID readings) hourly during operation, and logged on the VEG monitoring log included in Attachment A.
- Soil treatment will be complete once the soil has been heated at the target temperature range (500 ^{o}F to 700 ^{o}F) for a minimum of 22 minutes.
- Following treatment, the system will be turned off. The treatment chamber will be unsealed after a brief cool down period and the soil will be transported to the stockpile area to be stored in 100 cubic yard stockpiles pending confirmation sampling. Dry soil will be sprayed with water to eliminate fugitive dust emissions.

The stockpiles of treated soil from this AOC will be sampled as described above and in Section 6.3, to demonstrate efficacy of treatment. Upon demonstration of compliance with the residential soil RSLs, soil will be transported back to the Sand Creek AOC for backfilling and compaction in accordance with procedures in Section 8.0. If the treated soil stockpiles do not meet the residential soil RSLs, it will be subject to retreatment and resampling per the procedures referenced above, until such time that the post-treatment stockpile concentrations meet the residential soil RSLs for all COCs.

5.2.3 Asbestos Containing Material

Asbestos Containing Material (ACM) has been identified and removed from the Sand Creek AOC during previous removal actions. Prior to performing any excavation, discrete ACM profile samples will be collected by an Ohio State Certified Asbestos Hazard Evaluation Specialist (e.g. Diamond Environmental, Inc. in Ravenna, OH) using a hand auger in each excavation area and analyzed to determine the presence and concentration of friable asbestos within the soil at each excavation. Samples will be submitted to a National Voluntary Laboratory Accreditation Program (NVLAP) laboratory (Eurofins Atlanta) for analysis.

If the results identify the soil contains >1% friable asbestos in any excavation, work will cease immediately and the Alaniz-Endpoint Team Project Manager, USACE COR, and ARNG/OHARNG Representative will be notified. A plan of action will be established and agreed upon by the appropriate parties. Excavation work will not resume until the approved plan has been implemented and approval has been granted by the USACE COR. If the discovery results in a change to the scope, objectives, or schedule of this NTCRA, the Alaniz-Endpoint Team will notify the USACE COR. Additional revisions and/or corrective actions may be requested by the Alaniz-Endpoint Team to account for these unexpected changes.

In the event that ACM requiring abatement is identified in any excavation, the project team will notify and

coordinate with the Akron Regional Air Quality Management District (ARAQMD) regarding requirements for the project to be incorporated into the ACM management plan. Additionally, in accordance with the Ohio EPA regulations, a Notification of Demolition and Renovation/Abatement and Notification Fee Worksheet will be submitted to the Ohio EPA at least 10 days prior to commencement of field excavation activities. The ARAQMD will be kept informed of the project schedule. A hardcopy of the notification will be submitted to the OHARNG representative for review prior to submission via the Ohio EPA eBiz website.

A Certified Asbestos Hazard Abatement Specialist will be retained to oversee the excavation of any soil containing ACM. All soil within any excavation with >1% ACM will be transported and disposed at the Minerva Enterprises, Inc. landfill in Waynesburg, OH certified for ACM waste disposal.

5.2.4 Unforeseen Materials

In the event that an unsafe or unexpected material (e.g., explosive components, drums, cylinders, abandoned pipelines or utilities) is encountered during any phase of excavation, treatment or disposal activities, work will cease immediately and the Alaniz-Endpoint Team Project Manager, USACE COR, and ARNG/OHARNG Representative will be notified. A plan of action will be established and agreed upon by the appropriate parties. Excavation work will not resume until the approved plan has been implemented and approval has been granted by the USACE COR. If the discovery results in a change to the scope, objectives, or schedule of this NTCRA, the Alaniz-Endpoint Team will notify the USACE COR. Additional revisions and/or corrective actions may be requested by the Alaniz-Endpoint Team to account for these unexpected changes.

It is anticipated that solid waste will be encountered during excavation since the AOC was used as a dump site. When encountered, solid waste will be separated from the impacted soil, and stockpiled for profiling and disposal. The material will be sampled for profiling, per landfill and Ohio State requirements, and disposed at an appropriate landfill.

With any ground disturbing activity, there is always the potential for an inadvertent discovery of human remains, funerary objects, or other potential historical or archaeological items. If such items are encountered during excavation activities, excavation will immediately stop and the OHARNG Cultural Resources Manager (CRM), Alaniz-Endpoint Project Manager, USACE COR, and ARNG/OHARNG Representative will be notified. If the CRM is not available, the discovery will be reported to the CJAG Range Control.

The CRM or CJAG Range Control will collect and retain any artifacts or remains, as appropriate. In the event that human remains are discovered, precautions will be taken to ensure that the remains are not removed or further disturbed. The OHARNG Standard Operation Procedures for inadvertent discovery of cultural material will be followed. Excavation activities will not resume until the project site has been released by the OHARNG CRM.

5.3 BEST MANAGEMENT PRACTICES

Best management practices are activities that will be conducted to prevent the migration of contaminated soil during excavation, transportation, and thermal treatment activities. BMPs also prevent erosion of uncontaminated soil from disturbed areas and prevent uncontaminated run-on from entering excavations. The following BMPs will be conducted within each excavation area:

- Dust Control and Maintaining Roadways/Haul Routes;
- Haul Truck Inspection;
- Excavation Water, Stormwater, and Sediment Management; and
- Good Housekeeping.

5.3.1 Dust Control and Maintaining Roadways/Haul Routes

Dust may be generated during initial site clearing, excavation activities and during soil handling and transportation. Unnecessary dust will be avoided by maintaining vehicle traffic to within the posted speed limits and by applying water to dirt roads. A 4,000-gallon water truck will be available onsite for dust control and for further use by the VEG Technology for generation of steam necessary for thermal treatment. The project site and roadways will be maintained free of mud throughout construction activities by performing haul truck inspections per Section 5.3.2 and requiring trucks to drive through designated egress locations with track-out grates to collect excess dirt and mud prior to entering paved roadways. In addition, street sweepers will be used, if necessary, to clear any excess mud from CJAG roadways. As previously indicated, the haul route from the Sand Creek AOC to the planned NACA VEG Treatment Area and the haul route for transporting arsenic-impacted soil off-site are shown on Figure 4-1.

Due to the potential presence of ACM, all visible dust will be suppressed by applying water during the execution of the excavations and soil handling. The presence of dust will be monitored throughout construction activities by Alaniz-Endpoint Team personnel in compliance with ARAQMD requirements. Dust measurements will be collected using a dust meter (mini-ram) following continuous visible dust generation that lasts for a duration of 5 minutes. If dust readings exceed 1 milligram per cubic meter (mg/m3) at a distance of 100 feet downwind of construction activities, water will be applied to the soil to mitigate dust generation.

All soil piles created as a result of the remedial action described in this work plan are temporary and are associated with this remedial action. Stockpiled soil will be covered when not in use. In the event of fugitive dust releases being observed during transfer to and from the treatment system, water will be applied to suppress dust. Soil will be covered during treatment; thus, no dust is anticipated during this step.

During instances of high-velocity wind, additional dust measures may be implemented including covering soil stockpiles with tarps and temporarily suspending excavation or transportation activities. Visual dust monitoring will be conducted in accordance with the SSHP, prepared under separate cover.

5.3.2 Haul Truck Inspection

The Alaniz-Endpoint Team will inspect haul trucks and fill out a Truck Inspection Form (Attachment A) prior to leaving the excavation area workspaces or entering paved roads. If necessary, mud will be cleaned off tires with hand tools (e.g., shovel, broom, brush). Trucks will also be inspected for surface soil on the exterior of the truck bed as a result from the loading process. Prior to exiting the loading area, any adhered contaminated surface soil will be brushed off of the haul truck onto the plastic sheeting beneath the truck loading area, collected and either added to the haul truck's load or to the corresponding untreated surface soil stockpiles slated for thermal treatment.

5.3.3 Excavation Water, Stormwater, and Sediment Management

Excavation Water

Excavation water is considered any water that accumulates during excavation activities that has come into contact with contaminated soil (e.g., rainwater that collects within excavation areas or water from equipment decontamination, see Section 5.4). During severe weather (rain, high-velocity wind), measures will be taken to avoid generating excavation water. Such measures will be determined onsite and may include covering the open excavation areas with tarps weighted down with sandbags to prevent accumulation of excavation water and soil migration and diversion of off-site run-off away from the excavation.

In the event that excavation water is generated, the Alaniz-Endpoint Team will have a temporary water storage tank on standby at the NACA VEG Treatment Area, ready to mobilize to the appropriate excavation site when necessary. The Alaniz-Endpoint Team will be responsible for pumping excavation water to the temporary storage tank and ensuring that no leaks are present. Excavation water collected from excavations of PAH impacted soil will not require disposal as it will be transported to the NACA VEG Treatment Area and recycled within the VEG Technology's vapor generator for complete oxidation and transformation into a hot, clean steam to be used as the heat source in support of ongoing thermal treatment of soil (see Section 5.2.2). Any arsenic-impacted excavation water, expected to be limited in volume due the small remediation volume and the use of disposable sampling equipment, will be disposed of within the truck bed transporting soil from this AOC for off-site disposal, assuming the amount of impacted-water does not exceed 30 gallons. In doing so, the Alaniz-Endpoint Team will ensure free water is not present in the haul trucks and there are no liquids escaping the truck bed.

If the volume of arsenic-impacted excavation water proves to be greater than what is manageable for disposal/transport within the truck bed, the water will be drummed (in DOT-approved, 55 gallon closed-top drums), labeled, profiled via the sample results used for arsenic-impacted soil, and disposed of off-site under a waste manifest, in accordance with methods described in Section 7.0 and Standard Operating Procedure -7 (SOP-7) of the SAP (Endpoint, 2021) and Section 7.0 herein. Similarly, in the event that arsenic-impacted excavation water is generated prior to completing soil excavation activities within the Sand Creek Disposal AOC (e.g., rainwater collects within the partially excavated pit, despite minimizing

the accumulation of such water by covering open pits with tarps), the excavation water will be pumped to and temporarily stored in open-top 55-gallon drums with sealed bung-top lids. Depending on the volume of excavation water collected, the water will either be added to the truck bed containing arsenic-impacted soil prior to disposal or temporarily stored, transported and disposed within a closed-top 55-gallon drum using the same profile as soil from the AOC (see Section 7.5).

If confirmation sample results indicate additional soil requires excavation, storm water that collects in the excavation pit will be drummed as indicated above.

Stormwater

Stormwater is considered any water that accumulates that has not come in contact with contaminated soil, such as water that collects on top of tarps covering open excavation pits. Stormwater that accumulates in low areas of the AOC will be discharged onsite over the ground surface in a manner that will avoid creating excess ponding and mud (e.g., discharged at a slow to moderate rate though a filter bag and on top of plywood in a well vegetated area). The Alaniz-Endpoint Team will track any non-contaminated stormwater releases on daily Quality Control (QC) forms and on an OHARNG Stormwater Release Form (Attachment A). Anticipated stormwater discharge locations are provided in Attachment B.

Stormwater run-on to the excavation areas will be controlled to prevent the transportation of sediment and mud to the excavation. Silt Fence will be used to reduce and/or divert the flow of stormwater into the excavation area, and capture sediment transported by stormwater. The installation of silt fence is described in further detail in the following section.

If confirmation sample results indicate the extent of contaminated soil excavation is complete, any storm water collected within open excavation pits will be considered “clean” and pumped out of the excavation in accordance with the OHARNG Stormwater Release Form.

Sediment Management

Silt fence will be installed to prevent sediment from entering each excavation, and to divert upgradient stormwater away from the excavation. Silt fence will also be installed between working areas and surveyed wetlands to prevent potentially impacted soil migration. All silt fence will be maintained until post-construction vegetation is reestablished. The approximate location of silt fencing is provided in the design drawings included in Attachment B.

Silt fence will be installed by partially burying the fence material to prevent water from flowing under the fence and help anchor the fence. The fence will be installed in a trench 6 inches deep and secured to posts 10 feet apart. The fence will be installed on the side of stakes facing where water flow will come from. Fence material will be secured to posts using 3 to 5 staples from a heavy-duty staple gun, or equivalent. Once the silt fence is attached to the posts, the trench will be filled with the soil removed from the trench and tamped to compact the soil and secure the posts. Details of silt fence installation are provided on Figure B-3 in Attachment B.

5.3.4 Good Housekeeping

Good housekeeping practices are designed to maintain a clean and orderly work environment. Measures will include at a minimum:

- Regularly pick up and dispose of any garbage or construction waste;
- Maintain clear and organized work areas;
- Conduct daily equipment inspections; and
- Perform preventative maintenance on equipment to ensure it is in proper working condition.

The first equipment inspection shall be documented on a Safety Checklist for Machinery Form provided in Attachment A. Subsequent daily inspections will involve double-checking all items on the Safety Checklist, with any deviations immediately reported to the SSHO and the Alaniz-Endpoint Team Project Manager, followed by corrective action. Any implemented corrective actions will be noted on the Daily QC Report.

5.4 EQUIPMENT DECONTAMINATION

To further prevent migration of contaminated soil, measures will be implemented to minimize contact with impacted surface soil. In addition, disposable sampling equipment (e.g., foil pans and zip lock bags) and a step-probe sampler will be used for soil sampling, eliminating the need to decontaminate sampling equipment. The step-probe sampler will be decontaminated after all aliquots have been collected for ISM/composite samples.

Near the location of each excavation, a decontamination pad will be installed and utilized as necessary for decontamination of equipment. Equipment used to excavate, load, or haul contaminated surface soil will be thoroughly decontaminated prior to contact with native sediments or treated surface soil, and prior to demobilization from the site or AOCs. In addition, equipment will be decontaminated prior to being used in other excavation areas/AOCs (e.g., equipment used in arsenic impacted soil excavations will be decontaminated prior to use in PAH impacted soil excavations). Equipment, including the backhoe bucket and other parts of equipment that come in contact with contaminated soil (tracks wheels, undercarriage of equipment, etc.), will be decontaminated by manual wiping or brushing off surfaces, followed by rinsing either by direct steam from the VEG system (if located at the NACA VEG Treatment Area) or rinsed using clean water (i.e., water obtained from a municipal source; the same water used for dust control). At the conclusion of all operations at the AOC, all equipment will be decontaminated, and the decontamination pad will be dismantled and placed, along with any fluids or collected soil, in the next load of waste to be hauled for disposal.

Decontamination of equipment in contact with PAH-impacted soil will be performed over a designated decontamination area (see Drawings in Attachment B) lined with impermeable plastic sheeting/tarps. The

generated liquid investigation derived waste (IDW) will be collected and temporarily stored in the same tank used to store any generated PAH-impacted excavation water, and transported to the NACA VEG Treatment Area, where the liquid IDW will be recycled within the VEG Technology's vapor generator. If the volume of PAH-impacted decontamination/excavation water exceeds the temporary storage tank's capacity or the capacity of the VEG units, the water will be drummed, profiled in accordance with the SAP (Endpoint, 2021) and disposed under the appropriate manifest.

Decontamination of equipment in contact with arsenic-impacted soil will be performed over the haul truck bed containing impacted soil for off-site disposal. Due to the use of disposable sampling equipment, the anticipated volume of decontamination water added to the haul trucks will be minimal and the total amount of water added to the trucks will be confirmed to be less than 30 gallons. The water used for decontamination will not change the chemical profile of the soil. During both decontamination processes, the Alaniz-Endpoint Team will ensure no liquids escape the truck bed or decontamination areas.

If the volume of arsenic-impacted decontamination water proves to be greater than what is manageable for disposal/transport within the truck bed, the water will be drummed, profiled via sampling, and disposed of off-site under a waste manifest, in accordance with methods described in Section 7.0 of the SAP (Endpoint, 2021) and Section 7.0 herein. Management of non-liquid IDW is also discussed in Section 7.0 herein.

In the event of a release of untreated or untested decontamination water, the area of the release shall be investigated including collecting soil or sediment samples and analyzing for project COCs, to quantify any impacts. Following any release (soil or liquid), the root cause of the release will be determined, and steps taken to eliminate any future releases. Corrective measures that may be taken include an increase in the size of the stormwater control and/or a reduction in the volume of soil being stockpiled onsite for treatment.

6.0 ENVIRONMENTAL SAMPLING

This section describes the sampling process to be implemented in support of remediation activities at the Sand Creek AOC. Specifically, the following types of sampling will be performed:

- SCss-062M and SCsb-037M (arsenic) profile sampling will be performed to determine the waste profile and identify the appropriate disposal facility for off-site transport and disposal.
- Asbestos sampling will be performed on all four excavations to characterize asbestos in the excavation areas for appropriate soil handling procedures, including potential off-site disposal.
- Excavation pit sampling will be performed on all four excavations (SCss-062M, SCsb-037M, SCss-060M, and SCsb-049M) to confirm soil remaining in place following excavation meet site goals for their respective COCs.
- Thermally treated (PAH) soil stockpiles: post-treatment soil stockpile sampling will be performed to confirm COC concentrations in treated soil are protective of RSLs and may be reused as backfill for the excavation pits.
- Native Soil Confirmation Sampling: surface soil beneath impacted-soil stockpiling locations will be sampled and confirmed to be protected of RSLs for site related COCs.
- Imported soil to be used as backfill for excavations at SCss-062M and SCsb-037M (potential backfill source is Patrick Excavating and Trucking in Ravenna, Ohio): imported soil sampling will be performed to ensure no impacted material is introduced to the site. Results from the imported soil analysis must be at or below respective FWCUGs or residential RSLs and approved for use by the ARNG/OHARNG Representatives prior to being brought to CJAG.

6.1 PROFILE SAMPLING

6.1.1 Waste Profile Sampling

Prior to excavating arsenic-impacted soil at the Sand Creek AOC, one in-situ waste profile sample will be collected from within the limits of each excavation containing soils slated for disposal. Profile samples will ensure that impacted soil slated for disposal, in addition to any impacted solid/liquid waste from this AOC, is properly handled, transported and disposed. Collecting profile samples from all AOCs involving soil disposal prior to soil excavation at each respective AOC will allow adequate time to receive profile sample results, ensuring waste disposal is not delayed and that impacted soil/waste are handled by the appropriate transporter (DRMO if hazardous) and disposed at the appropriate disposal facility. The results of the waste profile samples will be reviewed, approved and signed by the CJAG Environmental Office, prior to commencing excavation activities. All waste will be transported and disposed of in accordance with Section 7.5 herein.

One 8-point composite in-situ soil sample (with aliquots collected from the 0-1 ft bgs range) will be collected within the boundaries of the excavation around SCss-062M and SCss-037 at the beginning of all remedial activities at CJAG or a minimum of 1-week prior to excavation. Specifically, one 8-point composite soil sample with aliquots collected from the 0-1 ft bgs range will be collected from the excavation

surrounding SCss-062M and one 8-point composite soil sample with aliquots collected from approximately 5 ft bgs (i.e., half the total depth of the excavation) will be collected from the excavation surrounding SCss-037. The waste profile samples will be analyzed for toxicity characteristic leaching potential (TCLP) for metals, TCLP volatile organic compounds, TCLP semi-volatile organic compounds, TCLP pesticides, TCLP herbicides, total cyanide, polychlorinated biphenyls, total sulfide, pH and flashpoint., A summary of analytical requirements and testing methods is provided in Table 6-1. Waste profile samples will be collected in accordance with the procedures outlined in Section 4.2.2.3 of the SAP (Endpoint, 2021) and labeled in accordance with the nomenclature for Category 3 soil provided in Section 4.2.1 of the SAP. Any additional analyses required by the disposal facility will also be performed.

Table 6-1. Waste Profile Sampling Analytical Requirements

Parameters [1]	Analytical Methods
TCLP (Metals, Pesticides, Herbicides, SVOCs)	SW-846 1311/7470/8081/8270/6010
TCLP (VOCs)	SW-846 1311/8260
Total Cyanide	SW-846 9012/9034
Total Sulfide	SW-846 9012/9034
PCBs	SW-846 8082
pH	SW-846 9040, 9045
Flashpoint	SW-846 1010

[1] Additional parameters may be required by the waste disposal facility. The waste disposal facility has not been selected at the time of this design.
PCB = Polychlorinated biphenyl
SVOC = Semi-volatile organic compound
TCLP = Toxic characteristic leaching procedure
VOC = Volatile organic compound

6.1.2 Asbestos Sampling

Concurrent with waste profile sampling described in section 6.1.1, discrete in-situ samples will be collected at the center of each the excavation areas at half the total anticipated excavation depth by an Ohio State Certified Asbestos Hazard Evaluation Specialist (e.g. Diamond Environmental, Inc. in Ravenna, OH) using a hand auger to identify the presence of friable asbestos. Care will be taken during sample collection to maintain sample integrity (i.e. no grinding or double handling of the soil). Sample results will be used to ensure that impacted soil is properly handled, and transported and disposed, as necessary. Collecting profile samples prior to soil excavation will allow adequate time to receive profile sample results, ensuring the appropriate handling procedures will be selected during excavation. Asbestos samples will be analyzed at a NVLAP laboratory (Eurofins Atlanta) using EPA Polarized Light Microscopy Method, or equivalent (e.g. ASTM D7521-13). The results of the asbestos profile samples will be reviewed, approved and signed by the CJAG Environmental Office, prior to commencing excavation activities. Soil containing >1% of friable asbestos will be transported and disposed of in accordance with Section 7.5 herein.

6.2 EXCAVATION CONFIRMATION SAMPLING

6.2.1 Shallow Excavation Confirmation Sampling

The preliminary dimensions of the SCss-062M and SCss-060M excavations, as shown on Figure 1-4, are anticipated to be approximately 45 feet (length) x 42.5 feet (width) x 1-foot (depth), and 37.5 feet (length) x 27.5 feet (width) x 1-foot (depth), respectively. Based on their initial excavation configurations, confirmation soil sampling of these excavation pits will consist of collecting four ISM sidewall samples (one ISM sample per sidewall), as shown on Figure 6-1. Sidewall samples will consist of aliquots collected from varying depths along the side of the excavation pit. In addition, one ISM excavation bottom sample will be collected (see Figure 6-1). All ISM confirmation sampling will be conducted in accordance with procedures outlined in Section 4.2.2 of the SAP (Endpoint, 2021) and all samples will be labeled in accordance with the nomenclature for Category 1 soil provided in Section 4.2.1 of the SAP and further specified in Table 6-2 herein. Based on the aforementioned anticipated dimensions and specified sampling intervals, a minimum of 5 ISM samples are proposed for each of these excavations. These samples will be analyzed for arsenic and PAHs, respectively, as indicated in the SAP (Endpoint, 2021).

Based on excavation pit confirmation sampling results and related comparison to the AOC clean-up goals, further excavation in a given direction may be warranted. Subsequent step-out sampling will be used to determine whether excavation may be ceased or whether an additional excavation step out is necessary. If confirmation sample results along the excavation sidewalls are in exceedance of AOC clean-up goals, the excavation will be expanded in the given direction in 1-foot lateral step-outs, until sampling confirms that all COCs in exceedance of AOC clean-up goals have been removed. Lastly, in the case that the bottom sample is in exceedance of AOC cleanup goals, the depth of the entire excavation pit will step-down by 6-inch intervals.

6.2.2 Deep Excavation Confirmation Sampling

The dimensions of the SCsb-037M and SCsb-049M excavations, as shown on Figure 1-4, are anticipated to be approximately 6 feet (length) x 6 feet (width) x 10-feet (depth), and 6 feet (length) x 6 feet (width) x 6-feet (depth), respectively. Based on these initial excavation configurations, confirmation sampling at these locations will consist of collecting discrete sidewall samples at two depth intervals: from 1 to 5 feet bgs and from 5 to 9 feet bgs (i.e., two discrete samples collected per sidewall). Sample nomenclature and locations are shown on Table 6-2. In addition, one discrete excavation bottom sample will be collected per each excavation. All sampling will be conducted in accordance with procedures outlined in Section 4.2.2 of the SAP (Endpoint, 2021) and will be labeled in accordance with the nomenclature for Category 1 soil in Table 6-2 herein. Based on the aforementioned anticipated dimensions and sampling intervals, a minimum of 8 sidewall and 1 bottom samples (total of 9 discrete samples) are proposed for each excavation. These samples will be analyzed for arsenic and PAHs, respectively, as indicated in the SAP (Endpoint, 2021).

Similar to sampling performed in shallow soil excavations, further excavation step-outs in a given direction may be warranted based on confirmation sampling results. If sidewall samples from any side of the deep excavations report analytical results that exceed AOC clean-up goals, a lateral step-out of 1-foot will be

implemented, whereas if an excavation pit bottom sample exceeds AOC clean-up goals, the depth of the entire excavation pit will step-down by 1-foot intervals until COC concentrations are confirmed to be below respective AOC clean-up goals.

Table 6-2. Sample Identification for Confirmation Sampling

Area	Station Location	Sample ID	Sample Description
SCss-060M	SCcs-080M	SCcs-080M-####-SO	Northwest Sidewall (Point 1 to 2)
	SCcs-081M	SCcs-081M-####-SO	Northeast Sidewall (Point 2 to 3)
	SCcs-082M	SCcs-082M-####-SO	Southeast Sidewall (Point 3 to 4)
	SCcs-083M	SCcs-083M-####-SO	Southwest Sidewall (Point 1 to 4)
	SCcs-084M	SCcs-084M-####-SO	Excavation Bottom (Points 1, 2, 3 & 4)
SCss-062M	SCcs-085M	SCcs-085M-####-SO	Northwest Sidewall (Point 5 to 8)
	SCcs-086M	SCcs-086M-####-SO	Northeast Sidewall (Point 5 to 6)
	SCcs-087M	SCcs-087M-####-SO	Southeast Sidewall (Point 6 to 7)
	SCcs-088M	SCcs-088M-####-SO	Southwest Sidewall (Point 7 to 8)
	SCcs-089M	SCcs-089M-####-SO	Excavation Bottom (Points 5, 6, 7 & 8)
SCsb-037M	SCcs-090D	SCcs-090D-####-SO	North Sidewall (Point 9 to 10)
	SCcs-091D	SCcs-091D-####-SO	East Sidewall (Point 10 to 11)
	SCcs-092D	SCcs-092D-####-SO	South Sidewall (Point 11 to 12)
	SCcs-093D	SCcs-093D-####-SO	West Sidewall (Point 7 to 12)
	SCcs-094D	SCcs-094D-####-SO	Excavation Bottom (Points 9, 10, 11 & 12)
SCsb-049M	SCcs-095D	SCcs-095D-####-SO	North Sidewall (Point 13 to 14)
	SCcs-096D	SCcs-096D-####-SO	East Sidewall (Point 14 to 16)
	SCcs-097D	SCcs-097D-####-SO	South Sidewall (Point 15 to 16)
	SCcs-098D	SCcs-098D-####-SO	West Sidewall (Point 13 to 16)
	SCcs-099D	SCcs-099D-####-SO	Excavation Bottom (Points 13, 14, 15 & 16)

cs: confirmation sample
M: Incremental Sampling Methodology
D: Discrete Sample
SC: Sand Creek AOC
SO: Soil Sample
Sample Identifier #### will be chosen during field implementation to ensure a duplicate number is not used. For discrete samples collected from sidewalls at SCsb-037M and SCsb-049M, the identifier "T" will denote a sidewall sample collected from 1-5 ft bgs and "B" will denote collection from 5-9 ft bgs.

6.3 THERMALLY TREATED SOIL STOCKPILE CONFIRMATION SAMPLING

Following VEG thermal treatment activities, the treated soil stockpile will be sampled per the procedures outlined in Section 4.2.2.2 of the SAP (Endpoint, 2021), including collection of one 8-point composite sample per each 100-cubic yard treated stockpile. Based on the anticipated in-situ dimensions PAH impacted soil excavations in this AOC defined in the EE/CA, approximately 55 cubic yards of ex-situ treated soil is anticipated, yielding approximately one composite post-treatment soil stockpile sample. As previously indicated in Section 5.2.2, any treated stockpiles reporting post-treatment concentrations above the RSLs will be retreated and accordingly resampled until the RSLs are met. Samples will be labeled in accordance with the nomenclature defined for thermally treated soil stockpile samples (Category 2) in Section 4.2.1 of the SAP. Treated soil stockpiles with confirmation sample results below the residential soil RSLs will be transported back to the AOCs and used as backfill for site restoration activities.

6.4 NATIVE SOIL CONFIRMATION SAMPLING

As mentioned in Section 5.2.2, before and after all remediation treatment activities at the NACA Test Area AOC, confirmation soil sampling will be performed within the footprint of the impacted-soil stockpile locations to confirm that native soil beneath the tarps underlying impacted-soil stockpiles are not affected. One ISM sample (with aliquots from the 0-1 ft bgs range) will be collected prior to stockpiling contaminated soil and one ISM sample will be collected once the soil stockpiling areas are no longer in use toward the end of the remedial action. The ISM soil sample will be collected in accordance with procedures specified in the SAP (Endpoint, 2021) and analyzed for all site-related COCs. In the event that soil beneath the tarps are found to be in exceedance of respective RSLs, one foot of soil beneath the former stockpiling area will be removed and disposed, followed by an additional ISM confirmation sample.

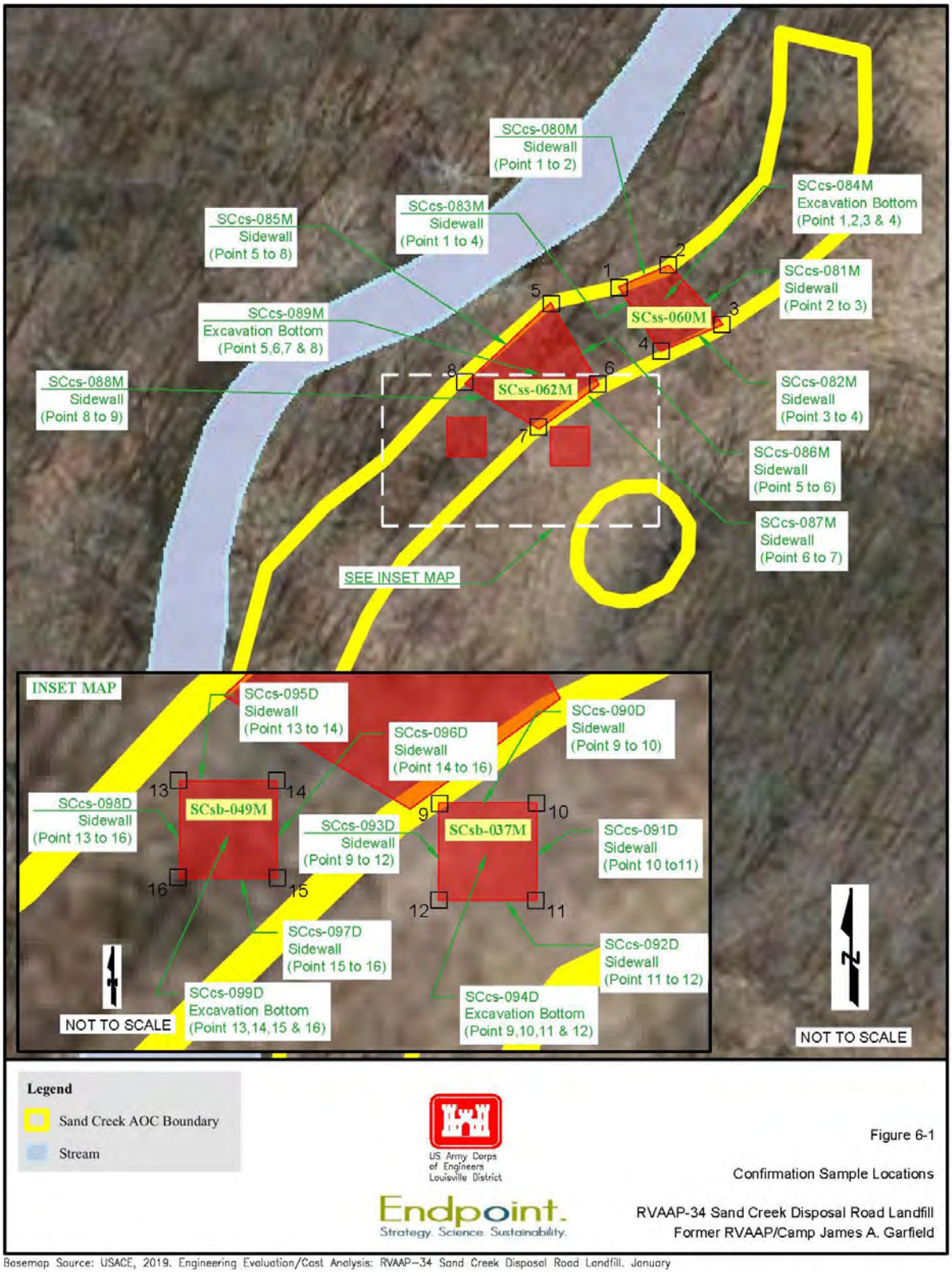
6.5 QA/QC SAMPLES

In addition to the samples referenced above, QC samples (including duplicate, matrix spike/matrix spike duplicate and USACE Quality Assurance [QA] split samples) will be collected for each aforementioned location in accordance with the frequency, procedures and analysis outlined in Section 4.2.2.4 and indicated in the SAP (Endpoint, 2021). Data Quality Objectives and procedures for collecting excavation sidewall, excavation bottom, in-situ arsenic-impacted soil profile sampling, treated soil stockpile sampling and native soil confirmation sampling are also provided in the SAP (Endpoint, 2021).

6.6 SAMPLE ANALYSIS

All confirmation and profiling samples will be preserved and transported to Eurofins/Test America Laboratories in Savannah, Georgia, in accordance with Section 6.0 of the SAP (Endpoint, 2021). Confirmation sample results will be provided within 24-hours following laboratory receipt of samples. The Alaniz-Endpoint Team QA Manager will use laboratory results to confirm confirmation samples meet established AOC cleanup goals and to properly profile soil or any encountered vegetation/debris/solid waste

slated for disposal. The USACE COR and ARNG/OHARNG Representative will be notified of the evaluations and results. If any sample does not meet AOC cleanup goals, the evaluation will include a description of the additional excavation based on the approach described in Sections 6.1 and 6.2. Sampling results will be included in the Remedial Action Completion Report (see Section 9.6.2).



Basemap Source: USACE, 2019. Engineering Evaluation/Cost Analysis: RVAAP–34 Sand Creek Disposal Road Landfill. January

7.0 WASTE MANAGEMENT

This section describes waste profiling, transportation, and waste disposal activities that will be performed during the completion of the remedial activities described in this NTCRA work plan. Waste is considered any indigenous IDW (e.g., excavated surface soil containing arsenic, excavation water) or non-indigenous IDW generated as part of remedial or sampling activities. All waste will be properly segregated, handled, characterized, managed, transported and disposed of in accordance with the federal, state and local laws, and in accordance with Section 7.0 and SOP-7 of the SAP (Endpoint, 2021), federal requirements, and the CJAG Waste Management Guidelines. All waste will be profiled and handled accordingly prior to project completion. Any transportation of solid or hazardous waste off-site will comply with all appropriate federal and state laws. Waste generated during the remedial action, including trees/vegetation that are mulched onsite, will be tracked using the Waste Tracking Form provided in Attachment A. This waste tracker will be submitted to the OHARNG at the completion of the remedial action. Table 7-1 presents each potential waste stream for this NTCRA.

7.1 WASTE STREAM IDENTIFICATION

Waste generated within each AOC will be managed, such that the waste does not pose any threat of contamination (e.g., in liquid or solid form) to areas/media that is otherwise not contaminated. Waste is generally categorized as either indigenous or non-indigenous IDW. As mentioned in Section 6.1.1, in-situ profile samples will be collected from arsenic impacted soil excavations prior to initiating excavation work. The results of these profile samples will be used to identify the correct transporter/disposal facility for the contaminated soil and debris (indigenous and non-indigenous IDW) from the Sand Creek AOC. No profile samples will be collected from PAH impacted soil as it will be treated by the VEG Technology and minimal contact/sampling waste is anticipated. Profile samples will be collected and analyzed in accordance with the procedures outlined in Sections 4.2.2.2 and 4.2.2.3 of the SAP.

- arsenic-impacted soil excavated from this AOC;
- ACM-impacted soil excavated from this AOC;
- Excavation water, if any; and
- Impacted topsoil vegetation or debris discovered during excavation, if any.

Whereas, non-indigenous IDW includes, but is not limited to the following:

- Disposable sampling equipment (e.g., foil pans and zip lock bags);
- Sanitary waste, trash, or solid waste (concrete, bricks, metal waste, etc.);
- Contact waste (e.g., personal protective equipment, plastic tarps/sheeting); and
- Decontamination fluids.

Non-indigenous and indigenous liquid IDW will be managed in accordance with Sections 5.3.3 and 5.4.

To this extent, liquid IDW requiring off-site disposal is not anticipated, with the exception of small volumes of decontamination water and excavation soil contact water, which will be added to the truck beds containing arsenic-impacted soil for off-site disposal. However, in the event that the volume of liquid IDW exceeds the volume that can be added to soil being disposed (i.e. exceeds saturation limits for soil transport), and exceeds the volume that can be recycled within the VEG Vapor Generator, the liquid waste will be drummed, sampled for profiling, and disposed off-site.

In general, waste management minimization procedures will be implemented to limit the volume of waste produced, including reusing materials when appropriate, minimizing contact with contaminated materials, minimizing foot and vehicular traffic through potentially contaminated areas and employing general good housekeeping practices, such as those previously discussed in Section 5.3.4.

7.2 WASTE STREAM MANAGEMENT

Characteristics for each waste stream include: the point of generation, staging and processing, characterization, and waste handling. All waste streams will be sampled and characterized in accordance with Section 7.0 of the SAP (Endpoint, 2021). Table 7-1 presents each potential waste stream for this NTCRA.

7.3 IDW FIELD STAGING

An IDW Field Staging Area (FSA) to temporarily store 55-gallon drums containing solid and liquid IDW will be designated at each AOC (see Drawings in Attachment B) at the beginning of field activities, with the final location approved by the ARNG/OHARNG Representative. The FSA will be constructed using impermeable plastic lining with raised edges for secondary containment to prevent any potential spilled liquid from escaping. In addition, the FSA will have an orange construction fence surrounding it and it will be managed in accordance with Section 7.0 of the SAP (Endpoint, 2021) and the CJAG Waste Management Guidelines. Solid and liquid IDW drums stored at each AOC FSA will be removed within 30 days of generation. If non-hazardous IDW drums are not expected to be disposed off-site within 30 days of generation, they will be relocated and temporarily stored at Building 1036. If hazardous IDW drums are not expected to be disposed off-site within 30 days of generation, they will be relocated and temporarily stored at Building 1047.

Upon completion of excavation activities at the Sand Creek AOC, any solid/liquid IDW drums will be transported to Building 1036/1047, where the waste will be temporarily stored. The location of the temporary IDW storage location at Building 1036/1047 will be specified by the OHARNG Representative and a containment area similar to the FSAs at each AOC will be constructed. Once all remedial work at each AOC has been completed and prior to final demobilization from the CJAG facility, the IDW stored at Building 1036/1047 will be transported and disposed off-site at the appropriate disposal facility.

Final inventories, in addition to container logs for IDW, will be taken and provided to the ARNG/OHARNG/USACE LRL Representative by the Alaniz-Endpoint Team Project Manager. All

identified hazardous waste containers will be disposed off-site within 90 days of the classification as hazardous waste. While a large volume of hazardous waste is not anticipated (due to direct loading of arsenic-impacted soil to hauling trucks and the anticipated small volume of contact waste generated from remediation of this AOC), in the event that sufficient hazardous waste is generated and requires onsite temporary storage, it will be stored at a Building 1047 and managed in accordance with Section 7.0 of the SAP (Endpoint, 2021). All non-hazardous liquid waste will have proper secondary containment and will be transported off the facility before project completion (i.e., prior to demobilization from CJAG). As mentioned in Section 9.4.1, hazardous waste storage areas will be inspected on a weekly basis to confirm spill equipment is maintained and no spills have occurred.

7.4 WASTE STORAGE CONTAINERS AND LABELING

All waste will be managed following OHARNG waste management guidelines. Indigenous solid IDW (e.g., arsenic- or PAH-impacted surface soil, including any topsoil vegetation) will not require storage as these impacted media will be loaded directly into haul trucks and either transported to an approved off-site disposal facility, in accordance with Section 5.2.1 herein, or transported to the NACA VEG Treatment Area where the media will be thermally treated and reused for site restoration. All solid non-indigenous IDW (e.g., disposable sampling equipment, contact waste including tarps, and trash) will be segregated as non-contaminated and potentially contaminated material by visual inspection. Potentially contaminated material will be temporarily stored in open-top 55-gallon drums equipped with plastic drum liners and sealed with bung-top lids, as necessary. Non-contaminated sanitary waste will be temporarily stored in plastic lined trash cans with lids. IDW containers will be temporarily stored at each AOC during remedial activities for up to 30 days and non-hazardous IDW containers will be transported to the temporary storage location at Building 1036 upon completion of work at the AOC. Hazardous IDW containers will be transported to the temporary storage location at Building 1047 upon completion of work at the AOC. The IDW containers will be covered with a weatherproof tarp (weather permitting) and inspected on a weekly basis to ensure no leaks or releases occur during use. IDW storage containers will be properly labeled in accordance with Section 7.0 and SOP-7 of the SAP (Endpoint, 2021). Visually contaminated solid waste will either be added to the haul truck transporting arsenic-impacted soil for disposal, or disposed prior to project completion using the arsenic impacted soil profile sampling results. Non-contaminated solid IDW (sanitary trash) will be disposed off-site through a commercial municipal waste service.

If asbestos samples confirm the presence of friable asbestos, all soil from that excavation will be contained in a plastic lined roll-off container (or drums depending on volume) for disposal. Prior to sealing the container for transportation and disposal, the plastic liner will be sealed to contain the soil within the container. The container will be labeled to identify the presence of asbestos, per Ohio EPA requirements.

The Alaniz-Endpoint Team will be responsible for providing new DOT-approved drums. The Alaniz-Endpoint Team Project Manager will be responsible for labeling IDW containers and coordinating transportation and final disposal at a state of Ohio or federal approved treatment, storage, or disposal facility (possibly located outside of the state of Ohio). In accordance with Section 7.5 herein, if any waste is deemed hazardous, the transporter and disposal facility will be DRMO approved. The OHARNG

Representative (or alternatively the ARNG Representative if waste is deemed non-hazardous) will sign all waste profiles and waste manifests for disposing project IDW at the approved location.

7.5 TRANSPORTATION AND DISPOSAL

The management, transportation, and disposal of all waste streams will be coordinated by the Alaniz-Endpoint Team Project Manager with the CJAG Environmental Office and performed in accordance with the Camp James. A Garfield Waste Management Guidelines and Section 7.0 of the SAP (Endpoint, 2021). All transportation paperwork for soil or possible liquid IDW (manifests or shipping papers) and on-road haul truck placards will be prepared by the Alaniz-Endpoint Team Project Manager in accordance with federal, state, and local regulatory requirements, and disposal facility requirements. The CJAG Environmental Office will be responsible for custody of manifest copies.

Contaminated IDW will be covered and transported by an appropriate licensed waste hauler to a licensed off-site disposal facility that has previously approved the profile of waste for disposal. Truck beds will be lined as required by state, DOT, or disposal facility requirements. As previously mentioned, if any waste is classified as hazardous waste, it will be transported by an approved DRMO or DLA Disposition Services transporter to an approved DRMO hazardous waste disposal facility, per the CJAG Waste Management Guidelines. Additional analysis may be performed based on disposal facility requirements. All manifests, shipping documents, and disposal facility approval letters will be provided to the Alaniz-Endpoint Team Project Manager and incorporated into the Remedial Action Completion Report (Section 9.6.2).

Table 7-1. Waste Stream Identification and Handling

Waste Stream	Point of Generation	Staging/Processing	Characterization	Waste Handling
Above-Ground Vegetation/Debris (i.e., not in contacted with contaminated soil)	Large vegetation (trees/bushes) or debris (large rocks/boulders and railroad ballast) generated within the excavation footprint and surrounding areas required to facilitate equipment access, haul routes and loading areas.	Trees/branches greater than 3-inches in diameter and other large woody vegetation shall be cut between Oct 1st and March 31st and chipped/mulched at the AOC. Mulch and any non-contaminated debris shall be temporarily stockpiled at the AOC.	None	Mulched vegetation and any non-contaminated debris (e.g., rocks/boulders) will be evenly spread across the AOC or disposed of by the Alaniz-Endpoint Team if too large to chip/mulch. Railroad ballast will be evenly spread across former railbeds/roads.
Topsoil Vegetation/Debris (i.e., COC-impacted vegetation)	Vegetation or debris (rocks, boulders, railroad ballast/aggregate) encountered below ground surface within the excavation footprint or other vegetation/debris that may have been in contact with impacted soil.	Arsenic Excavations: Topsoil vegetation/debris will not be separated from arsenic-impacted soil. Soil and any topsoil vegetation/debris shall be loaded directly into haul trucks. PAH Excavations: Topsoil vegetation/debris will not be separated from PAH-impacted soil. Soil and any topsoil vegetation/debris shall be transported to the NACA Test Area AOC for treatment. .	Soil profile samples collected from arsenic impacted areas prior to excavation will be used to characterize the soil for off-site disposal. PAH impacted soil excavated will be sampled pre- and post-treatment at the NACA Area. Post treatment samples will be used to confirm treated soil meets reuse criteria.	Arsenic Excavations: : After direct loading to haul trucks, arsenic-impacted soil and topsoil vegetation/debris shall be transported and disposed of at an approved off-site disposal facility. PAH Excavations : After direct loading to haul trucks, PAH-impacted soil and topsoil vegetation/debris shall be transported to the NACA Test Area AOC, thermally treated and reused as backfill for site restoration at the AOCs.
Solid Waste (e.g., bricks, concrete, asphalt, rebar, other metal/solid waste)	Contaminated waste encountered below ground surface within the excavation footprint or non-contaminated waste that is removed during site clearing activities.	Arsenic Excavations: Solid waste will not be separated from arsenic-impacted soil and will be loaded directly into haul trucks. PAH Excavations: Solid waste will be separated from PAH-impacted soil to the extent practical and temporarily stored in a roll-off bin or in 55-gallon drums.	Soil profile samples collected from arsenic impacted areas prior to excavation will be used to characterize the soil and solid waste for off-site disposal. Solid waste from PAH-impacted excavations will be sampled for disposal profiling.	Any solid waste containers will be transported and disposed at an approved off-site disposal facility.

Table 7-1. Waste Stream Identification and Handling (continued)

Waste Stream	Point of Generation	Staging/Processing	Characterization	Waste Handling
All excavated soil containing ACM	Generated from the excavations containing PAH- and arsenic-impacted soil.	No staging prior to profiling. Once profiled, impacted soil (including co-mingled topsoil vegetation/debris) will be loaded into lined containers to be sealed prior to off-site disposal. The material will be transported following state, Federal Department of Transportation (DOT), and disposal facility requirements.	One discrete ACM profile soil sample shall be collected from each excavation, by an Ohio State Certified Asbestos Hazard Evaluation Specialist, and used to profile all soil and debris (soil/topsoil vegetation/debris from these excavations) for each excavation for on-site handling and potential off-site disposal. Profile samples will be analyzed to determine the asbestos content in soil and debris.	If analytical results indicate soil in any individual excavation contains ACM (>1% friable), the soil will be transported and disposed of at an appropriate facility, per state and Federal asbestos containing waste handling procedures. An Asbestos Waste Shipment Record will be included with the waste manifest for any disposal soil containing ACM.
Excavated Soil from arsenic-impacted areas	Generated from the excavations containing arsenic-impacted soil.	Arsenic-impacted soil (including co-mingled topsoil vegetation/debris) will be loaded directly into haul trucks for disposal off-site. Haul truck beds will be lined as required by state, Federal Department of Transportation (DOT), or disposal facility requirements.	One 8-point composite profile soil sample shall be collected from each excavation and used to profile all contaminated soil and debris (soil/topsoil vegetation/debris from these excavations) for off-site disposal. Profile samples will be TCLP analyzed to determine the classification of contaminated soil and debris (hazardous, non-hazardous).	If TCLP results indicate the contaminated soil is hazardous, a DRMO (or other DLA Disposition Services entity) approved waste transporter will transport and dispose at an approved DRMO hazardous waste facility.If contaminated soil is deemed non-hazardous, the contaminated soil and debris from these excavations will be transported and disposed at an approved off-site facility.
Excavated Soil from PAH impacted areas	Generated from the excavations containing PAH impacted soil.	PAH-impacted soil will be thermally treated and reused onsite; thus, these soils are not considered waste.	None	Contaminated soil will be excavated and transported to the NACA area to be treated by the VEG Technology system. Following receiving the analytical results from the treated soil meeting the AOC cleanup goals, the treated soil will be transported back to the site and will be used to backfill the excavation.
Non-Contaminated Sanitary Waste / Trash from Construction (e.g., garbage and plastic waste, not in contact with contaminated soil)	Generated by site activities/personnel in which disposable equipment does not come in contact with contaminated soil.	Contact waste/disposable sampling equipment will be collected daily in plastic lined trash cans and stored in accordance with Section 7.0 of the SAP (Endpoint, 2021).	None	Sanitary waste/trash will be disposed off-site through a commercial municipal waste service.

Table 7-1. Waste Stream Identification and Handling (continued)

Waste Stream	Point of Generation	Staging/Processing	Characterization	Waste Handling
Contact Waste / Disposable Sampling Equipment (e.g., PPE, gloves, boot covers, plastic sheeting/tarps, foil pans and zip lock bags)	Generated by remedial activities/site personnel which come in contact with contaminated soil.	PPE and disposable sampling equipment will be identified based on a visual inspection (e.g., soiled versus non-soiled). Potentially contaminated contact waste will be containerized in accordance with Section 7.0 of the SAP (Endpoint, 2021) and stored in approved DOT open-top 55-gallon drums equipped with plastic liners and sealed with bung-top lids. Waste drums will be temporarily stored at the AOCs and transported to the temporary storage location at Building 1036/1047 upon completion of work at the AOC.	No additional characterization Soil profile samples collected from arsenic-impacted areas shall be used to characterize contact waste / disposable sampling equipment disposed off-site.	Contact waste will be disposed in accordance with Section 7.0 of the SAP (Endpoint, 2021). It will be disposed as either sanitary waste, non-hazardous or hazardous waste at a permitted waste facility based on the soil profile results.
Excavation Water (i.e., water that has come in contact with contaminated soil/equipment)	Water collected within excavation pits/boundaries during rainfall events or decontamination water.	Arsenic-impacted excavation water will be collected and added to the truck bed transporting arsenic-impacted soil (if <30 gallons). Decontamination of equipment shall be performed over haul trucks containing soil for off-site disposal, ensuring that volume of the water is sufficiently small (< 30 gallons) such that the water does not escape the truck bed, nor does it change the quality of the soil being off hauled. PAH Excavations: PAH-impacted excavation water will be pumped into a temporary water storage tank. Decontamination of excavation equipment from PAH-impacted soil excavations will be conducted over a designated decontamination area lined with impermeable plastic sheeting, and the decontamination water will be added to the same temporary storage tank. Minimal excavation water is anticipated based on the depths/extents of excavation areas; in the event that the volume of excavation water from either remediation areas is greater than what is manageable for disposal/transport within the truck bed or reuse by the VEG unit, the water will be stored in closed-top 55-gallon DOT-approved drums.	No additional characterization Soil profile samples collected from arsenic-impacted excavations shall be used to characterize all waste disposed off-site.	Arsenic Excavations: Excavation water (including decontamination water) will be transported and disposed off-site along with arsenic-impacted soil. PAH Excavations: Excavation water from PAH-impacted soil will be transferred from the temporary storage tank into the VEG system to be recycled within the VEG's vapor generator for complete oxidation and transformation into a hot, clean steam used at a heat source for the VEG's treatment chamber.

8.0 SITE RESTORATION

Site restoration will commence following analysis of confirmation sample analytical results and confirmation that AOC-related COC concentrations are at or below AOC cleanup goals. Site restoration activities will not begin until confirmation sample results have been provided to the USACE Representative, and approval to proceed has been granted. The Alaniz-Endpoint Team will restore the project sites to pre-construction conditions. At a minimum, site restoration activities will include:

- Re-grading and backfilling excavation pits and surrounding areas; and
- Re-vegetation of the disturbed area.

8.1 RE-GRADING AND BACKFILL

Upon confirmation that thermally treated soil concentrations are below respective RSLs, treated soil will be used to backfill the PAH impacted soil excavation pits in the Sand Creek AOC. Due to the disposal of arsenic-impacted soil from this AOC, the respective excavation pits will be backfilled using imported soil from an approved local off-site source, such as Patrick Excavating and Trucking in Ravenna, Ohio (a source used in prior remediation efforts at the former RVAAP facility). Imported soil will be sampled and analyzed for the RVAAP full-suite of chemicals as outlined in the SAP (Endpoint, 2021) prior to backfilling. Sample results will be reviewed and approved by the ARNG/OHARNG Representatives, the USACE COR and the Ohio EPA prior to use. Where necessary, ruts and depressions within the project sites (e.g., unpaved access roads, truck loading area, equipment movement areas, and construction support area) will also be re-graded. Soil shall be compacted in place using successive horizontal layers of eight (8) inches (in areas where the excavation or rut is at least 8 inches deep) in loose depth for the full width of the excavation and compacted. Each layer shall be compacted before the overlying lift is placed. Compaction of the soil will be accomplished by a minimum of three passes of a roller or other approved compacting equipment routed over the entire surface of each layer in such a manner as to obtain a firm, dense, and uniform compaction across the entire width of the work area.

Final grading will be performed to match surrounding elevations and provide positive drainage to prevent future ponding or erosion. The final grade of each project site will be inspected and approved by the USACE COR prior to demobilization.

8.2 RE-VEGETATION

Disturbed work areas where remediation activities have temporarily ceased will be stabilized with temporary seed or mulch as described on Table 8-1 unless activities are to recommence within 21 days. Permanent cover for the disturbed areas will be seeded within seven days following excavation, backfilling, and final grading activities. Re-vegetation seeding will consist of the OHARNG approved seed mixes specified in Table 8-1. Seed mixes will be approved by the OHARNG Environmental Office and prepared for application at the site by the Ohio Prairie Nursery in Hiram, Ohio. The seed mix will be sown into the treated soil and covered with mulch. Restored areas will be inspected on a weekly basis and reported on a Site Restoration Inspection Form (Attachment A) until 70% vegetative cover is achieved. Although soil

treated using the VEG Technology has not historically required fertilizers or other soil amendments prior to seeding for plant growth, following construction, the Alaniz-Endpoint Team will assess the need for soil amendments (e.g., adding fertilizers, etc.) to facilitate successful growth.

Table 8-1. Revegetation Guidance

NEED		SPECIES AND PROPORTION	APPLICATION
Temporary Cover for Ongoing Projects	Areas left idle for greater than 21 days, but scheduled for disturbance within the same summer growing season	100% Annual Ryegrass *(Lolium multiflorum)*	Broadcast at 40 pounds per acre. Drill at 30 pounds per acre. Mulch with a minimum of 3 bales of straw per 1000 ft^2 Use mulch netting instead of straw on slopes > 6%.
	Areas left idle for greater than 21 days, but scheduled for disturbance within the same fall growing season	100% Winter rye *(Secale cereal)*	Broadcast at 112 pounds per acre. Drill at 80 pounds per acre. Mulch with a minimum of 3 bales of straw per 1000 ft^2 Use mulch netting instead of straw on slopes > 6%.
	Areas left idle for greater than 21 days, but scheduled for disturbance within the same spring growing season	100% Oats *(Aveva sativa)*	Broadcast at 80 pounds per acre. Drill at 65 pounds per acre. Mulch with a minimum of 3 bales of straw per 1000 ft^2 Use mulch netting instead of straw on slopes > 6%.
	Areas that will remain unfinished indefinitely	40% Nodding Wild Rye (*Elymus Canadensis*) 40% Virginia wild rye (*Elymus virginicus*) 15% Partridge Pea (*Chamaecrista fasciculate*) 5% Black-eyed Susan (*Rudbeckia hirta*) Add 10 lbs/ac Annual Ryegrass *(Lolium multiflorum)*/acre	Broadcast at 35 pounds per acre. Drill at 25 pounds per acre. Mulch with a minimum of 3 bales of straw per 1000 ft^2 Use mulch netting instead of straw on slopes > 6%.
	Late Season (after 15 September) quick, temporary cover	23.5% Nodding Wild Rye (*Elymus Canadensis*) 25% Virginia wild rye (*Elymus virginicus*) 18.75% Partridge Pea (*Chamaecrista fasciculate*) 1.5% Black-eyed Susan (*Rudbeckia hirta*) 31.25% Little Bluestem (*Schizachyrium scoparium*) Add Annual Ryegrass *(Lolium multiflorum)*/acre: 20 lbs/ac for broadcast or 15 lbs/ac for drill	Broadcast at 25 pounds per acre. Drill at 18 pounds per acre. Mulch with a minimum of 3 bales of straw per 1000 ft^2 Use mulch netting instead of straw on slopes > 6%.
Permanent Cover for Site Closure	Open Areas	23.5% Nodding Wild Rye (*Elymus Canadensis*) 25% Virginia wild rye (*Elymus virginicus*) 22% Little Bluestem (*Schizachyrium scoparium*) 18.75% Partridge Pea (*Chamaecrista fasciculate*) 7.75% Thin-leaved Coneflower (*Rudbeckia triloba*) 1.5% Brown fox sedge (*Carex vulpinoidea*) 1.5% Black-eyed Susan (*Rudbeckia hirta*) Add Annual Ryegrass *(Lolium multiflorum)*/acre: 20 lbs/ac for broadcast or 15 lbs/ac for drill	Broadcast at 18 pounds per acre. Drill at 12 pounds per acre. Mulch with a minimum of 3 bales of straw per 1000 ft^2 Use mulch netting instead of straw on slopes > 6%.
	Shaded, Partial Sun, Openings In Woods	31% Deertongue (*Panicum clandestinum*) 25% Virginia wild rye (*Elymus virginicus*) 25% Nodding Wild Rye (*Elymus Canadensis*) 10% Big Bluestem (*Andropogon gerardii*) 9% Side-Oats Grama (*Bouteloua curtipendula*) Add Annual Ryegrass *(Lolium multiflorum)*/acre: 20 lbs/ac for broadcast or 15 lbs/ac for drill	Broadcast at 30 pounds per acre. Drill at 20 pounds per acre. Mulch with a minimum of 3 bales of straw per 1000 ft^2 Use mulch netting instead of straw on slopes > 6%.

9.0 CONSTRUCTION QUALITY ASSURANCE PLAN

This section presents the Alaniz-Endpoint Team Construction Quality Assurance Plan, which describes inspection procedures and documentation to ensure all remedial activities are implemented according to the requirements set forth in this NTCRA work plan.

In addition to the QA/QC procedures provided in the SAP (Endpoint, 2021), the following will be discussed:

- Responsibility and Authority;
- Personnel Qualifications;
- Daily Planned Briefings;
- Inspection Activities;
- Confirmation Requirements; and
- Documentation.

9.1 RESPONSIBILITY AND AUTHORITY

9.1.1 Responsibility

The organizational chart presented in Section 2.0 outlines the management structure that will be used to implement the excavation and remedial activities in accordance with this NTCRA work plan. The functional responsibilities of key personnel were described in Section 2.1. Personnel assignments to each position were based on the following:

- Qualifications;
- Experience; and
- Training.

The Alaniz-Endpoint Team QA Manager and Project Manager, in coordination with the USACE COR, will ensure that completed remedial activities conform to the NTCRA work plan. The Alaniz-Endpoint Team Project Manager will verify completion of these activities.

The Alaniz-Endpoint Team Project Manager will monitor excavation, thermal treatment, disposal, and site restoration activities. The Alaniz-Endpoint Team Project Manager or designee will be on site during work activities to ensure that all components of this NTCRA work plan are fulfilled.

9.1.2 Administration

The QA/QC organization is administered by the Alaniz-Endpoint Team QA Manager in concert with the Alaniz-Endpoint Team Project Manager. The Alaniz-Endpoint Team Project Manager will be supported by the FTL and technical staff (engineers, scientists, and technicians) as necessary.

All vendors supplying materials used for any aspect of the remediation or site restoration activities will supply such materials from manufacturing facilities with established QC programs. Results of the manufacturer QC procedures will be submitted to the Alaniz-Endpoint Team QA Manager for review, evaluation, and documentation prior to beginning field activities.

9.2 PERSONNEL QUALIFICATIONS

All QA/QC personnel will be properly trained for their job and hold HAZWOPER certifications. The Alaniz-Endpoint Team Project Manager will ensure that completed remedial activities conform to this NTCRA work plan and any necessary permit conditions. The Alaniz-Endpoint Team Project Manager will have demonstrated knowledge of specific construction practices relating to excavation procedures, observation and testing procedures, and documentation procedures. The Alaniz-Endpoint Team Project Manager will also be experienced in performing similar duties on previous jobs where comparable construction activities took place.

9.3 DAILY TAILGATE MEETINGS

At the start of the project, the Alaniz-Endpoint Team will participate in a pre-construction briefing on objectives, health and safety, proposed deviations from this NTCRA work plan, and project schedule.

In addition, all onsite personnel will participate in daily tailgate safety meetings led by the Alaniz-Endpoint Team Project Manager, or designee, to determine the plan of action for the work day and remind workers of health and safety topics. Topics discussed during these meetings will be recorded on Tailgate Safety Meeting Forms (Attachment A) and will include the following:

- A discussion of the planned activities for the work day, including the extent of planned excavation;
- Weather considerations;
- Safety reminders;
- Transportation and delivery schedule;
- Project schedule; and
- Any issues that may arise and how to resolve those issues.

The USACE COR and ARNG/OHARNG Representative, or authorized designees are invited to attend the pre-work briefing and any daily tailgate safety meetings. As previously mentioned, all field activities will be coordinated with CJAG Range Control on a daily basis (i.e., notification at the start and end of the work day, and number of field personnel). In the event that a deviation from the methods provided in this NTCRA work plan is required, the deviation will be documented on a Field Change Form (included in Attachment A), submitted and approved by the USACE COR and Ohio EPA prior to implementation.

9.4 INSPECTION ACTIVITIES

Inspections will be completed to verify acceptability of materials, prevent spills, assess effectiveness of storm water and dust generation controls, and confirm VEG system equipment is operating within design limits. The scope and frequency of each type of inspection is described below.

9.4.1 Spill Control

The Alaniz-Endpoint Team Project Manager will conduct weekly inspections of hazardous wastes storage and monthly inspections of non-hazardous waste storage to verify spill equipment is maintained and no spills have occurred. The Alaniz-Endpoint Team Project Manager will be notified if any visual or olfactory indicators of equipment leaks or spills are encountered during remediation activities. The Alaniz-Endpoint Team will provide all necessary onsite spill equipment (e.g., granulated clay, absorbent blankets, personal protective equipment, shovels, containers). The onsite spill kit will be utilized to clean up the spill or outside resources will be utilized in the event of a large or reportable quantity spill. All onsite workers will maintain good housekeeping practices (as discussed in Section 5.3.4). Spills will be responded to as presented in Section 12.1.2 of the FWSHP and the CJAG Spill Contingency Plan. In the event of a spill or leak, the employee making the discovery will immediately notify the Alaniz-Endpoint Team SSHO and the Alaniz-Endpoint Team Project Manager. These spills can include, but are not limited to, releases of fuels, lubricants, and hydraulic fluids.

The Alaniz-Endpoint Team Project Manager will ensure the spill is immediately reported via phone to the OHARNG and the CJAG Range Control. The Alaniz-Endpoint Team Project Manager will ensure the incident is documented on a CJAG Spill Incident Reporting Form and a First Responder Reporting Form (provided in Attachment A), and reported in accordance with the procedures noted on the Incident Reporting Form and the CJAG Waste Management Guidelines.

9.4.2 Stormwater/Excavation Water Controls

Site work will be planned using the weather forecast, with work being limited during severe storm events. In addition, all excavated soils, both treated and untreated, shall be managed in lined and covered stockpiles within the treatment area. The tarps covering each stockpile will be maintained in good condition and secured prior to the end of each workday and when rain events occur. In the event which weather conditions require stormwater/excavation water management, the Alaniz-Endpoint Team will install, inspect and document all storm water controls (e.g., covering excavation areas/pits with tarps, installing/inspecting silt fencing, divert off-site run-off away from the excavation) prior to and during remedial activities, per Section 5.3.3. Stormwater controls will be inspected on a weekly basis and following any rain event resulting in one-half inch of rain or more, and documented on a Stormwater Control Inspection Form (see Attachment A). Collected stormwater not in contact with impacted soil shall be discharged onsite in accordance with Section 5.3.3 and reported on a Stormwater Release Form. Any water collected from within the excavation pit or in contact with impacted-soil (i.e., excavation water) shall be either recycled or disposed in accordance with Section 5.3.3 herein.

All employees will practice due diligence to prevent any damage to the stormwater control measures. The Alaniz-Endpoint team will conduct weekly inspections to evaluate the integrity of the storm water controls. Any deficiencies will be immediately corrected and documented in the daily report.

During rain events, minimal runoff of contact water is anticipated within the VEG treatment area located at the NACA Test Area and will be limited by tarps covering stockpiles and treatment equipment. BMPs installed around the perimeter of the NACA VEG treatment area will prevent sediment and contaminated soil from entering adjacent wetland areas.

In the event of a release of soil (contaminated or treated) beyond the silt fence, the soil will be excavated immediately and returned to the appropriate soil stockpile. If the release is from a contaminated soil stockpile, native soil and/or sediment sampling will be performed, and samples analyzed for project COCs to ensure that native soils are not in excess of residential land use criteria.

9.4.3 Dust Control

Dust generation may occur during excavation, soil transportation, equipment movement on paved and unpaved roads, and site restoration. Generation of dust will be eliminated by implementing construction procedures discussed in Section 5.3.1 and by keeping vehicles on improved roads, limiting speeds to a maximum of 10 mph on access roads, and applying water for dust suppression purposes as required. Due to the potential presence of ACM, all visible dust will be suppressed by applying water during the execution of the excavations and soil handling. Water used for dust control will be clean (i.e., obtained from the Newton Falls Municipal Water Department). Engineering controls will be implemented to minimize the potential for dust generation. An Alaniz-Endpoint Team member will conduct and report dust inspections on Daily QC reports, as described in the SSHP (to be prepared under separate cover).

9.4.4 VEG System Operation

An Alaniz-Endpoint Team technician will be responsible for performing periodic system equipment tests to confirm that the system is operating within the design limits. The technician will also review the data gathered hourly during system operation, as described in Section 5.2.3, to confirm the system is operating within the normal range of parameters (e.g. temperature, propane flow, and water flow). The technician will notify the Alaniz-Endpoint Team Project Manager if any tests indicate equipment may not be operating as designed.

VEG System Thermocouples, used to measure the temperature of VEG system effluent and soil during treatment are calibrated at the beginning and end of each project. The pre-project calibration will be recorded by the calibrating technician on the Contractor’s Quality Control Daily Report and stored on-site for the duration of the project.

During the project, daily inspections will be performed to verify the water and propane control valves are functioning properly and do not have leaks. The test will consist of closing valves manually to confirm that

system effluent temperature declines following valve closure. These tests will be documented in the Contractor's Quality Control Daily Report, included in Attachment A.

In addition to daily valve tests, the system emergency shut off switch will be tested weekly by engaging the switch while the system is in operation. These tests will be recorded on the Contractor's Quality Control Daily Report.

9.4.5 Survey

As mentioned in Section 5.1, the initial and final excavation boundaries will be surveyed by a registered surveyor to document the vertical and horizontal extents of the remedial activities. Coordinates for the excavation extents will be included in the Remedial Action Completion Report (Section 9.6.2). The horizontal and vertical survey tolerance will be ±0.1 ft. The excavation coordinates will be reported in Ohio State North American Datum 83 ft.

9.4.6 Site Restoration

Once remedial activities have been completed and approved by the USACE COR, excavations will be backfilled and graded to match adjacent contours. Imported soil will be sampled by the Alaniz-Endpoint Team in accordance with the procedures in Section 3.1 of the SAP prior to being delivered to the site. Sample results will be provided to the Army for approval, a minimum of seven days prior to placing materials. Backfilling and re-vegetation procedures will comply with Section 8.0 herein and will be overseen by the Alaniz-Endpoint Team. In addition, restored areas will be inspected on a weekly basis and reported on a Site Restoration Inspection Form until 70% vegetation cover is achieved, after which any existing erosion control measures will be removed.

9.5 CONFIRMATION REQUIREMENTS

9.5.1 Confirmation Sampling

Confirmation sampling will be performed in accordance with Section 6.0 of this NTCRA work plan and the Section 4.2 of the SAP (Endpoint, 2021) to demonstrate achievement of the AOC cleanup goals. Confirmation samples from arsenic impacted areas will be analyzed for arsenic, and confirmation samples from PAH impacted areas will be analyzed for site-specific PAHs. Analyses will be conducted by Eurofins/Test America Laboratories in Savannah, Georgia.

9.5.2 Verification of Achievement of Performance Criteria

The Alaniz-Endpoint QA Manager will confirm that confirmation sample results meet AOC cleanup goals, both relative to excavation pit/bottom sampling and post-treatment soil sampling results. The USACE COR and ARNG/OHARNG Representative will be notified of the evaluations and results. If any sample does not meet the AOC cleanup goals, the evaluation will include a description of the additional excavation and/or treatment based on the approaches described in Section 6.0. Confirmation sampling results will be included in the Remedial Action Completion Report (Section 9.6.2).

9.6 DOCUMENTATION

9.6.1 Field Documentation

Daily inspection and quality control reports will be completed, signed and dated by the Alaniz-Endpoint Team Project Manager, or designee.

Daily quality control reports shall include:

- Summary of activities performed at the project site;
- Daily inspection activities;
- Weather information and ground conditions;
- Materials delivered or visitors to the site;
- Deviations from the approved NTCRA work plan (e.g., verbal instruction received from government);
- Problems encountered during field activities;
- Copies of Chain of Custody and summary of sampling performed; and,
- Summary of confirmation or profiling sample results.

Copies of the Contractor's Quality Control Daily Report and Tailgate Safety Meeting Form are included in Attachment A. Sampling field forms are included in Attachment II of the SAP (Endpoint, 2021). Daily reports may be combined to form monthly reports for submittal to the Ohio EPA, by the Army, as required per Section 5.4 of the SAP (Endpoint, 2021).

9.6.2 Remedial Action Completion Report

Upon completion of remedial activities, a Remedial Action Completion Report (RACR) will be prepared by the Alaniz-Endpoint Team. The RACR will document:

- Activities conducted to implement the remedial action
- Summary of sampling results, copies of field forms, waste trackers and waste manifests;
- Verification that the project was performed in accordance with this NTCRA work plan;
- Any approved field variances from this NTCRA work plan (e.g., unforeseen site conditions, change in scope);
- Corrective actions; and
- Achievement of AOC cleanup goals.

10.0 REFERENCES

Endpoint, 2015. *Implementation Report for Bench- and Pilot-Scale Testing Ex-Situ Thermal Treatment of Polycyclic Aromatic Hydrocarbons in Soils.* RVAAP-50 Atlas Scrap Yard Site. Former Ravenna Army Ammunition Plant, Ravenna OH. December.

Endpoint, 2021. *Final Remedial Design for Soil, Sediment, And Surface Water At RVAAP-42 Load Line 9,* March 2021.

MKM Engineers, Inc. (MKM), 2004. *Remedial Design/Removal Action Plan for RVAAP 34 Sand Creek Disposal Road Landfill, Ravenna Army Ammunition Plant, Ravenna, Ohio*, prepared for U.S. Army Joint Munitions Command, Rock Island, Illinois, March.

Science Applications International Corporation (SAIC), 1996. *Preliminary Assessment for the Characterization of Areas of Contamination, Ravenna Army Ammunition Plant, Ravenna, Ohio*, Prepared for U.S. Army Corps of Engineers, Nashville District, February.

SAIC, 2010. *Final Facility Wide Cleanup Goals for the Ravenna Army Ammunition Plant, Ravenna, Ohio*, Prepared for the U.S. Army Corps of Engineers, Louisville District, March 23.

Shaw, 2010. *Final Sampling and Analysis Plan Addendum No. 1 for Environmental Services at RVAAP-34 Sand Creek Disposal Road Landfill, RVAAP-03 Open Demolition Area #1, and RVAAP-28 Mustard Agent Burial Site, Version 1.0*, Ravenna Army Ammunition Plant, Ravenna, Ohio, February.

Shaw. 2011. Final Digital Geophysical Mapping Report for the RVAAP-34 Sand Creek Disposal Road Landfill, RVAAP-03 Open Demolition Area #1, and RVAAP-28 Mustard Agent Burial Site, January 11.

U.S. Army Center for Health Promotion and Preventative Medicine (USACHPPM), 1998. *Relative Risk Site Evaluation for Newly Added Sites at the Ravenna Army Ammunition Plant, Ravenna, OH, Hazardous and Medical Waste Study No. 37-EF-5360-99,*

U.S. Army Corps of Engineers (USACE), 1998. *Phase I Remedial Investigation Report for the Phase I Remedial Investigation of High Priority Areas of Concern at the Ravenna Army Ammunition Plant*, Ravenna, Ohio, February.

USACE. 2017. *Revised Final Remedial Investigation Report for RVAAP-34 Sand Creek Disposal Road Landfill*. Ravenna Army Ammunition Plant, Ravenna, Ohio, February 2017.

USACE, 2019A. *FINAL Engineering Evaluation/Cost Analysis: RVAAP-34 Sand Creek Disposal Road Landfill at Camp James A. Garfield Joint Military Training Center,* Portage and Trumbull Counties, Ohio, January.

USACE, 2019B. *Final Action Memorandum: RVAAP-34 Sand Creek Disposal Road Landfill at Former Ravenna Army Ammunition Plant,* September.

Attachment A
Field Forms

CAMP JAMES A. GARFIELD

Joint Military Training Center
8455 State Route 5
Ravenna, Ohio 44266-9244
(614) 336-6041

CONTRACTOR ACCESS REQUEST FORM

COMPANY NAME:	
Project POC Name:	
ADDRESS:	
PHONE:	[COMPANY PHONE NUMBER]

PROJECT NAME/AREA OF WORK:	
CJAG JMTC PROJECT POC/PHONE:	

PERSONNEL REQUIRING ACCESS TO FACILITY

LAST NAME	FIRST NAME	CELL PHONE #	LIC. PLATE #

START DATE:		**END DATE:**	

APPROVED BY: _____

SIGNATURE *PRINT NAME* *RANK* *DATE*

MAIN GATE _____ **EAST GATE** _____ **(# OF PAGES)** _____

ESCORT REQUIRED? **YES** **NO**

ESCORT POC: _____

NAME *PHONE #*

CAMP JAMES A. GARFIELD

PERSONNEL REQUIRING ACCESS TO FACILITY: CONT.	
COMPANY NAME:	
PROJECT NAME/AREA OF WORK:	

LAST NAME	FIRST NAME	CELL PHONE #	LIC. PLATE #

Construction Site Inspection Checklist for OHC000005

By making use of some simple Best Management Practices (BMPs) a construction site operator can do his or her share to protect Ohio's water resources from the harmful effects of sediment. The topography of the site and the extent of the construction activities will determine which of these practices are applicable to any given site, but the BMPs listed here are applicable to most construction sites. For details on the installation and maintenance of these BMPs, please refer to the current ***Rainwater and Land Development****, Ohio EPA's Standards for Storm Water Management Land Development and Urban Stream Protection*. The manual is available at http://epa.ohio.gov/dsw/storm/technical_guidance.

Temporary Stabilization

This is the most effective BMP. All disturbed areas that will lie dormant for over 14 days must be stabilized within 7 days of the date the area becomes inactive. The goal of temporary stabilization is to provide cover, quickly. Areas within 50 feet of a stream must be stabilized within 2 days of inactivity. This is accomplished by seeding with fast-growing grasses then covering with straw mulch. Apply only mulch between November 1 and March 31. To minimize your costs of temporary stabilization, leave natural cover in place for as long as possible. Only disturb areas you intend to work within the next 14 days.

Construction Entrances

Construction entrances are installed to minimize off-site tracking of sediments. A stone access drive should be installed at every point where vehicles enter or exit the site. Every individual lot should also have its own drive once construction on the lot begins.

Sediment Ponds

Sediment ponds are required for construction areas with concentrated runoff or when the design capacity of silt fence or inlet protection is exceeded. There are two types of sediment ponds: sediment basins and sediment traps. A sediment trap is appropriate where the contributing drainage area is 5 acres or less. The outlet is an earthen embankment with a simple stone spillway. A sediment basin is appropriate for drainage areas larger than 10 acres. The outlet is an engineered riser pipe with a skimmer or similar device used to dewater the pond at the surface. Often a permanent storm water management pond, such as a retention or detention basin, can be modified to act as a sediment basin during construction. All sediment ponds must be installed within 7 days of first grubbing the area they control, provide a minimum dewatering zone of 67 cubic yards per acre of total contributing drainage area and a sediment settling zone of 34 cubic yards per disturbed acre below the level of the outlet. Sediment basins must be designed to drain the dewatering zone over a 48-hour period.

Sediment Barriers

This is typically used at the perimeter of a disturbed area. It's only for small drainage areas on relatively flat slopes or around small soil storage piles. Not suitable where runoff is concentrated in a ditch, pipe or through streams. For large drainage areas where flow is concentrated, collect runoff in diversion berms or channels and pass it through a sediment pond prior to discharging it from the site. Combination barriers constructed of silt fence supported by straw bales or silt fence embedded within rock check dams may be effective within small channels. As with all sediment controls, sediment barriers must be capable of pooling runoff so that sediment can settle out of suspension. Sediment barriers must be installed within 7 days of first grubbing the area it controls.

Inlet Protection

This must be installed on all yard drains and curb drains when these inlets do not drain to a sediment trap or basin. Even if there is a sediment trap or basin, inlet protection is still recommended, as it will increase the overall sediment removal efficiency. These are best used on roads with little or no traffic. If working properly, inlet protection will cause water to pond. If used on curb inlets, streets will flood temporarily during heavy storms. Check with your municipality before installing curb inlet protection. They may prefer an alternate means of sediment control such as silt fence or ponds.

Permanent Stabilization

All areas at final grade must be permanently stabilized within 7 days of reaching final grade. This is usually accomplished by using seed and mulch, but special measures are sometimes required. This is particularly true in drainage ditches or on steep slopes. These measures include the addition of topsoil, erosion control matting, rock rip-rap or retaining walls. Permanent seeding should be done March 1 to May 31 and August 1 to September 30. Dormant seeding can be done from November 20 to March 15. At all other times of the year, the area should be temporarily stabilized until a permanent seeding can be applied.

Non-Sediment Pollution Control

Although sediment is the pollutant of greatest concern on most construction sites, there are other sources of pollution. Most of these BMPs are easy to implement with a little bit of planning and go a long way toward keeping your site clean and organized. Please be sure to inform all contractors how these BMPs affect their operations on the site, particularly those that will be working near a stream.

Inspection Sheet

INSPECTIONS MUST BE CONDUCTED ONCE EVERY 7 DAYS AND WITHIN 24 HOURS OF A 0.5" OR GREATER RAINFALL. ALL SEDIMENT CONTROLS MUST BE INSTALLED PRIOR TO GRADING AND WITHIN 7 DAYS OF FIRST GRUBBING

GENERAL INSPECTION INFORMATION

Construction Site Inspection Date: _____ Inspector Name: _____

Inspector Title: _____ Qualifications/Certifications: _____

Storm Events of the Last 7 Days

Storm Event Date	Storm Event Time	Storm Event Duration	Total Rainfall Amount	Discharge Occur? (Y/N)
_____	_____	_____	_____(inches)	_____
_____	_____	_____	_____(inches)	_____
_____	_____	_____	_____(inches)	_____
_____	_____	_____	_____(inches)	_____

Weather Information at the Time of Inspection

Temperature _____ Climate (Sunny, Cloudy, Rain)? _____ Is Storm Water Being Discharged? _____

Sketch or Small Site Map

Along with a narrative inspection log, Ohio EPA recommends the inspector use a sketch or a reduced photocopy of the site plan showing the location of storm water outfalls and storm drain inlets as well as the location and types of control measures. Problems observed at these locations, or at other locations on the construction site, should be highlighted and any corrective measures undertaken should be drawn in and noted in detail on the front side of the sketch. This method will also be helpful as the permittee is required to update the SWP3 to reflect current site conditions.

CONSTRUCTION ENTRANCES

Key things to look for ...

	Yes	No
1. Has the drive been constructed by placing geotextile fabric under the stone?	☐	☐
2. Is the stone 2-inch diameter?	☐	☐
3. Has the stone been placed to a depth of 6 inches, with a width of 10 feet and a length of at least 50 feet (30 feet for entrances onto individual sublots)?	☐	☐
4. If the drive is placed on a slope, has a diversion berm been constructed across the drive to divert runoff away from the street or water resource?	☐	☐
5. If drive is placed across a ditch, was a culvert pipe used to allow runoff to flow across the drive?	☐	☐

Note areas where repairs or maintenance is needed or where this practice needs to be applied:

SEDIMENT PONDS

Key things to look for ...

		Yes	No
1.	Are concentrated flows of runoff directed to a sediment pond?	☐	☐
2.	Is sheet-flow runoff from drainage areas that exceed the design capacity of silt fence (generally 0.25 acre or larger) directed to a sediment pond?	☐	☐
3.	Is runoff being collected and directed to the sediment pond via the storm sewer system or via a network of diversion berms and channels?	☐	☐
4.	Is the sediment pond dewatering zone appropriately sized (67 cubic yards per acre of total drainage area)?	☐	☐
5.	Is the sediment pond sediment settling zone appropriately sized (34 cubic yards per acre of disturbed area)?	☐	☐
6.	Is the sediment basin designed to be dewatered at the surface through the use of a skimmer or another similar surface water dewatering device?	☐	☐
7.	Is the sediment basin designed so that the dewatering zone will drain in no less time than 48 hours?	☐	☐
8.	Have the embankments of the sediment pond and the areas that lie downstream of the pond been stabilized?	☐	☐
9.	For sediment traps, is there geotextile under the stone spillway and is the spillway saddle-shaped?	☐	☐
10.	For sediment traps, which dewater 100% between storms, is the dewatering pipe end-capped, no larger than 6 inches in diameter, perforated and double-wrapped in geotextile?	☐	☐
11.	Is the length-to-width ratio between inlet(s) and outlet at least 2:1? **NOTE**: If not, a baffle should be added to lengthen the distance.	☐	☐
12.	Is the depth from the bottom of the basin to the top of the primary spillway no more than 3 to 5 feet?	☐	☐
13.	For a modified storm water pond being used as a sediment pond, is the connection between the riser pipe and the permanent outlet water-tight?	☐	☐
14.	Was the basin installed prior to grading the site?	☐	☐
15.	Is it time to clean-out the sediment pond to restore its original capacity? Generally, sediment should be removed from the sediment settling zone once it's half-full. Stabilize the dredged sediments with seed and mulch.	☐	☐

Note areas where repairs or maintenance is needed or where this practice needs to be applied:

SEDIMENT BARRIERS

Key things to look for ...

	Yes	No
1. Is the silt fence at least 4" to 6" into the ground?	☐	☐
2. Is the silt fence trench backfilled to prevent runoff from cutting underneath the fence?	☐	☐
3. Is the silt fence pulled tight so it won't sag when water builds up behind it?	☐	☐
4. Are the ends brought upslope of the rest of the silt fence so as to prevent runoff from going around the ends?	☐	☐
5. Is the silt fence placed on a level contour? If not, the fence will only act as a diversion.	☐	☐
6. Have all the gaps and tears in the silt fence been eliminated.	☐	☐
7. Is the sediment barrier controlling an appropriate drainage area? Refer to Chapter 6 of ***Rainwater*** manual. **RULE OF THUMB**: Design capacity for 100 linear feet of sediment barrier is 0.5 acres for slopes < 2%, 0.25 acres for slopes 2% to 20%, & 0.125 acres for slopes 20% or more. Generally, no more than 0.25 acres should lie behind 100 feet of sediment barrier at 2% to 20% slope, i.e., the distance between the barrier and the top of the slope behind it should be no more than 125 feet. The allowable distance increases on flatter slopes and decreases for steeper slopes. **All non-silt fence sediment barriers must be at least 12-inches in diameter.**	☐	☐

Note areas where repairs or maintenance is needed or where this practice needs to be applied:

INLET PROTECTION

Key things to look for ...

	Yes	No
1. Does water pond around the inlet when it rains?	☐	☐
2. Has the fabric been replaced when it develops tears or sags?	☐	☐
3. For curb inlet protection, does the fabric cover the entire grate, including the curb window?	☐	☐
4. For yard inlet protection, does the structure encircle the entire grate?	☐	☐
5. Is the fabric properly entrenched or anchored so that water passes through it and not under it?	☐	☐
6. For yard inlet protection, is the fabric properly supported to withstand the weight of water and prevent sagging? The fabric should be supported by a wood frame with cross braces, or straw bales.	☐	☐
7. Is sediment that has accumulated around the inlet removed on a regular basis?	☐	☐

Note areas where repairs or maintenance is needed or where this practice needs to be applied:

TEMPORARY STABILIZATION

Key things to look for ...

	Yes	No
1. Are there any areas of the site that are disturbed, but will likely lie dormant for over 14 days?	☐	☐
2. Have all dormant, disturbed areas been temporarily stabilized in their entireties?	☐	☐
3. Have disturbed areas outside the silt fence been seeded or mulched?	☐	☐
4. Have soil stockpiles that will sit for over 14 days been stabilized?	☐	☐
5. Has seed and mulch been applied at the proper rate? In general, seed is applied at 3 to 5 lbs per 1000 sq ft and straw mulch is applied at 2-3 bales per 1000 sq ft.	☐	☐
6. Has seed or mulch blown away? If so, repair.	☐	☐

Note areas where repairs or maintenance is needed or where this practice needs to be applied:

PERMANENT STABILIZATION

Key things to look for ...

	Yes	No
1. Are any areas at final grade?	☐	☐
2. Has the soil been properly prepared to accept permanent seeding?	☐	☐
3. Has seed and mulch been applied at the appropriate rate (see Chapter 7 of the ***Rainwater*** manual)?	☐	☐
4. If rainfall has been inadequate, are seeded areas being watered?	☐	☐
5. For drainage ditches where flow velocity exceeds 3.5 ft/s from a 10-year, 24-hour storm has matting been applied to the ditch bottom?	☐	☐
6. If the flow velocity exceeds 5.0 ft/s, has the ditch bottom been stabilized with rock rip-rap? **NOTE**: Rock check dams may be needed to slow the flow of runoff.	☐	☐
7. Has rock rip-rap been placed under all storm water outfall pipes to prevent scouring in the receiving stream or erosion of the receiving channel?	☐	☐
8. For sites with steep slopes or fill areas, is runoff from the top of the site conveyed to the bottom of the slope or fill area in a controlled manner so as not to cause erosion?	☐	☐

Note areas where repairs or maintenance is needed or where this practice needs to be applied:

NON-SEDIMENT POLLUTION CONTROL

Key things to look for ...

	Yes	No
1. Has an area been designated for washing out concrete trucks? Washings must be contained on site within a bermed area until they harden. The washings should never be directed toward a watercourse, ditch or storm drain.	☐	☐
2. Is waste and packaging disposed of in a dumpster? Do not burn them on site.	☐	☐
3. Are fuel tanks and drums of toxic and hazardous materials stored within a diked area or trailer and away from any watercourse, ditch or storm drain?	☐	☐
4. Are streets swept as often as necessary to keep them clean and free from sediment? NOTE: Sediment should be swept back onto the lot - not down the storm sewers.	☐	☐
5. Are stockpiles of soil or other materials stored away from any watercourse, ditch or storm drain?	☐	☐
6. Have stream crossings been constructed entirely of non-erodible material?	☐	☐
7. If an area of the site is being dewatered, is it being pumped from a sump pit or is the discharge directed to a sediment pond? **NOTE**: if you must lower ground water, the water may be discharged to the receiving stream as long as the water remains clean. Be sure not to co-mingle the clean ground water with sediment-laden water or to discharge it off-site by passing it over disturbed ground.	☐	☐

Note areas where repairs or maintenance is needed or where this practice needs to be applied:

Site Name: _____ Date: _____

Name (print)	Company	Time	
		In	Out

Comments: _____

Endpoint.
Strategy. Science. Sustainability.

CONTRACTOR'S QUALITY CONTROL DAILY REPORT

REPORT NO. 1 SHEET 1 OF 1

PROJECT	CONTRACT NO.	DATE
CONTRACTOR'S REPRESENTATIVE ON THE JOB		
WEATHER (Rain, Snow, Cloudy, Windy, etc.)	GROUND CONDITIONS (Dry, Damp, Wet, Frozen, etc.)	

1. PRIME CONTRACTOR:

NO. EMPLOYEES BY JOB CATEGORIES (Arrival and Departure)	Hours	HEAVY EQUIPMENT ON JOB (Arrival and Departure)	NO. UNITS	HRS. WORKING		
				YES	NO	Comments

WORK PERFORMED BY PRIME CONTRACTOR:

MATERIALS DELIVERED (Arrival/MSDS)	OFFICIAL VISITORS TO SITE (Arrival and Departure)

2A. SUBCONTRACTOR,

NO. EMPLOYEES BY JOB CATEGORIES (Arrival and Departure)	Hours	HEAVY EQUIPMENT ON JOB (Arrival and Departure)	NO. UNITS	HRS. WORKING		
				YES	NO	Comments

WORK PERFORMED BY SUBCONTRACTOR:

3. SPECIFIC INSPECTIONS: (Inspections performed, results, and corrective actions)

4. TESTING: ☐1 Check if any testing was performed today. (Complete and attach Test Report Information Sheets.)

Type and Location of Testing:

5. CONSTRUCTION DEFICIENCIES OR RE-TESTING REQUIRED. AS A RESULT OF GOVERNMENT ONSITE QA:

6. HEALTH AND SAFETY OBSERVATIONS OR ACTIONS TAKEN:

7. CONTRACTOR DELAYS/PROBLEMS/DEFICIENCIES/CORRECTIVE ACTIONS:

8. REMARKS:

9. CERTIFICATION:

I certify that the above report is complete and correct and that I, or my authorized representative, have inspected all work performed this day by the prime contractor and each subcontractor and determined that all materials, equipment, and workmanship are in strict compliance with the RD, SAP/QAPP, and USACE requirements.

Contractor's Quality Control Representative

_____

FIELD CHANGE REQUEST

FCR NO. _____ DATE INITIATED _____
PROJECT _____
CONTRACT NO. _____

REQUESTOR IDENTIFICATION
NAME_____ ORGANIZATION _____ PHONE _____

TITLE _____ SIGNATURE

BASELINE IDENTIFICATION
BASELINE(S) AFFECTED ☐ Cost ☐ Scope ☐ Milestone ☐ Method of Accomplishment

AFFECTED DOCUMENT (TITLE, NUMBER AND SECTION)

DESCRIPTION OF CHANGE:

JUSTIFICATION:

IMPACT OF NOT IMPLEMENTING REQUEST:

PARTICIPANTS AFFECTED BY IMPLEMENTING REQUEST:

COST ESTIMATE ($) __0__ ESTIMATOR SIGNATURE _____
PHONE_____ DATE _____

PREVIOUS FCR AFFECTED ☐ YES ☐ NO; IF YES, FCR NO. ___

USACE COR: _____ DATE: _____

OHIO EPA PROJECT MANAGER: _____ DATE: _____

ENDPOINT H&S MANGER: _____ DATE: _____

QRG 2.2 FIRST RESPONDER REPORTING FORM

Collect as much of the information on the top half of this form as possible before making initial notification. Complete the top and bottom of the form before turning in to Range Operations.

Name of individual reporting spill:_____

When did the spill occur (Date and Time)? _____

Spill Location (Building or area name / number, indoors or out; if vehicle involved, type and bumper number):

_____

What was spilled?_____**How much was spilled?** _____

Rate at which material is currently spilling. _____

Extent of spill travel? _____

Did the spill reach water (ditch, creek, stream, pond, well head)? _____

Number of injured personnel and type injuries, if applicable. _____

Do you need the Fire Department to respond to protect life, property, and environment? _____

Unit:_____**State:**_____**Report Date & Time:**_____

On Scene Coordinator Name and Grade:_____**Phone:** _____

How did the spill occur (be specific)? _____

_____

What remedial action was taken? _____

_____

Was soil and absorbent material generated?_____**How much?** _____

What is the location of the soil and absorbents? _____

Was the Environmental Office contacted (yes or No, date and time)? _____

Who did you talk to in the Environmental Office? _____

Was the site cleared by the Env. Office (Yes or No, date and time)? _____

Who cleared the site (name and grade, date and time)? _____

Initial information is critical. Get as much information as you can, but don't hesitate to make the initial notification if a spill is moving or worsening rapidly!

This form must be completed for all releases and turned-in to CJAG Range Operations within 24 hours.

FIRST RESPONDER SPILL/RELEASE RESPONSE ACTIONS

Units or contractors performing training or other operations at Camp James A. Garfield shall be responsible for adhering to the provisions identified in the Integrated Environmental Contingency Plans (IECP). A copy of the IECP may be obtained from the Camp James A. Garfield Environmental Supervisor. Following discovery of a spill (any size), the procedures outlined below shall be executed where applicable:

1. **If necessary, initiate evacuation of the immediate area.**
2. **Notify Camp James A. Garfield Range Operations via two-way radio or by calling (614) 336-6041, and report information contained on the "First Responder Reporting Form" if it is known or can reasonably be determined. This form has been copied on the opposite side of this page. If Range Operations cannot be reached, contact a Camp James A. Garfield OSC (listed below).**
3. **Stop spill flow when possible without undue risk of personal injury.**
4. **If trained, contain the spill using available spill response equipment or techniques.**
5. **Make spill scene OFF LIMITS to unauthorized personnel.**
6. **Restrict all sources of ignition when flammable substances are involved.**
7. **Report to the OSC upon his/her arrival to the scene. Turn in a completed copy of the Camp James A. Garfield First Responder Form to Range Operations for ALL releases, even ones cleaned up by the reporter.**

TELEPHONE NUMBER

When Camp James A. Garfield Range Operations is *not available*, the OSC *must be contacted* by the discoverer/first responder following a release if it is in water, at or above a reportable quantity (25 gallons or more of POL), a hazardous or extremely hazardous substance, a hazardous waste, or involves fire, explosion, or is otherwise a major incident.

NAME	JOB TITLE	OFFICE	24 HOUR
Camp James A Garfield Range Operations	Operations and Training	(614)336-6041	(614) 202-5783
Tim Morgan (Primary OSC)	Environmental Supervisor	(614)336-6568	(330)322-7098
Brad Kline (Alternate OSC)	Environmental Specialist	(614)336-4918	Contact Alternate
Katie Tait (Alternate OSC)	Environmental Specialist	(614)336-6136	Contact Alternate
Joint Forces Command (Alternate POC)	OHARNG Emergency Center	(888)637-9053	(888)637-9053

Off-site (from Camp James A. Garfield area code 614 phones)

Ravenna Dispatch 9-1-330 296-6486

SEE REVERSE FOR FIRST RESPONDER REPORTING FORM

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SAFETY CHECKLIST FOR MACHINERY, MECHANIZED EQUIPMENT, AND OTHER MOBILE EQUIPMENT

Project Name:
Contract Number:

Equipment Name and Number:
Owned or Leased?

Contractor:	Subcontractor:
Contractor Inspector:	Date Inspected:

CHECKLIST	Yes	No	N/A
1. Are initial and daily/shift inspection records available?			
2. Are only qualified operators assigned to operate equipment?			
3 Are sufficient lights provided for night operations?			
4. Does the unit have at minimum a 5-B:C fire extinguisher?			
5. Is there an effective working reverse alarm?			
6. Is the unit shut down for refueling?			
7. Are moving parts, shafts, sprockets, belts, etc., guarded?			
8. Is protection against hot surfaces, exhausts, etc., provided?			
9. Are fuel tanks located in a manner to prevent spills or overflow from running onto the engine exhaust or electrical equipment?			
10. Are exhaust discharges directed so they do not endanger persons or obstruct operator vision?			
11. Are seat belts provided for each person required to ride on the equipment?			
12. Is protection (grills, canopies, screens) provided to shield operators from falling or flying objects?			
13. Is roll-over protection provided (ROPS)?			

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SAFETY CHECKLIST FOR MACHINERY, MECHANIZED EQUIPMENT, AND OTHER MOBILE EQUIPMENT

CHECKLIST	Yes	No	N/A
14. Is a safe means of access to the cab provided (steps, grab bars, non-slip surfaces)?			
15. Are adequate head and taillights provided?			
16. Have the brakes been tested and found satisfactory?			
17. Does the unit have an emergency brake which will automatically stop the equipment upon brake failure? Is the system manually operable from the driver's position?			
18. Is all equipment with windshields equipped with powered wipers and defogging or defrosting system?			
19. Are all vehicles that will be parked or moving slower than normal traffic on haul roads equipped with a yellow flashing light or flashers visible from all directions?			
20. Is the slow moving emblem used on all vehicles which by design move at 25 MPH or less on public roads?			
21. Have air tanks been tested and certified?			
22. Is an air pressure gauge in working condition installed on the unit?			
23. Does the air tank have an accessible drain valve?			
24. Have the hydraulic/operating systems been checked for leaks?			
25. Remarks: (Enter action taken for all "No" answers)			

SSHO Signature:
Date:

U.S. Army Corps of Engineers

RVAAP-34 Sand Creek Disposal Road Landfill
Site and Silt Fence Inspection Form

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Date:_____ Time: _____

Weather: (include days since last rainfall and amount in inches of last rainfall)

_____

_____

_____

SILT FENCE INSPECTION

Are silt fences intact? Yes ☐ No ☐

If no, describe status when arrived at site and maintenance required for silt fences:

_____

_____

_____

_____

_____

_____

Percentage of grass coverage_____%

Where photos taken at the site? Yes ☐ No ☐

SITE INSPECTION

Is the site in good shape (e.g., no debris)?

If no, describe status when arrived at site and maintenance required to improve site condition: Yes ☐ No ☐

_____

_____

_____

_____

_____

_____

If site requires additional actions beyond what can be done during the inspection, please contact the Project Manager immediately to coordinate site improvements.

ADDITIONAL COMMENTS

_____

_____

_____

_____

Recorded By:_____ **Date:**_____

QC Checked By:_____ **Date:**_____

U.S. Army Corps of Engineers

RVAAP-34 Sand Creek Disposal Road Landfill
Site Restoration Inspection Form

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Date/Time:_____ Completed by: _____

SITE RESTORATION INSPECTION

Final grading completed?	Yes ☐ No ☐ N/A ☐
Has seeding been sown into soil?	Yes ☐ No ☐ N/A ☐
Has all equipment been removed from the site?	Yes ☐ No ☐ N/A ☐
Has all non-impacted vegetation been mulched?	Yes ☐ No ☐ N/A ☐
Have all vegetation mulch/rock been evenly spread across site?	Yes ☐ No ☐ N/A ☐
Temporary stormwater/erosion controls removed?	Yes ☐ No ☐ N/A ☐
Were all disturbed areas seeded within 7 days of excavation, backfilling/final grading?	Yes ☐ No ☐ N/A ☐
Is seed established? (70% coverage is required)	Yes ☐ No ☐ N/A ☐
Is silt fencing intact?	Yes ☐ No ☐ N/A ☐
Are there signs of erosion (cracks/ruts/gullies/minimal grass coverage/slope failure)?	Yes ☐ No ☐ N/A ☐
Have disturbed areas outside the silt fence been seeded or mulched?	Yes ☐ No ☐ N/A ☐
Has seed or mulch blown away? If so, repair.	Yes ☐ No ☐ N/A ☐

Maintenance required for above issues:

_____

_____

_____

U.S. Army Corps of Engineers

RVAAP-34 Sand Creek Disposal Road Landfill
Initial Installation Inspection for Storm Water Controls

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Date/Time:_____ Completed by: _____

Initial Installation Inspection for Storm Water Controls

Is the silt fence at least 4 inches to 6 inches into the ground?	Yes ☐ No ☐
Is the trench backfilled to prevent runoff from cutting underneath the silt fence?	Yes ☐ No ☐
Is the silt fence pulled tight so it will not sag when water builds up behind it?	Yes ☐ No ☐
Are the ends brought upslope of the rest of the silt fence so as to prevent runoff from going under the ends?	Yes ☐ No ☐
Is the silt fence on a level contour?	Yes ☐ No ☐
Have all gaps and tears in the silt fence been eliminated?	Yes ☐ No ☐

Maintenance required for above issues:

_____

_____

_____

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TAILGATE SAFETY MEETING FORM

Instructions
To be competed by supervisor prior to beginning of new job, when changes in work procedures occur, or when additional hazards are present.

NAME ,TYPE, LOCATION OF PROJECT OR WORK ACTIVITY:

TOPICS/HAZARDS DISCUSSED:

INFORMAL TRAINING CONDUCTED (Name, topics):

NAMES OF EMPLOYEES:

Supervisors Signature/Date: _____

U.S. Army Corps of Engineers

RVAAP-34 Sand Creek Disposal Road Landfill
Truck Inspection Form

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Date/Time:_____ **Completed by:**_____

Truck/License Number:_____ ***Trucking Company***:_____

Type of Load Hazardous Waste Soil or Non-hazardous Waste Soil (circle one)

Is the truck lined (if required by disposal facility)? Yes ☐ No☐

Are all sides of truck and its wheels cleaned of all debris? Yes ☐ No☐
If no, describe actions taken.

_____

_____

_____

_____

Is the truck covered? Yes ☐ No☐

Is waste manifest (or shipping papers) completed and in the truck? Yes ☐ No☐

Comments:

_____

_____

_____

_____

CAMP RAVENNA WASTE MANAGEMENT GUIDELINES

PURPOSE: Guidelines to be followed by contractors working at Camp Ravenna Joint Military Training Center who are generating/shipping Hazardous, Non-Hazardous, Special or Universal Waste.

POLICY: The policy at Camp Ravenna is to comply with all local, state, federal and installation requirements. Contractor is responsible for waste minimization and is required to recycle materials if possible.

Restoration Program POC: Katie Tait (614) 336-6136 Military & Non-Restoration POC: Brad Kline (614) 336-4918

Coordination:

- Coordinate all waste generation and shipments with the appropriate Camp Ravenna POC listed above or the Environmental Supervisor in their absence at (614) 336-6568.
- Notify Camp Ravenna POC prior to waste sampling for characterization. Details about sampling activities must be included (i.e., number of sample, analyticals, etc.).
- All Hazardous and Non-Hazardous waste management storage locations must be pre-approved prior to generation.
- Ensure all labels include: Date, Contractor, and Waste Type.
- When contractors have waste onsite, a weekly Inspection inventory must be completed and submitted to the appropriate POC in the Camp Ravenna environmental office.
- All wastes shall be tracked and logged throughout the duration of the project. Contractor will provide Camp Ravenna POC with a monthly rollup report of all waste and recycled streams generated by no later than the 10th day of the following month.

Hazardous Waste Treatment, Storage and Disposal Facilities and Waste Haulers: Contractors are required to utilize hazardous waste haulers and Treatment, Storage, and Disposal Facilities on the latest Defense Reutilization Marketing Office (DRMO) approved list. The current qualified waste hauler and TSDF list can be viewed by following the "Qualified Facilities" and "Qualified Transporters" links found on the DLA Hazardous Waste Disposal Homepage, http://www.dla.mil/DispositionServices/Offers/Disposal/HazardousWaste/HazWasteDisposal.aspx.

Hazardous or Non-Hazardous manifest form, the following must be included:

- Military and non-restoration operations waste Site Name = Camp Ravenna Joint Military Training Center. Mailing and Site address: Camp Ravenna ENV, 1438 State Route 534 SW, Newton Falls, Ohio 44444, (614) 336-4918. Ohio EPA ID # – OHD981192925.
- Restoration Program waste Site Name = Former Ravenna Army Ammunition Plant. Mailing address is same as address above. Site address: 8451 State Route 5, Ravenna, Ohio 44266, (614) 336-6136. Ohio EPA ID # – OH5210020736.
- Contractor's shipping Hazardous Waste must provide a Land Disposal Restriction (LDR) in accordance with 40 CFR Part 268.
- Profiling:
  - The required shipping documentation (i.e. waste profile and executive summary of lab reports (if available)) need to be submitted to appropriate Camp Ravenna POC or designee(s) for approval and signature prior to shipping.
  - Results of characterization must be submitted to appropriate Camp Ravenna POC within 30 days after collecting sample.
- Manifests - Hazardous and Non-Hazardous:
  - The waste carrier/transporter provides appropriate manifest to the contractor.
  - The contractor is required to:
    - Ensure that Camp Ravenna POC or designee(s) is available to sign the manifest on the scheduled day of shipment;
    - Verify that each manifest is properly completed and signed by Camp Ravenna POC or designee(s);
    - Provide the Generator copy of the manifest to Camp Ravenna POC or designee(s); and
    - Ensure that the original Generator copy of the manifest signed by the treatment storage disposal facility is returned to Camp Ravenna within 30 days of the shipping date for Hazardous and Non-Hazardous Waste.
    - The use of a Bill of Lading, in lieu of a waste manifest, must be approved by the Camp Ravenna environmental office.

All satellite accumulation storage sites and containers will comply with 40CFR 262.34(c)(1):

- Any material that is subject to Hazardous Waste Manifest Requirements of the US Environmental Protection Agency must comply with 40 CFR Part 262.
- From the time any waste is placed in a satellite storage container, proper labeling must be on the container (proper labeling includes date, contractors name and product type).
- Pending analysis label is to be used from the time the sample is taken until the results are received.
- In no case will waste labeled pending analysis exceed 45 days.

All Camp Ravenna Hazardous and Non-Hazardous records are maintained at the Camp Ravenna environmental office, point of contacts are Katie Tait at (614) 336-6136 and Brad Kline at (614) 336-4918.

CAMP RAVENNA WEEKLY NON-HAZARDOUS & HAZARDOUS WASTE INSPECTION/INVENTORY SHEET

Contractor: _____ Month: _____ Year: _____ Waste Description: _____

Container Nos. _____

	WEEK 1	WEEK 2	WEEK 3	WEEK 4
	Date: **Time:**	**Date:** **Time:**	**Date:** **Time:**	**Date:** **Time:**
Point of Contact (Name / Number)				
Project Name:				
Contracting Agency and POC:				
Waste Determination: Pending Analysis, Hazardous, Non-Hazardous, etc.				
*Location on installation:				
Date Generated:				
Projected date of disposal:				
Non-Haz, Satellite, 90 day storage area				
Waste generation site:				
Number of Containers (size / type):				
Condition of Container:				
Containers closed, no loose lids, no loose bungs?	yes / no	yes / no	yes / no	yes / no
Waste labeled properly and visible (40 CFR 262.34 (c) (1):	yes / no	yes / no	yes / no	yes / no
Secondary containment	yes / no	yes / no	yes / no	yes / no
Incompatibles stored together?	yes / no	yes / no	yes / no	yes / no
Any spills?	yes / no	yes / no	yes / no	yes / no
Spill kit available?	yes / no	yes / no	yes / no	yes / no
Fire extinguisher present and charged?	yes / no	yes / no	yes / no	yes / no
Containers grounded if ignitables?	yes / no / na	yes / no / na	yes / no / na	yes / no / na
Emergency notification form/info present?	yes / no	yes / no	yes / no	yes / no
Container log binder present?	yes / no	yes / no	yes / no	yes / no
Signs posted if required?	yes / no	yes / no	yes / no	yes / no
Photo's submitted	yes / no	yes / no	yes / no	yes / no
Printed Name:				
Signature:				

This form is required for Non-Hazardous and Hazardous waste including PCB and special waste.

CONTRACTORS ARE REQUIRED TO SUBMIT THIS FORM WEEKLY TO THE CAMP RAVENNA ENV OFFFICE WHEN WASTE IS STORED ON SITE.

CONTRACTORS ARE ENCOURAGED TO INCLUDE PHOTOS WITH EACH WEEKLY INSPECTION SHEET WHEN WASTE IS STORED ON SITE.

*Draw detailed map showing location of waste within the site.

Construction/Demolition Diversion and Waste Disposal Form

Project Title **Multiple AOCs at Camp James A. Garfield**

Date	Area of Concern	Material Type*	Material Description**	Total Quantity of Material	Tons/lbs/CY/each	Disposal Facility Name/City/State	Total Number of Manifest/Disposal Tickets Attached

***Material Type:** Debris, Recyclable/Reutilized Material, Universal Waste,

****Material Description:** Debris (wood, glass, asphalt, concrete, soil, plastic etc…)
Recyclable Material (scrap metal and concrete etc….)
Universal Waste (Sampling Equipment, PPE, sanitary trash)

DUST MONITORING RECORD
RAM/MiniRAM MEASUREMENTS

Time	Date	LOCATION (upwind/ downwind, reference figure for station location)	INSTRUMENT RAM/MiniRAM	Concentration (mg/ m^3)	Recorded by

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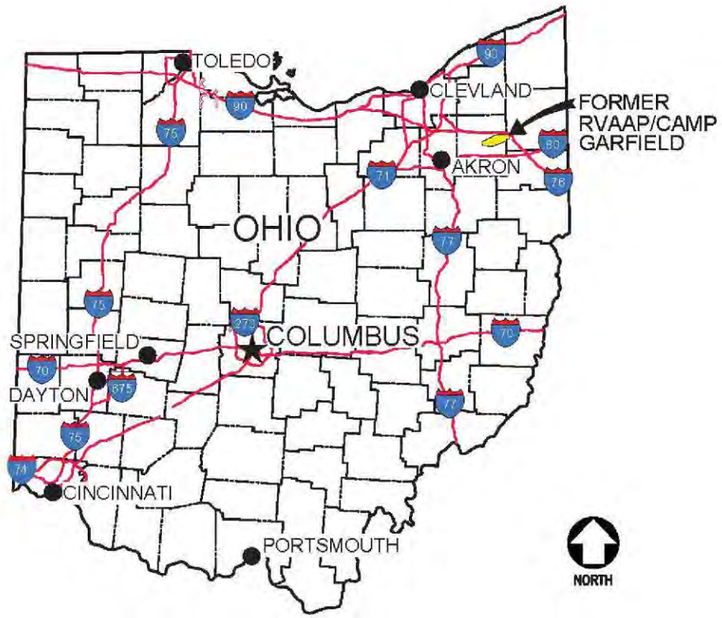
VEG MONITORING LOG

Time	Date	VEG Temperature (°F)	VEG Flow (cfm)	ThermOx Temperature (°F)	ThermOx Flow (cfm)	ThermOx Influent PID (ppm)	ThermOx Effluent PID (ppm)	Recorded by

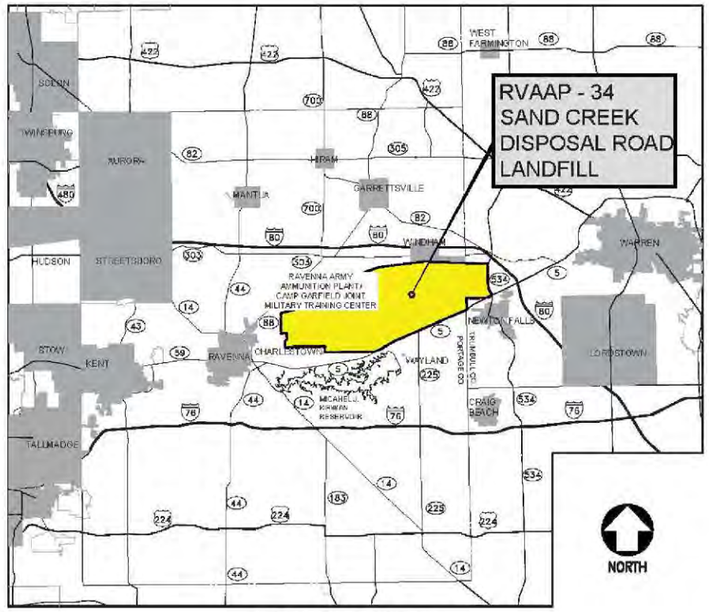
°F = degrees Farenheit
cfm = cubic feet per minute
ppm = parts per million

Attachment B
Design Drawings

U.S. ARMY ENGINEER DISTRICT
CORPS OF ENGINEERS
FORMER RAVENNA ARMY AMMUNITION PLANT - CAMP JAMES A.GARFIELD (CJAG)
RVAAP-34 SAND CREEK DISPOSAL ROAD LANDFILL



LOCATION MAP
NOT TO SCALE



VICINITY MAP

THIS REMEDIAL DESIGN ADDRESSES THE EXCAVATION AND TREATMENT OR OFF-SITE DISPOSAL OF CONTAMINATED SOILS FROM THE RVAAP-34 SAND CREEK DISPOSAL ROAD LANDFILL AREA OF CONCERN AT THE FORMER RAVENNA ARMY AMMUNITION PLANT (RVAAP)/CAMP GARFIELD JOINT MILITARY TRAINING CENTER IN RAVENNA, OHIO

APPROXIMATELY 58 CUBIC YARDS (EX SITU) (46.2 CUBIC YARDS IN SITU) OF POLYCYCLIC AROMATIC HYDROCARBON (PAH) IMPACTED SOIL WILL BE EXCAVATED AND THERMALLY TREATED USING ENDPOINT'S PATENTED VAPOR ENERGY GENERATOR (VEG) TECHNOLOGY. APPROXIMATELY 101 CUBIC YARDS (EX SITU) (84.3 CUBIC YARDS IN SITU) OF METALS IMPACTED SOILS WILL BE EXCAVATED AND DISPOSED OFFSITE.

SCOPE OF WORK

US Army Corps of Engineers
Louisville District

U.S. Army Engineer District
Corps of Engineers
Louisville, Kentucky

DATE	04/24/2019	SCALE	NOT TO SCALE	DESIGNED BY:	
PROJECT/CONTRACT NO.	W912QR17D004	DRAWN BY:		APPROVED BY:	
REV.	DATE	DESCRIPTIONS		DRAWN BY:	CHECKED BY:

PROJECT: REMEDIAL DESIGN
RVAAP-34 SAND CREEK
DISPOSAL ROAD LANDFILL

DRAWING TITLE: TITLE SHEET

US Army Corps of Engineers
Louisville District

US Army Corps of Engineers
Former Ravenna Army
Ammunition Plant/CJAG
Portage and Trumbull Counties, Ohio

Endpoint
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B-1
DRAWING NUMBER

Basemap Source: Leidos, 2014. Remedial Design for Soil, Sediment and Surface Water at RVAAP-13 Building 1200 and RVAAP-48 Anchor Test Area. Drawn by P. Holm

C:\USERS\[USER]\DROPBOX\ENDPOINT PROJECTS\RAVENNA-USACE LOUISVILLE\RAVENNA SITES\RVAAP-34 SAND CREEK DISPOSAL ROAD LANDFILL\FIGURES\CAD\APPENDIX B-DESIGN DRAWINGS APP B-2_GENERAL NOTES SAND CREEK

GENERAL NOTES

1. HEREINAFTER, THE TERM "ALANIZ-ENPOINT TEAM" IN THESE DRAWINGS SHALL REFER TO ALL ALANIZ ENDPOINT TEAM PERSONNEL AND/OR ITS SUBCONTRACTORS IMPLEMENTING THE RVAAP-34 SAND CREEK DISPOSAL ROAD LANDFILL NON-TIME CRITICAL REMOVAL ACTION WORKPLAN (NTCRA WP), UNLESS OTHERWISE NOTED.
2. THE ALANIZ-ENDPOINT TEAM SHALL COMPLETE ALL ACTIVITIES ASSOCIATED WITH THE PROJECT IN COMPLIANCE WITH APPLICABLE LOCAL, STATE, AND FEDERAL REGULATIONS AND REQUIREMENTS.
3. THE ALANIZ-ENDPOINT TEAM SHALL PERFORM ALL REMEDIAL ACTIVITIES IN COMPLIANCE WITH THE NTCRA WP, DESIGN DRAWINGS, SPECIFICATIONS AND ATTACHMENTS.
4. THE ALANIZ-ENDPOINT TEAM SHALL SUPPLY ALL EQUIPMENT, MATERIALS AND LABOR TO PERFORM THE CONTRACT REQUIREMENTS INCLUDING WORKER SAFETY EQUIPMENT.
5. THE ALANIZ-ENDPOINT TEAM SHALL COMPLY WITH SITE ACCESS PROTOCOLS.
6. ALL ALANIZ-ENDPOINT TEAM PERSONNEL AND ANY VISITORS TO THE SITE SHALL SIGN IN AND SIGN OUT ON THE DAILY SITE LOG UPON ARRIVAL AND DEPARTURE FROM THE PROJECT AREA.
7. THE ALANIZ-ENDPOINT TEAM AND ANY VISITORS TO THE SITE MUST ATTEND A DAILY HEALTH AND SAFETY TAILGATE MEETING PRIOR TO THE START OF THE DAY'S CONSTRUCTION ACTIVITIES OR PRIOR TO ENTERING THE PROJECT AREA. THESE TAILGATE MEETINGS WILL BE RUN BY THE ALANIZ-ENDPOINT TEAM CONSTRUCTION MANAGER, WHO WILL DISCUSS THE EXPECTED ACTIVITIES FOR THE DAY, POTENTIAL HAZARDS, ANTICIPATED WEATHER CONDITIONS AND ANY ADDITIONAL SAFETY TIPS OR REMINDERS. THE ALANIZ-ENDPOINT TEAM CONSTRUCTION MANAGER IS RESPONSIBLE FOR DOCUMENTING THE TAILGATE MEETING AND OBTAINING SIGNATURES FROM ALL PERSONNEL WHO HAVE BEEN BRIEFED.
8. ACCESS TO THE FORMER RVAAP/CAMP JAMES A. GARFIELD JOINT MILITARY TRAINING CENTER SHALL BE THROUGH THE MAIN GATE LOCATED OFF STATE ROUTE 5. THIS GATE IS GUARDED AND SHALL REQUIRE ADDITIONAL TIME TO GAIN ACCESS. THE ALANIZ-ENDPOINT TEAM SHALL BE REQUIRED TO ALLOW FOR DELAYS WITHOUT ADDITIONAL CHARGES.
9. TOPOGRAPHIC MAPPING DATA IS BASED ON SURVEY AND AERIAL PHOTOGRAPH INFORMATION PROVIDED IN PRIOR SITE-RELATED DOCUMENTS PREPARED BY USACE. MINOR DISCREPANCIES BETWEEN DRAWINGS AND ACTUAL FIELD CONDITIONS MAY BE ENCOUNTERED AND SHALL NOT CAUSE FOR ADDITIONAL CHARGES. THE ALANIZ-ENDPOINT TEAM SHALL VERIFY EXISTING CONDITIONS, ELEVATIONS AND DIMENSIONS PRIOR TO THE START OF CONSTRUCTION.
10. THE ALANIZ-ENDPOINT TEAM SHALL CONTACT OHARNG PRIOR TO COORDINATING AND CONDUCTING UTILITY SURVEY AND CLEARANCES.
11. STORMWATER CONTROLS SHALL BE INSTALLED PRIOR TO INITIATION OF ANY CONSTRUCTION ACTIVITY THAT MAY CAUSE EROSION OR SEDIMENTATION. STORMWATER CONTROL MEASURES SHALL BE MAINTAINED AND REINSTALLED AS NECESSARY FOR THE DURATION OF CONSTRUCTION AND RESTORATION ACTIVITIES. STORMWATER CONTROLS SHALL BE INSPECTED WEEKLY AND FOLLOWING RAIN EVENTS WITH RAINFALL TOTALING ½ INCH OR MORE.
12. EROSION CONTROL MEASURES SHALL BE PLACED WHERE INDICATED ON THE DRAWINGS, UNLESS FIELD OBSERVATIONS RESULT IN A MODIFICATION (ADDITIONAL LOCATIONS OR ELIMINATING THE NEED FOR ALTOGETHER) OF STORMWATER CONTROLS. EROSION CONTROL MEASURES SHALL MEET ALL FEDERAL AND STATE REQUIREMENTS.
13. IF UNEXPECTED MATERIALS, SUCH AS EXPLOSIVE COMPONENTS, DRUMS, CYLINDERS, ABANDONED PIPELINES, UTILITIES, ARCHEOLOGICAL ARTIFACTS OR HUMAN REMAINS ARE DISCOVERED DURING THE REMEDIAL ACTIVITIES, WORK SHALL CEASE IMMEDIATELY AND THE ALANIZ-ENDPOINT TEAM SHALL NOT RESUME WORK UNTIL APPROVAL IS GRANTED BY USACE,OHARNG OR THE OHARNG CULTURAL RESOURCE MANAGER AND THE ALANIZ-ENDPOINT TEAM CONSTRUCTION MANAGER.
14. NO WORK SHALL TAKE PLACE DURING INCLEMENT WEATHER (AS DETERMINED BY THE ALANIZ-ENDPOINT JV CONSTRUCTION MANAGER) TO MINIMIZE THE POTENTIAL FOR EROSION AND SEDIMENT RUNOFF.
15. DURING PERIODS OF HIGH WINDS, WHICH MAY RESULT IN EXCESSIVE DUST, ADDITIONAL DUST CONTROLS OR CEASING WORK MAY BE REQUIRED AS DETERMINED BY THE ALANIZ-ENDPOINT TEAM CONSTRUCTION MANAGER.
16. ALL ON-ROAD HAUL TRUCKS WILL ADHERE TO OHIO DOT TRANSPORTATION GUIDELINES. THE ALANIZ-ENDPOINT TEAM SHALL ENSURE TRUCKS DO NOT LEAVE THE PROJECT SITE IN EXCESS OF 80,000 LBS GROSS WEIGHT.
17. THE ALANIZ-ENDPOINT TEAM SHALL INSPECT HAUL TRUCKS WITHIN THE INSPECTION AREA PRIOR TO LEAVING EXCAVATION/PROJECT AREAS TO ENSURE NO SOIL/MUD IS TRACKED ONTO PUBLIC OR OHARNG ROADWAYS. ALL HAUL TRUCKS LOADS SHALL BE COVERED PRIOR TO DEPARTING PROJECT AREAS.
18. THE ALANIZ-ENDPOINT TEAM IS RESPONSIBLE FOR REMOVING ANY MATERIAL/MUD SPILLED OR TRACKED ON ROADWAYS.
19. ALL METALS-IMPACTED SOILS SHALL BE DISPOSED AT AN APPROVED OFFSITE DISPOSAL FACILITY.
20. THE ALANIZ-ENDPOINT TEAM SHALL BE RESPONSIBLE FOR FOLLOWING ALL OHARNG, FEDERAL, STATE AND LOCAL SAFETY REQUIREMENTS FOR THE PROTECTION OF ALL PERSONS AND PROPERTY. THE ALANIZ-ENDPOINT TEAM SHALL ALSO INITIATE, MAINTAIN AND SUPERVISE ALL SAFETY REQUIREMENTS AND PRECAUTIONS IN ACCORDANCE WITH THE SITE SAFETY AND HEALTH PLAN (SSHP).
21. A FIRST AID KIT AND HOSPITAL ROUTE MAP SHALL BE MAINTAINED ON-SITE BY THE ALANIZ-ENDPOINT TEAM DURING CONSTRUCTION ACTIVITIES.
22. THE ALANIZ-ENDPOINT TEAM SHALL ENSURE THIS NTCRA WP AND THE SSHP IS PRESENT ON-SITE AT ALL TIMES DURING CONSTRUCTION ACTIVITIES.
23. ALL EXCAVATION AREAS SHALL BE BACKFILLED WITH EITHER TREATED SOIL OR CLEAN SOIL IMPORTED FROM AN OFF-SITE APPROVED SOURCE AND GRADED TO MATCH EXISTING SITE CONTOURS. ALL DISTURBED AREAS SHALL BE RE-SEEDED ACCORDING TO TABLE 8-1 OF THE RVAAP-34 SAND CREEK DISPOSAL ROAD LANDFILL NTCRA WP.

MATERIAL NOTES

1. EROSION AND SEDIMENTATION CONTROL PLACEMENT AND ANCHORING SHALL BE COMPLETED IN ACCORDANCE WITH THE MANUFACTURER RECOMMENDATIONS AND ANY RELEVANT STATE OF OHIO REQUIREMENTS.

LEGEND FOR ALL DRAWINGS

- SILT FENCE
- HAUL ROUTE
- SOIL EXCAVATION AREA
- 1/B-3 ..... DETAIL WITH DRAWING SHEET NUMBER

DRAWING INDEX

DRAWING NO.	DRAWING TITLE
B-1	TITLE SHEET
B-2	GENERAL NOTES
B-3	RVAAP-34 SAND CREEK DISPOSAL ROAD LANDFILL SITE PREPARATION AND EXCAVATION PLAN
B-4	STAGING AREAS AT NACA TEST AOC

LIST OF SUBMITTALS

1. SITE SAFETY AND HEALTH PLAN (SSHP)
2. ACCIDENT PREVENTION PLAN (APP)
3. WASTE PROFILES

MEDIA AND CHEMICALS OF CONCERN

AREA	MEDIA	CHEMICALS OF CONCERN
SCss-062M	Surface Soil (0-1 ft. bgs)	Arsenic
SCsb-037M	Soil (0-10 ft. bgs)	Arsenic
SCss-060M	Surface Soil (0-1 ft. bgs)	PAHs
SCss-049M	Soil (0-6 ft. bgs)	PAHs

NOTE:
CHEMICALS OF CONCERN WERE NOT IDENTIFIED FOR SEDIMENT OR SURFACE WATER.

ESTIMATED SOIL TREATMENT/WASTE QUANTITIES

LOCATIONS REQUIRING REMEDIATION	APPROXIMATE EXCAVATION AREA SQ. FT.	ESTIMATED TREATMENT VOLUME CU. YD.	ESTIMATED WASTE VOLUME CU. YD.	ESTIMATED IMPORTED CLEAN FILL CU. YD.
SCss-062M (Arsenic)	1,912	NA	71 in situ (85 ex-situ)	71 in situ (85 ex-situ)
SCsb-037M (Arsenic)	360	NA	13.3 in situ (16 ex-situ)	13.3 in situ (16 ex-situ)
SCss-060 (PAHs)	1,032	38.2 in situ (46 ex-situ)	NA	NA
SCss-049 (PAHs)	216	8 in situ (10 ex-situ)	NA	NA

NOTES:
1. ESTIMATED QUANTITIES MAY CHANGE DUE TO CONFIRMATION SAMPLING.
2. THE ALANIZ-ENDPOINT TEAM SHALL VERIFY QUANTITIES.

DESIGNED BY: | APPROVED BY:
DRAWN BY: | CHECKED BY:
SCALE: NOT TO SCALE | VERT. DATUM:
DATE: 04/04/2019 | PROJECT/CONTRACT NO.:

REV.	DATE	DESCRIPTION	DESIGN BY	CHECKED BY

PROJECT: REMEDIAL DESIGN RVAAP-34 SAND CREEK DISPOSAL ROAD LANDFILL

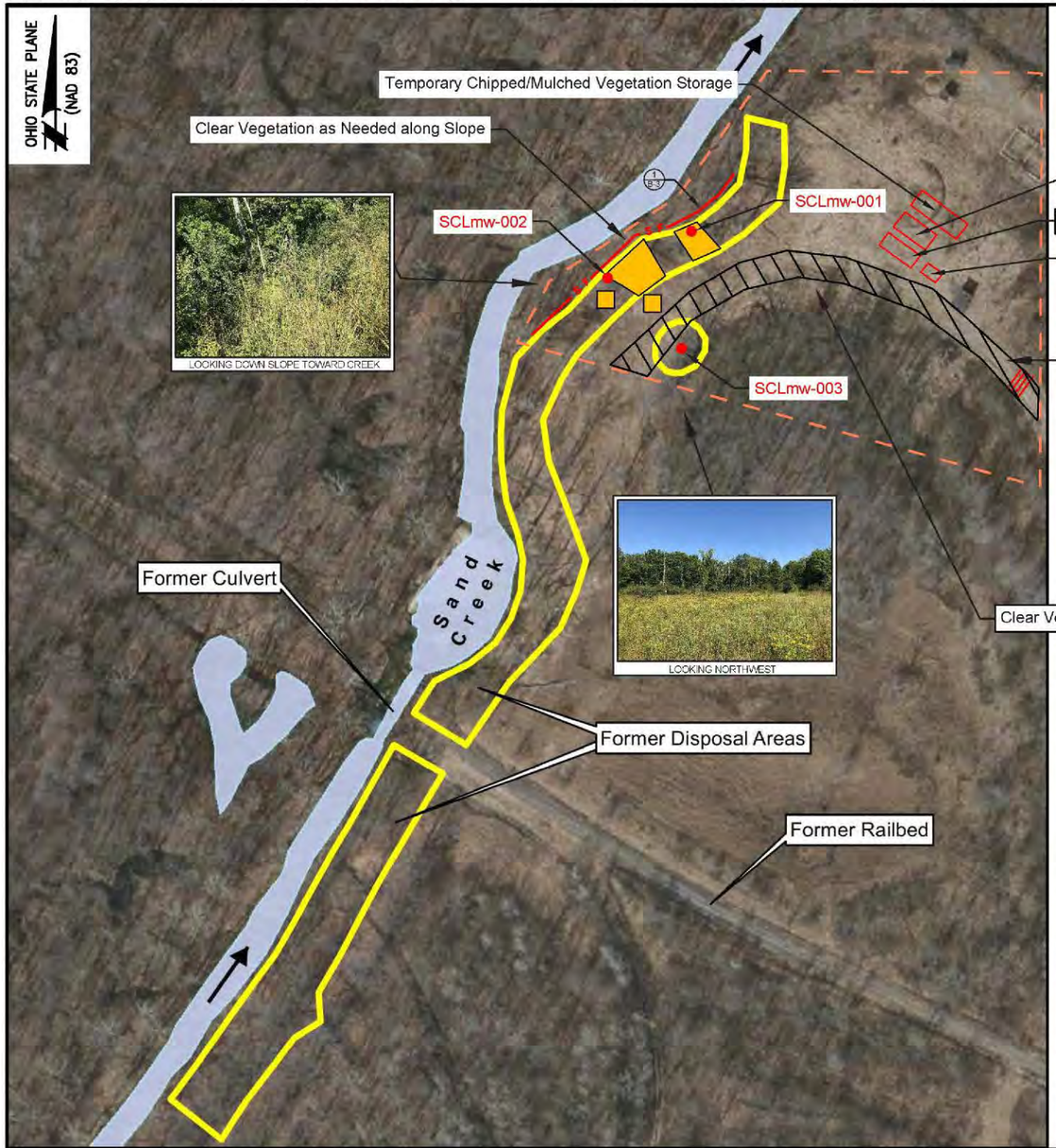
DRAWING TITLE: GENERAL NOTES

US Army Corps of Engineers Louisville District

CLIENT: US Army Corps of Engineers Former Ravenna Army Ammunition Plant/CJAG Portage and Trumbull Counties, Ohio

Endpoint Strategy Science Sustainability

DRAWING NUMBER: B-2



SITE PREPARATION

1. DRAWINGS AND NOTES SERVE ONLY AS GUIDLINES. ALL STORMWATER CONTROLS SHALL MEET OHIO'S "RAINWATER AND LAND DEVELOPMENT" STANDARDS.

2. THE ALANIZ-ENDPOINT TEAM WILL BE RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF ALL STORMWATER CONTROLS. WEEKLY INSPECTIONS AND INSPECTIONS WITHIN 24 HOURS OF A STORM EVENT GREATER THAN 0.5 INCHES SHALL BE CONDUCTED BY THE ALANIZ-ENDPOINT TEAM.

3. SILT FENCING LOCATIONS MAY BE REVISED AT THE DISCRETION OF THE ALANIZ-ENDPOINT TEAM CONSTRUCTION MANAGER BASED ON SITE CONDITIONS AND REMEDIAL DESIGN SAMPLING RESULTS.

4. ACCESS IMPROVEMENTS TO PREVENT EXCESS DUST, TIRE RUTTING, AND MUD SHALL BE REQUIRED AS NEEDED TO SUPPORT CONSTRUCTION ACTIVITIES.

5. THE ALANIZ-ENDPOINT TEAM SHALL CLEAR TREES AND VEGETATION ALONG THE GRAVEL ROAD/HAUL ROUTE AND SURROUNDING EXCAVATION AREAS. ALL TREES GREATER THAN 3 IN. IN DIAMETER THAT REQUIRE REMOVAL SHALL BE CUT BETWEEN THE MONTHS OF OCTOBER AND MARCH.

6. TREES LESS THAN 4 IN. IN DIAMETER AND OTHER VEGETATION NOT IN CONTACT WITH IMPACTED SOILS SHALL BE CHIPPED/MULCHED AND SPREAD ACROSS THE SITE AND SURROUNDING AREAS FOLLOWING CONSTRUCTION ACTIVITIES. TREES GREATER THAN 4 IN. IN DIAMETER SHALL BE TEMPORARILY STORED IN THE DESIGNATED LOCATION AND DISPOSED OFFSITE WITH IMPACTED SOILS.

7. ALL TREE/VEGETATION STAGING AND REMOVAL SHALL BE COORDINATED WITH OHARNG.

8. THE ALANIZ-ENDPOINT TEAM SHALL TAKE CARE TO PROTECT THE EXISTING MONITORING WELLS AND WILL BE RESPONSIBLE TO REPAIR ANY DAMAGE TO THE WELL AS A RESULT OF CONSTRUCTION ACTIVITIES.

9. HAUL ROUTE WILL BE HARDENED AS NECESSARY TO MINIMIZE SITE DISTURBANCE.

NOTES:

1. INITIAL EXCAVATION BOUNDARIES TO BE DETERMINED AND STAKED IN THE FIELD USING HISTORICAL SAMPLE COORDINATES AND APPROXIMATE EXCAVATION EXTENTS SHOWN ON FIGURES IN THE NTCRA WORKPLAN AND PRIOR DECISION DOCUMENTS..

2. EXCAVATION EXTENTS ARE SUBJECT TO CHANGE BASED ON CONFIRMATION SAMPLING RESULTS.

LEGEND:

- AOC BOUNDARY
- PROJECT SITE
- SILT FENCE
- HAUL ROUTE
- SOIL EXCAVATION AREA
- GROUNDWATER MONITORING WELL

SOIL REMOVAL ACTIVITIES

1. UTILITY CLEARANCE WILL BE CONDUCTED WITHIN THE EXCAVATION BOUNDARIES.

2. EXCAVATION BOUNDARIES WILL BE SURVEYED PRIOR TO SOIL REMOVAL.

3. WASTE PROFILE SAMPLES WILL BE COLLECTED FROM THE EXCAVATION AREAS PRIOR TO EXCAVATION ACTIVITIES.

4. IMPACTED SOILS/TOPSOIL VEGETATION FROM METALS-IMPACTED AREAS WILL BE LOADED DIRECTLY INTO HAULING TRUCKS FOR OFFSITE DISPOSAL.

SITE RESTORATION ACTIVITIES

1. FINAL EXCAVATION BOUNDARIES WILL BE SURVEYED.

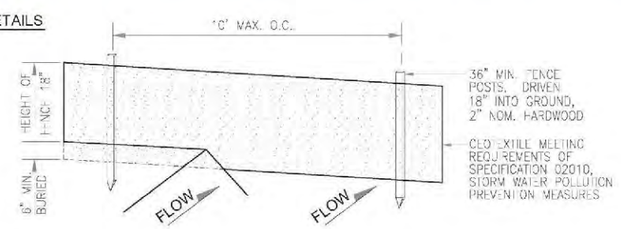
2. EXCAVATION PITS WILL BE BACKFILLED USING CLEAN IMPORTED SOIL OR CONFIRMED TREATED SOIL. BACKFILLING AREAS WILL BE RE-GRADED TO MATCH SURROUNDING ELEVATIONS.

3. PERFORM BACKFILLING/RE-VEGETATION IN ACCORDANCE WITH NTCRA WORKPLAN.

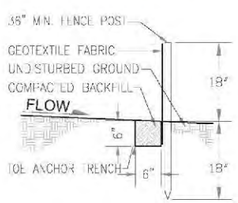
4. OHARNG WILL APPROVE FINAL SITE RESTORATION.

0 75 150 300
SCALE: 1" = 150'

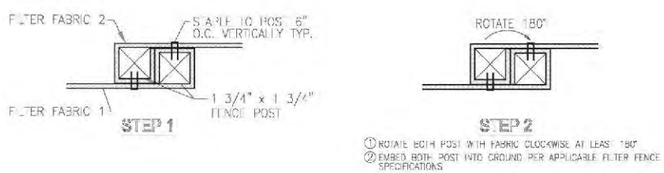
1 / B-3 SILT FENCE DETAILS
NOT TO SCALE



PERSPECTIVE VIEW



FENCE SECTION



SILT FENCE CONNECTION POINT

DESIGNED BY:	DRAWN BY:	SCALE: NOT TO SCALE	DATE: 9/4/2019	REV	DATE	DESCRIPTIONS	DRAWN BY	CHECKED BY
APPROVED BY:	CHECKED BY	WIN 20X11 (TABLOID)	PROJECT/CONTRACT NO.					

PROJECT: REMEDIAL DESIGN RVAAP-34 SAND CREEK DISPOSAL ROAD LANDFILL

DRAWING TITLE: SITE PREPARATION AND EXCAVATION PLAN

US Army Corps of Engineers Louisville District

US Army Corps of Engineers
Former Ravenna Army Ammunition Plant/CJAG
Portage and Trumbull Counties, Ohio

C. SHT:

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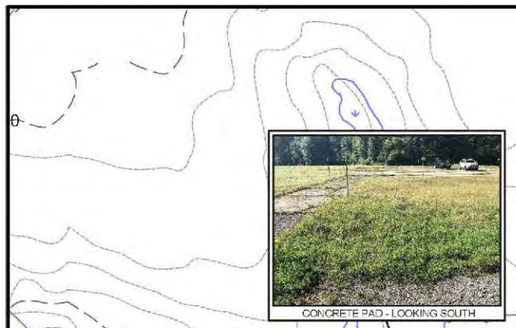
B-3
DRAWING NUMBER

Basemap Source: Leidos, 2014. Remedial Design for Soil, Sediment and Surface Water at RVAAP-13 Building 1200 and RVAAP-48 Anchor Test Area. Drawn by P. Holm and Leidos, 2017. Final Proposed Plan for Soil, Sediment and Surface Water at RVAAP-42 Load Line 9. Drawn by P. Holm



CONCRETE PAD - LOOKING SOUTH

VEG STAGING AREA - LOOKING SE

FORMER RUNWAY - LOOKING EAST

VEG Staging Area/
Propane and Water Tanks

Stockpiling Area

Decontamination Area/
Temporary IDW Storage

Alternate Haul Route
(During Area 1 Construction)

Track-out grates

CONCRETE
PAD

VEG/Misc. Equipment Storage

Open Area Available for Use
(If Needed)

FORMER CRASH
AREA WELL PIT

FORMER CRASH
AREA RESERVOIR

1080
1078
1076
1074
1070

LEGEND:

- GRAVEL ROAD
- SURFACE WATER
- WETLAND (2014 INRMP)
- INTERMITTENT STREAM
- GROUND CONTOUR (10-FT)
- GROUND CONTOUR (2-FT)
- APPROXIMATE OPEN DEMOLITION AREA #1 AOC BOUNDARY
- CONSTRUCTION STAGING AREA
- SF SILT FENCING
- TRUCK TRAFFIC ARROW

SOIL AGGREGATES

- FORMER PLANE REFUELING AND CRASH STRIP AREA
- FORMER CRASH AREA

OHIO STATE PLANE (NAD 83)

0 100 200

SCALE: 1" = 200'

PROJECT:
REMEDIAL DESIGN
RVAAP-34 SAND CREEK
DISPOSAL ROAD LANDFILL

DRAWING TITLE:
STAGING AREAS AT
NACA TEST AREA AOC

REV	DATE	DESCRIPTIONS	DRAWN BY	CHECKED BY

DESIGNED BY:
DRAWN BY:
CHECKED BY
APPROVED BY:

DATE: 04/04/2019
PROJECT/CONTRACT NO.
SCALE: NOT TO SCALE
WBS/ORG/TASKS

US Army Corps of Engineers
Louisville District

CLIENT:
US Army Corps of Engineers
Former Ravenna Army
Ammunition Plant/CJAG
Portage and Trumbull Counties, Ohio

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B-4
DRAWING NUMBER

Attachment C
Ohio EPA Correspondence

Ohio Environmental Protection Agency

Mike DeWine, Governor
Jon Husted, Lt. Governor
Laurie A. Stevenson, Director

January 8, 2021

TRANSMITTED ELECTRONICALLY

Mr. Kevin Sedlak
Restoration Program
Manager ARNG-ILE Clean Up
Camp James A Garfield JTC
1438 State Route 534 SW
Newton Falls, OH 44444

RE: US Army Ammunition Plt
RVAAP Remediation Response
Project Records
Remedial Response
Portage County
ID # 267000859137

Subject: Ohio EPA Comments on the "Draft Non Time Critical Removal Action Work Plan for RVAAP-34 Sand Creek Disposal Road Landfill" dated October 16, 2020

Dear Mr. Sedlak:

The Ohio Environmental Protection Agency (Ohio EPA) has received and reviewed the "Draft Non Time Critical Removal Action (NTCRA) Work Plan for RVAAP-34 Sand Creek Disposal Road Landfill" at the Former Ravenna Army Ammunition Plant, Portage and Trumbull Counties, Ohio (Camp Garfield). This document was received via email at Ohio EPA's Northeast District Office (NEDO), Division of Environmental Response and Revitalization (DERR) on October 19, 2020. The report was prepared for the United States Army Corps of Engineers (USACE) on behalf of the National Guard Bureau by Endpoint Consulting, Incorporated and Alaniz Associates Corporation under Contract Number W912QR-17-C-0045. Comments on the document based on Ohio EPA review are provided below. Please provide responses to the comments in accordance with the Directors Findings and Orders. Additional information is necessary to approve the document.

DRAFT NTCRA WORK PLAN FOR RVAAP-34 SAND CREEK DISPOSAL ROAD LANDFILL

The selected remedial alternative for soil at the Sand Creek Disposal Road Landfill RVAAP-34, as recommended in the Engineering Evaluation/Cost Analysis (EE/CA), is Alternative 2, Excavation with Off-Site Disposal for Soil with Arsenic and Ex-Situ Thermal Treatment for Soil with polycyclic aromatic hydrocarbons (PAHs) to Attain Unrestricted (Residential) Land Use.

The scope of this activity includes the excavation and off-site disposal of soil at sample locations SCss-062M-0001-SO and SCsb-037M-0001-SO/SCsb-037M-0002-SO and ex-situ thermal treatment of soil excavated at sample locations SCss-060M-0001-SO and SCsb-049M-0001-SO. To this end, this NTCRA work plan details requirements and procedures necessary to implement the selected remedial action alternative, including a plan to excavate and dispose of arsenic-impacted soil above RVAAP background levels and excavation and thermal treatment of PAH-impacted soil exceeding residential Regional Screening Levels (RSLs), allowing for unrestricted (i.e., residential) reuse of the area of concern (AOC).

COMMENTS

Comment 1: Section 1.0: Introduction, Figure 1.4, Estimated Extent of Soil Remediation

The identification labels for areas SCsb-037M, and SCsb-049M are illegible.

> **Action Item:** Revise the map and modify area identifying labels.

Comment 2: Section 5.2.2, page 23 Ex-Situ Thermal Treatment of PAHs in Soil Using the Vapor Energy Generator (VEG) Technology, VEG Thermal Treatment Process

A description of the thermal treatment process is described in this section, but the volume or thickness of the soil in the treatment chamber is not provided. The section also explains that the temperature in the chamber reaches 500-700 degrees Fahrenheit. It is unclear if the soil temperature is specifically monitored or just the temperature within the chamber.

> **Action Item:** Clarify the what the volume (and thickness) of the soil is within the chamber and specifically if the temperature of the middle of the soil volume is monitored.

Comment 3: Section 6.1.1: Waste Profile Sampling

The section describes how sampling will take place to characterize the waste profile in proposed arsenic -impacted excavation areas prior to removal of soils. This will be based on one soil boring in each area. The section does not provide the lead time anticipated for this sampling.

> **Action Item:** Provide the anticipated lead time for this sampling event prior to excavation.

Comment 4: Section 6.6.1: Waste Profile Sampling

The report states, "[p]rior to excavating arsenic-impacted soil at the Sand Creek AOC, two in-situ waste profile samples will be collected from within the limits of each excavation." For the shallow soil excavation at SCss-062M-0001-SO, an incremental sampling methodology (ISM) sample from the zero to one-foot depth will be collected to profile the 71 cubic yards estimated for excavation. For the deep soil excavation at SCsb-037M, a discrete sample from the middle

depth of the excavation (i.e., five feet) will be collected from the center of the excavation area of approximately 13 cubic yards. It is unclear how one ISM sample will be appropriate to characterize 71 cubic yards of soil at SCss-062M-0001-SO, and how one discrete sample will be appropriate for waste profile sampling of 13 cubic yards of soil at SCsb-037M. U.S. EPA Guidance SW-846: Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, Chapter 9: Sampling Plan discusses how chemical information needs to be sufficiently precise to be considered reliable, and that "sampling precision is most commonly achieved by taking an appropriate number of samples from the population." The guidance points to the use of Formula 8 in Table 9-1 for a means of estimating an appropriate sampling effort, and that increasing the number or size of samples taken from a population increases sampling precision.

> **Action Item:** Provide rationale for the appropriateness of collecting the proposed waste profile samples or increase the number of waste profiling samples.

Comment 5: Section 6.2.2: Deep Excavation Confirmation Sampling

One discrete confirmation soil sample from each wall of the deep excavation areas is proposed at a depth of half of the excavation. At the arsenic excavation area for SCsb-037M-0001-SO/SCsb-037M-0002-SO, remedial investigation samples were collected at two depth intervals: one to five feet below ground surface at SCsb-037-M-0001-SO and five to nine feet below ground surface at SCsb-037M-0002-SO. Each of these depth intervals reported arsenic detections above a soil clean-up goal. Therefore, the deep excavation wall confirmation discrete sampling at this area should, at a minimum, have two depth locations at each wall, one in the one to five-foot interval and one at the five to nine-foot interval, to confirm arsenic concentrations remaining, if any, are below clean-up goals.

> **Action Item:** Revise the depth proposed for the wall confirmation discrete soil sampling at remedial area SCsb-037M-0001-SO/SCsb-037M-0002-SO.

Comment 6: Table 3-1. Summary of Soil COCs, Cleanup Goals, and Remediation - Volumes, Arsenic Clean-Up Goal

Footnote 1 to the table states, "Cleanup goal for arsenic based on a background 15.5 to 18.8 mg/kg and compared to 20.1 mg/kg 95%UCL [Upper Confidence Limit]". The report does not state if the original background data sets for the surface soil and subsurface soil were used to calculate the 95% UCL, or if it was the two final background values that were used to calculate the proposed 95% UCL background value. If it were the latter option, two values are not statistically appropriate to develop a 95% UCL, and the U.S. EPA 95% UCL software would give error messages. Additionally, the USACE developed separate arsenic background values to be used for the surface soil and subsurface soil, as reported in their March 2010 document "Final Facility-Wide Human Health Cleanup Goals for the Ravenna Army Ammunition Plant (RVAAP), Ravenna, Ohio" as prepared by SAIC. The Ravenna site-specific surface soil background value for arsenic is 15.4 mg/kg, and the Ravenna site-specific subsurface soil background value for arsenic is 19.8 mg/kg. These values are the background

values to use for arsenic clean-up goals for the surface and subsurface excavations as previously developed by USACE and agreed upon by Ohio EPA.

> **Action Item:** Revise footnote 1 for Table 3-1 to state the soil clean-up goals for arsenic are the surface soil background value for arsenic of 15.4 mg/kg and the subsurface soil background value for arsenic of 19.8 mg/kg.

As a precautionary response to COVID-19, Ohio EPA is currently operating with most staff working remotely. During this time, we will not be issuing hard-copy mail. This letter is an official response from Ohio EPA that will be maintained as a public record.

This "Draft Non Time Critical Removal Action Work Plan for RVAAP-34 Sand Creek Disposal Road Landfill" was reviewed by personnel from Ohio EPA. If you have questions or would like to set up a meeting to discuss these comments, you can contact me via email at kevin.palombo@epa.ohio.gov, or at (330) 963-1292.

Sincerely,

Kevin M. Palombo
Environmental Specialist
Division of Environmental Response and Revitalization

KP/sc

ec: Katie Tait, OHARNG RTLS
Steven Kvaal, USACE Louisville
Nat Peters, USACE Louisville
Rebecca Shreffler, Chenega Tri-Services
Bob Princic, Ohio EPA, NEDO, DERR
Natalie Oryshkewych, Ohio EPA NEDO, DERR
Liam McEvoy, Ohio EPA, NEDO, DERR
Thomas Schneider, Ohio EPA, SWDO, DERR
Carrie Rasik, Ohio EPA, CO, DERR

NATIONAL GUARD BUREAU
111 SOUTH GEORGE MASON DRIVE
ARLINGTON VA 22204-1373

January 29, 2021

Ohio Environmental Protection Agency
DERR-NEDO
Attn: Kevin Palombo
2110 East Aurora Road
Twinsburg, OH 44087-1924

Subject: Ravenna Army Ammunition Plant (RVAAP) Restoration Program, Portage/Trumbull Counties, Draft Non Time-Critical Removal Action Work Plan for RVAAP-34 Sand Creek Disposal Road Landfill (Ohio EPA Work Flow Activity #267000859137)

Dear Mr. Palombo:

The Army National Guard (ARNG) has reviewed comments provided by the Ohio Environmental Protection Agency (Ohio EPA) for the *Draft Non Time-Critical Removal Action (NTCRA) Work Plan for RVAAP-34 Sand Creek Disposal Road Landfill* dated October 16, 2020.

The responses on the attached comment resolution table reflect ARNG responses to Ohio EPA comments received on January 8, 2021 regarding the subject NTCRA Work Plan.

Please contact the undersigned at 614-336-6000 Ext 2053 or kevin.m.sedlak.ctr@mail.mil if there are issues or concerns with this submission.

Sincerely,

SEDLAK.KEVIN.MICHAEL.1254440171

Digitally signed by SEDLAK.KEVIN.MICHAEL.1254440171
Date: 2021.02.01 06:47:23 -05'00'

Kevin M. Sedlak
RVAAP Restoration Program Manager
Army National Guard Directorate

cc: Mark Leeper, ARNG
Bob Princic, Ohio EPA, NEDO, DERR
Tom Schneider, Ohio EPA, SWDO, DERR
Katie Tait, OHARNG, Camp James A. Garfield
Nathaniel Peters, USACE Louisville
Steve Kvaal, USACE Louisville
Rebecca Shreffler, Chenega
Pat Ryan, Leidos – REIMS
Carrie Rasik, Ohio EPA, CO, DERR
Natalie Oryshkewych, Ohio EPA NEDO, DERR
Liam McEvoy, Ohio EPA, NEDO, DERR

Comment Resolution Table

Installation: Camp James A. Garfield/Former RVAAP
Document: Draft Non Time-Critical Removal Action Work Plan for Sand Creek Disposal Road Landfill (RVAAP-34).
Reviewer(s): Kevin Palombo, Environmental Specialist, Ohio EPA
Date: January 29, 2021

Cmt. No.	Page or Sheet	Comment and Recommendation	Response
Ohio EPA 1	Figure 1.4	The identification labels for areas SCsb-037M, and SCsb-049M are illegible. Action Item: Revise the map and modify area identifying labels.	Figure 1.4 has been revised so that the referenced labels are legible. See attached copy of the revised figure.
Ohio EPA 2	Section 5.2.2, Page 23	A description of the thermal treatment process is described in this section, but the volume or thickness of the soil in the treatment chamber is not provided. The section also explains that the temperature in the chamber reaches 500-700 degrees Fahrenheit. It is unclear if the soil temperature is specifically monitored or just the temperature within the chamber. Action Item: Clarify the what the volume (and thickness) of the soil is within the chamber and specifically if the temperature of the middle of the soil volume is monitored.	The following sentences in the second paragraph under "VEG Thermal Treatment Process" in Section 5.2.2. have been revised to read: "The steam created through the VEG's vapor generator is in turn placed into contact with the impacted soil within a fully enclosed and sealed treatment chamber. Depth of soil within the treatment chamber is approximately 2.5 feet." "Soil temperatures will be measured after the soil is discharged from the treatment chamber by inserting thermocouples in the soil, or using a hand-held infrared thermometer, demonstrating that soil has reached target treatment temperatures."

Comment Resolution Table

Installation: Camp James A. Garfield/Former RVAAP
Document: Draft Non Time-Critical Removal Action Work Plan for Sand Creek Disposal Road Landfill (RVAAP-34).
Reviewer(s): Kevin Palombo, Environmental Specialist, Ohio EPA
Date: January 29, 2021

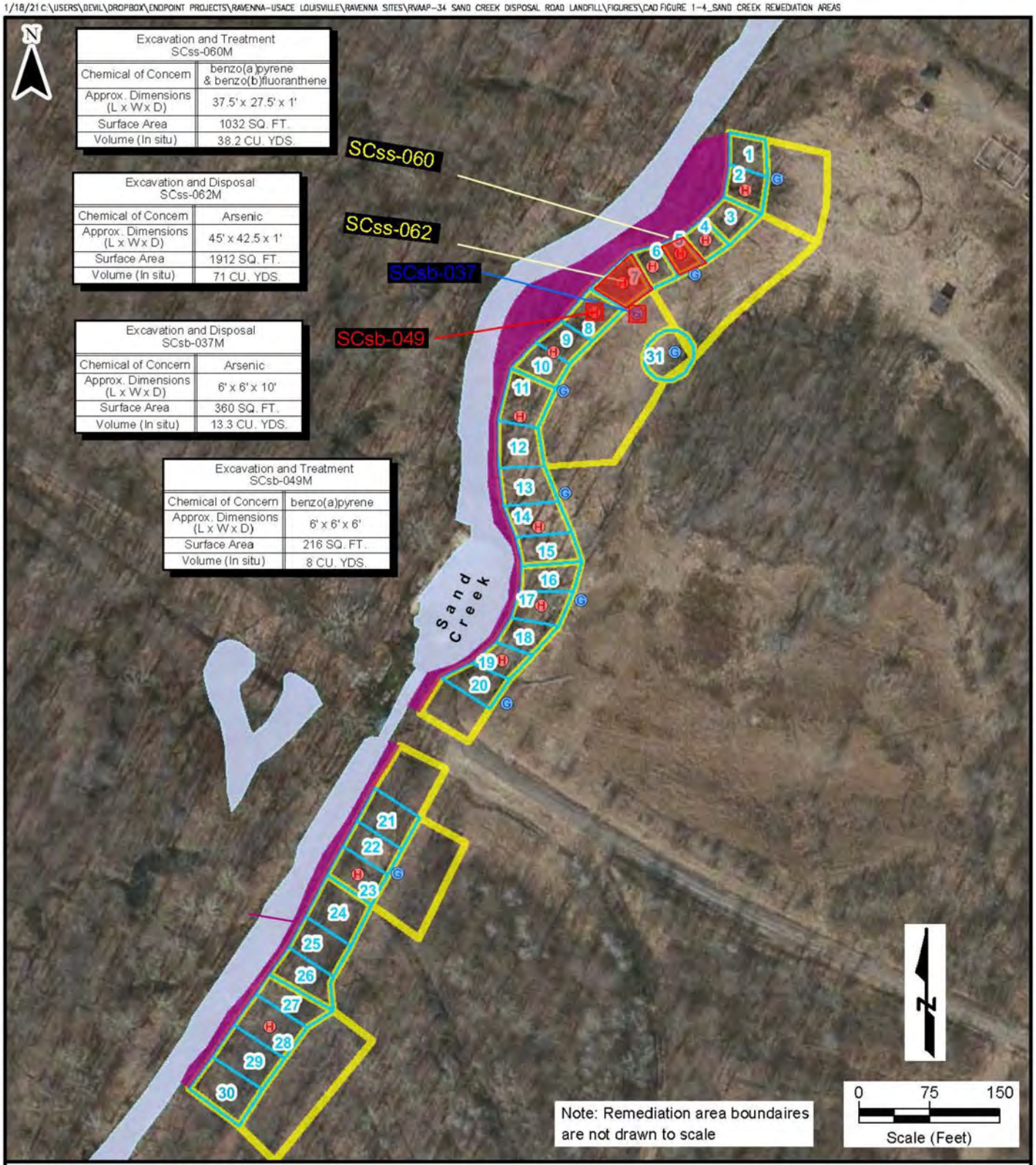
Ohio EPA 3	Section 6.1.1 Waste Profile Sampling	The section describes how sampling will take place to characterize the waste profile in proposed arsenic -impacted excavation areas prior to removal of soils. This will be based on one soil boring in each area. The section does not provide the lead time anticipated for this sampling. Action Item: Provide the anticipated lead time for this sampling event prior to excavation.	Waste profile samples will be collected from all AOCs and submitted to the laboratory at the same time prior to commencing remedial activities/excavation at any one AOC within CJAG. Samples will be collected at a minimum of 1 week prior to excavation. In response to the comment, and to coincide with Ohio EPA approved changes for the Load Line 9 Remedial Design, Sampling and Analysis Plan (e.g., waste profile samples will consist of an 8-point composite sample, rather than ISM), the following sentences in Section 6.1.1. have been revised to: "Prior to excavating arsenic-impacted soil at the Sand Creek AOC, one in-situ waste profile sample will be collected from within the limits of each excavation containing soils slated for disposal." "Collecting profile samples from all AOCs involving soil disposal prior to soil excavation at each respective AOC will allow adequate time to receive profile sample results…" "One 8-point composite in-situ soil sample (with aliquots collected from the 0-1 ft bgs range) will be collected within the boundaries of the excavation around SCss-062M and SCss-037 at the beginning of all remedial activities at CJAG or a minimum of 1-week prior to excavation."
Ohio EPA 4	Section 6.6.1 Waste Profile Sampling	The report states, "[p]rior to excavating arsenic-impacted soil at the Sand Creek AOC, two in situ waste profile samples will be collected from within the limits of each excavation." For the shallow soil excavation at SCss-062M-0001-SO, an incremental sampling methodology (ISM) sample from the zero to one-foot depth will be collected to profile the 71 cubic yards estimated for excavation. For the deep soil excavation at SCsb-037M, a discrete sample from the middle depth of the excavation (i.e., five feet) will be collected from the center of the excavation area of approximately 13 cubic yards. It is unclear	The sample quantity was selected to comply with the waste facility RCRA permit requirements. Prior to receipt of this comment, and at the request of the Ohio EPA, the ARNG modified the procedure for waste profile sampling outlined in the project Sampling and Analysis Plan and Quality Assurance Project Plan. In response to this comment, and to coincide with Ohio EPA approved changes for the Load Line 9 Remedial Design, Sampling and Analysis Plan (e.g., waste profile samples will consist of an 8-point composite sample, rather than ISM), the following sentence in Section 6.1.1. have been revised to: "One 8-point composite in-situ soil sample (with aliquots collected from the 0-1 ft

		how one ISM sample will be appropriate to characterize 71 cubic yards of soil at SCss-062M-0001-SO, and how one discrete sample will be appropriate for waste profile sampling of 13 cubic yards of soil at SCsb-037M. U.S. EPA Guidance SW-846: Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, Chapter 9: Sampling Plan discusses how chemical information needs to be sufficiently precise to be considered reliable, and that "sampling precision is most commonly achieved by taking an appropriate number of samples from the population." The guidance points to the use of Formula 8 in Table 9-1 for a means of estimating an appropriate sampling effort, and that increasing the number or size of samples taken from a population increases sampling precision. Action Item: Provide rationale for the appropriateness of collecting the proposed waste profile samples or increase the number of waste profiling samples.	bgs range) will be collected within the boundaries of the excavation around SCss-062M and SCss-037 at the beginning of all remedial activities at CJAG or a minimum of 1-week prior to excavation. Specifically, one 8-point composite soil sample with aliquots collected from the 0-1 ft bgs range will be collected from the excavation surrounding SCss-062M and one 8-point composite soil sample with aliquots collected from approximately 5 ft bgs (i.e., half the total depth of the excavation) will be collected from the excavation surrounding SCss-037."
Ohio EPA 5	Section 6.2.2 Deep Excavation Confirmation Sampling	One discrete confirmation soil sample from each wall of the deep excavation areas is proposed at a depth of half of the excavation. At the arsenic excavation area for SCsb-037M0001-SO/SCsb-037M-0002-SO, remedial investigation samples were collected at two depth intervals: one to five feet below ground surface at SCsb-037-M-0001-SO and five to nine feet below ground surface at SCsb-037M-0002-SO. Each of these depth intervals reported arsenic detections above a soil clean-up goal. Therefore, the deep excavation wall confirmation discrete sampling at this area	The text in Section 6.2.2. has been revised to state, "… confirmation sampling at these locations will consist of collecting discrete sidewall samples at two depth intervals: from 1 to 5 feet bgs and from 5 to 9 feet bgs (i.e., two discrete samples collected per sidewall). Sample nomenclature and locations are shown on Table 6-2." and "Based on the aforementioned anticipated dimensions and sampling intervals, a minimum of 8 sidewall and 1 bottom samples (total of 9 discrete samples) are proposed for each excavation." Additionally, the following note has been added to Table 6-2, "For discrete samples collected from sidewalls at SCsb-037M and SCsb-049M, the identifier "T" will denote a sidewall sample collected from 1-5 ft bgs and "B" will denote collection from 5-9 ft bgs."

		should, at a minimum, have two depth locations at each wall, one in the one to five-foot interval and one at the five to nine-foot interval, to confirm arsenic concentrations remaining, if any, are below clean-up goals. Action Item: Revise the depth proposed for the wall confirmation discrete soil sampling at remedial area SCsb-037M-0001-SO/SCsb-037M-0002-SO.	
Ohio EPA 6	Table 3-1. Summary of Soil COCs, Cleanup Goals, and Remediation Volumes, Arsenic Cleanup Goal	Footnote 1 to the table states, "Cleanup goal for arsenic based on a background 15.5 to 18.8 mg/kg and compared to 20.1 mg/kg 95%UCL [Upper Confidence Limit]". The report does not state if the original background data sets for the surface soil and subsurface soil were used to calculate the 95% UCL, or if it was the two final background values that were used to calculate the proposed 95% UCL background value. If it were the latter option, two values are not statistically appropriate to develop a 95% UCL, and the U.S. EPA 95% UCL software would give error messages. Additionally, the USACE developed separate arsenic background values to be used for the surface soil and subsurface soil, as reported in their March 2010 document "Final Facility-Wide Human Health Cleanup Goals for the Ravenna Army Ammunition Plant (RVAAP), Ravenna, Ohio" as prepared by SAIC. The Ravenna site-specific surface soil background value for arsenic is 15.4 mg/kg, and the Ravenna site-specific subsurface soil background value for arsenic is 19.8 mg/kg. These values are the background values to use for arsenic clean-up goals for the surface and	Footnote 1 for Table 3-1 has been revised to, "Cleanup goal for arsenic based on a background surface soil value of 15.4 and subsurface value of 19.8 mg/kg."

		subsurface excavations as previously developed by USAGE and agreed upon by Ohio EPA. Action Item: Revise footnote 1 for Table 3-1 to state the soil clean-up goals for arsenic are the surface soil background value for arsenic of 15.4 mg/kg and the subsurface soil background value for arsenic of 19.8 mg/kg.	

1/18/21 C:\USERS\DEVIL\DROPBOX\ENDPOINT PROJECTS\RAVENNA-USACE LOUISVILLE\RAVENNA SITES\RVAAP-34 SAND CREEK DISPOSAL ROAD LANDFILL\FIGURES\CAD FIGURE 1-4_SAND CREEK REMEDIATION AREAS



Legend

- Geoprobe Sample Location (9)
- Hand-Auger Sample Location (13)
- Incremental Sample Sediment Area (2)
- Incremental Sample Soil Area (18)
- Sand Creek Dump-Limits & Sample Grids (16)
- Area Requiring Remediation

US Army Corps of Engineers Louisville District

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Figure 1-4

Estimated Extent of Soil Remediation

RVAAP-34 Sand Creek Disposal Road Landfill
Former RVAAP/Camp James A. Garfield

Basemap Source: USACE, 2019. Engineering Evaluation/Cost Analysis: RVAAP-34 Sand Creek Disposal Road Landfill. January

Ohio Environmental Protection Agency

Mike DeWine, Governor
Jon Husted, Lt. Governor
Laurie A. Stevenson, Director

February 19, 2021

TRANSMITTED ELECTRONICALLY

Mr. Kevin Sedlak
Restoration Program Manager
ARNG-ILE Clean Up
Camp James A Garfield JTC
1438 State Route 534 SW
Newton Falls, OH 44444

RE: US Army Ammunition Plt RVAAP
Remediation Response
Project Records
Remedial Response
Portage County
ID # 267000859137

Subject: Response to Ohio EPA Comments on the "Draft Non Time Critical Removal Action Work Plan for RVAAP-34 Sand Creek Disposal Road Landfill" dated January 29, 2021

Dear Mr. Sedlak:

The Ohio Environmental Protection Agency (Ohio EPA) has received and reviewed the Response to Ohio EPA comments sent to you in our letter dated January 8, 2021 on the "Draft Non Time Critical Removal Action (NTCRA) Work Plan for RVAAP-34 Sand Creek Disposal Road Landfill" at the Former Ravenna Army Ammunition Plant, Portage and Trumbull Counties, Ohio (CJAG). Your response was received via email at Ohio EPA's Northeast District Office (NEDO), Division of Environmental Response and Revitalization (DERR) on February 2, 2021. The response was prepared for the United States Army Corps of Engineers on behalf of the National Guard Bureau by Endpoint Consulting, Incorporated and Alaniz Associates Corporation under Contract Number W912QR-17-C-0045.

The selected remedial alternative for soil at the Sand Creek Disposal Road Landfill RVAAP-34, as recommended in the Engineering Evaluation/Cost Analysis (EE/CA), is Alternative 2, Excavation with Off-Site Disposal for Soil with Arsenic and Ex-Situ Thermal Treatment for Soil with polycyclic aromatic hydrocarbons (PAHs) to Attain Unrestricted (Residential) Land Use. The scope of this activity includes the excavation and off-site disposal of soil at sample locations SCss-062M-0001-SO and SCsb-037M-0001-SO/ SCsb-037M-0002-SO and ex-situ thermal treatment of soil excavated at sample locations SCss-060M-0001-SO and SCsb-049M-0001-SO. To this end, this NTCRA work plan details requirements and procedures necessary to implement the selected remedial action alternative, including a plan to excavate and dispose of arsenic-impacted soil above RVAAP background levels and excavation and thermal treatment of PAH-impacted soil exceeding residential Regional Screening Levels (RSLs), allowing for unrestricted (i.e., residential) reuse of the area of concern (AOC).

The following provides Ohio EPA's comments and the Army's response. One of the comments, Comment 5, will require further response and concurrence.

COMMENTS

Comment 1: Section 1.0: Introduction, Figure 1.4, Estimated Extent of Soil Remediation

The identification labels for areas SCsb-037M and SCsb-049M are illegible.

Comment 1 Action Item: Revise the map and modify area identifying labels.

Response to Comment: Figure 1.4 has been revised so that the referenced labels are legible. A copy of the revised figure was also attached. **The response addresses the comment.**

Comment 2: Section 5.2.2, page 23 Ex-Situ Thermal Treatment of PAHs in Soil Using the Vapor Energy Generator (VEG) Technology, VEG Thermal Treatment Process

A description of the thermal treatment process is described in this section, but the volume or thickness of the soil in the treatment chamber is not provided. The section also explains that the temperature in the chamber reaches 500 to 700 degrees Fahrenheit. It is unclear if the soil temperature is specifically monitored or just the temperature within the chamber.

Comment 2 Action Item: Clarify the what the volume (and thickness) of the soil is within the chamber and specifically if the temperature of the middle of the soil volume is monitored.

Response to Comment: The following sentences in the second paragraph under "VEG Thermal Treatment Process" in Section 5.2.2. have been revised to read: "The steam created through the VEG's vapor generator is in turn placed into contact with the impacted soil within a fully enclosed and sealed treatment chamber. Depth of soil within the treatment chamber is approximately 2.5 feet. Soil temperatures will be measured after the soil is discharged from the treatment chamber by inserting thermocouples in the soil, or using a hand-held infrared thermometer, demonstrating that soil has reached target treatment temperatures." **The response addresses the comment.**

Comment 3: Section 6.1.1: Waste Profile Sampling

The section describes how sampling will take place to characterize the waste profile in proposed arsenic-impacted excavation areas prior to removal of soils. This will be based on one soil boring in each area. The section does not provide the lead time anticipated for this sampling.

Comment 3 Action Item: Provide the anticipated lead time for this sampling event prior to excavation.

Response to Comment: Waste profile samples will be collected from all AOCs and submitted to the laboratory at the same time prior to commencing remedial activities/excavation at any one AOC within CJAG. Samples will be collected at a minimum of 1 week prior to excavation.

In response to the comment, and to coincide with Ohio EPA approved changes for the Load Line 9 Remedial Design, Sampling and Analysis Plan (e.g., waste profile samples will consist of an eight-point composite sample, rather than incremental sampling methodology (ISM)), the following sentences in Section 6.1.1. have been revised to: "Prior to excavating arsenic-impacted soil at the Sand Creek AOC, one in-situ waste profile sample will be collected from within the limits of each excavation containing soils slated for disposal." "Collecting profile samples from all AOCs involving soil disposal prior to soil excavation at each respective AOC will allow adequate time to receive profile sample results…" "One 8-point composite in-situ soil sample (with aliquots collected from the 0-1 ft bgs range) will be collected within the boundaries of the excavation around SCss062M and SCss-037 at the beginning of all remedial activities at CJAG or a minimum of 1-week prior to excavation." **The response addresses the comment.**

Comment 4: Section 6.2.2: Deep Excavation Confirmation Sampling

One discrete confirmation soil sample from each wall of the deep excavation areas is proposed at a depth of half of the excavation. At the arsenic excavation area for SCsb-037M-0001-SO/SCsb-037M-0002-SO, remedial investigation samples were collected at two depth intervals: one to five feet below ground surface (bgs) at SCsb-037-M-0001-SO and five to nine feet bgs at SCsb-037M-0002-SO. Each of these depth intervals reported arsenic detections above a soil clean-up goal. Therefore, the deep excavation wall confirmation discrete sampling at this area should, at a minimum, have two depth locations at each wall, one in the one to five-foot interval and one at the five to nine-foot interval, to confirm arsenic concentrations remaining, if any, are below clean-up goals.

Comment 4 Action Item: Revise the depth proposed for the wall confirmation discrete soil sampling at remedial area SCsb-037M-0001-SO/SCsb-037M-0002-SO.

Response to Comment: Eight sidewall samples will be collected, one from the one to five-foot interval and one from the five to nine-foot interval. The text in section 6.2.2 has been revised, and the following note has been added to Table 6-2, "For discrete samples collected from sidewalls at SCsb-037M and SCsb-049M, the identifier "T" will denote a sidewall sample collected from 1-5 ft bgs and "B" will denote collection from 5-9 ft bgs." **The response addresses the comment.**

Comment 5: Section 6.6.1: Waste Profile Sampling

The report states, "[p]rior to excavating arsenic-impacted soil at the Sand Creek AOC, two in-situ waste profile samples will be collected from within the limits of each excavation." For the shallow soil excavation at SCss-062M-0001-SO, an ISM sample from the zero to one-foot depth will be collected to profile the 71 cubic yards estimated for excavation. For the deep soil excavation at SCsb-037M, a discrete sample from the middle depth of the excavation (i.e., five feet) will be collected from the center of the excavation area of approximately 13 cubic yards. It is unclear how one ISM sample will be appropriate to characterize 71 cubic yards of soil at SCss-062M-0001-SO, and how one discrete sample will be appropriate for waste profile sampling of 13 cubic yards of soil at SCsb-037M. U.S. EPA Guidance SW-846: Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, Chapter 9: Sampling Plan discusses how chemical information needs to be sufficiently precise to be considered reliable, and that "sampling precision is most commonly achieved by taking an appropriate number of samples from the population." The guidance points to the use of Formula 8 in Table 9-1 for a means of estimating an appropriate sampling effort, and that increasing the number or size of samples taken from a population increases sampling precision.

Comment 5 Action Item: Provide rationale for the appropriateness of collecting the proposed waste profile samples or increase the number of waste profiling samples.

Response to Comment: The response states, "Prior to receipt of this comment, and at the request of the Ohio EPA, the ARNG modified the procedure for waste profile sampling outlined in the project Sampling and Analysis Plan and Quality Assurance Project Plan. In response to this comment, and to coincide with Ohio EPA approved changes for the Load Line 9 Remedial Design, Sampling and Analysis Plan (e.g., waste profile samples will consist of an 8-point composite sample, rather than ISM)".

After talking to the LL9 SAP review team, a final LL9 SAP document has yet to be approved by Ohio EPA, and the LL9 Ohio EPA team did not have comments on the waste sampling section of the SAP. Section 3.6: Sample Design, subsection Category 3 of the draft SAP describes the waste profile sampling as one in-situ soil ISM with a minimum of 30 aliquots to the depth of excavation and one discrete sample collected at the center of the area at a depth of half the excavation depth. Therefore, modifying the procedure from ISM/discrete to eight-point composite at Sand Creek should not occur prior to the LL9 SAP being approved. If the waste profile sampling procedures in the Draft LL9 SAP keeps with the ISM and discrete procedure, conduct ISM and discrete at both areas SCss-062M-0001-SO and SCsb-037M as described by the SAP and provide identification and rationale for the number of aliquots for ISM at each area. The SAP states a minimum number of 30 aliquots, but the aliquot number should not be static for each area. Rather, the aliquot number should be based on the proposed volume of excavation (e.g., a larger volume of waste would generally have more aliquots than a smaller volume of waste).

Also, once approved, please provide the final LL9 RD SAP as an appendix to the Sand Creek NTCR for reference.

Comment 6: Table 3-1. Summary of Soil COCs, Cleanup Goals, and Remediation - Volumes, Arsenic Clean-Up Goal

Footnote 1 to the table states, "Cleanup goal for arsenic based on a background 15.5 to 18.8 mg/kg and compared to 20.1 mg/kg 95% [Upper Confidence Limit] UCL." The report does not state if the original background data sets for the surface soil and subsurface soil were used to calculate the 95% UCL, or if it was the two final background values that were used to calculate the proposed 95% UCL background value. If it were the latter option, two values are not statistically appropriate to develop a 95% UCL, and the U.S. EPA 95% UCL software would give error messages. Additionally, the U.S. Army Corp of Engineers (USACE) developed separate arsenic background values to be used for the surface soil and subsurface soil, as reported in their March 2010 document "Final Facility-Wide Human Health Cleanup Goals for the Ravenna Army Ammunition Plant (RVAAP), Ravenna, Ohio" as prepared by SAIC. The Ravenna site-specific surface soil background value for arsenic is 15.4 mg/kg, and the Ravenna site-specific subsurface soil background value for arsenic is 19.8 mg/kg. These values are the background values to use for arsenic clean-up goals for the surface and subsurface excavations as previously developed by USACE and agreed upon by Ohio EPA.

Comment 6 Action Item: Revised footnote 1 for Table 3-1 to state the soil clean-up goals for arsenic are the surface soil background value for arsenic of 15.4 mg/kg and the subsurface soil background value for arsenic of 19.8 mg/kg.

Response to Comment: The footnote was revised per the action: Footnote 1 for Table 3-1 has been revised to, "Cleanup goal for arsenic based on a background surface soil value of 15.4 and subsurface value of 19.8 mg/kg." **The response addresses the comment.**

The response to Ohio EPA comments on the "Draft Non Time Critical Removal Action Work Plan for RVAAP-34 Sand Creek Disposal Road Landfill" was reviewed by personnel from Ohio EPA. Additional information is necessary to approve the response to Comment 5.

As a precautionary response to COVID-19, Ohio EPA is currently operating with most staff working remotely. During this time, we will not be issuing hard-copy mail. This letter is an official response from Ohio EPA that will be maintained as a public record.

If you have questions or would like to set up a meeting to discuss, you can contact me via email at kevin.palombo@epa.ohio.gov, or at (330) 963-1292.

Sincerely,

Kevin M. Palombo
Environmental Specialist
Division of Environmental Response and Revitalization

KP/sc

ec: Katie Tait, OHARNG RTLS
Steven Kvaal, USACE Louisville
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NATIONAL GUARD BUREAU
111 SOUTH GEORGE MASON DRIVE
ARLINGTON VA 22204-1373

March 17, 2021

Ohio Environmental Protection Agency
DERR-NEDO
Attn: Kevin Palombo
2110 East Aurora Road
Twinsburg, OH 44087-1924

Subject: Ravenna Army Ammunition Plant (RVAAP) Restoration Program, Portage/Trumbull Counties, Response to Comments on Draft Non Time-Critical Removal Action Work Plan for RVAAP-34 Sand Creek Disposal Road Landfill (Ohio EPA Work Flow Activity #267000859137)

Dear Mr. Palombo:

The Army National Guard (ARNG) has reviewed comments provided for the Response to Comments letter dated January 29, 2021 for the *Draft Non Time-Critical Removal Action Work Plan for RVAAP-34 Sand Creek Disposal Road Landfill* (Work Plan) by the Ohio Environmental Protection Agency (Ohio EPA) in a letter dated February 19, 2021.

The responses on the attached comment resolution table reflect Ohio EPA comments received on February 19, 2021 regarding the Work Plan. The Ohio EPA confirmed that previous comments provided by the Ohio EPA regarding the Work Plan were adequately addressed in the letter dated February 19, 2021

Please contact the undersigned at 614-336-6000 Ext 2053 or kevin.m.sedlak.ctr@mail.mil if there are issues or concerns with this submission.

Sincerely,

SEDLAK.KEVIN.MICHAEL.1254440171 Digitally signed by SEDLAK.KEVIN.MICHAEL.1254440171 Date: 2021.03.17 06:46:32 -04'00'

Kevin M. Sedlak
RVAAP Restoration Program Manager
Army National Guard Directorate

cc: Mark Leeper, ARNG
Bob Princic, Ohio EPA, NEDO, DERR
Tom Schneider, Ohio EPA, SWDO, DERR
Katie Tait, OHARNG, Camp James A. Garfield
Nathaniel Peters, USACE Louisville
Steve Kvaal, USACE Louisville
Rebecca Shreffler, Chenega
Pat Ryan, Leidos – REIMS
Carrie Rasik, Ohio EPA, CO, DERR
Natalie Oryshkewych, Ohio EPA NEDO, DERR
Liam McEvoy, Ohio EPA, NEDO, DERR

Comment Resolution Table

Installation: Camp James A. Garfield/Former RVAAP
Document: Draft Non Time-Critical Removal Action Work Plan for Sand Creek Disposal Road Landfill (RVAAP-34).
Reviewer(s): Kevin Palombo, Environmental Specialist, Ohio EPA
Date: March 17, 2021

Cmt. No.	Page or Sheet	Comment and Recommendation	Response
Ohio EPA 5	Section 6.1.1 Waste Profile Sampling	The response states, "Prior to receipt of this comment, and at the request of the Ohio EPA, the ARNG modified the procedure for waste profile sampling outlined in the project Sampling and Analysis Plan and Quality Assurance Project Plan. In response to this comment, and to coincide with Ohio EPA approved changes for the Load Line 9 Remedial Design, Sampling and Analysis Plan (e.g., waste profile samples will consist of an 8-point composite sample, rather than ISM)". After talking to the LL9 SAP review team, a final LL9 SAP document has yet to be approved by Ohio EPA, and the LL9 Ohio EPA team did not have comments on the waste sampling section of the SAP. Section 3.6: Sample Design, subsection Category 3 of the draft SAP describes the waste profile sampling as one in-situ soil ISM with a minimum of 30 aliquots to the depth of excavation and one discrete sample collected at the center of the area at a depth of half the excavation depth. Therefore, modifying the procedure from ISM/discrete to eight-point composite at Sand Creek should not occur prior to the LL9 SAP being approved. If the waste profile sampling procedures in the Draft LL9 SAP keeps with the ISM and discrete procedure, conduct ISM and discrete at both areas SCss-062M-0001-SO and SCsb-037M as described by the SAP and provide identification and rationale for the number of aliquots for ISM at each area. The SAP states a minimum number of 30 aliquots, but the aliquot number should not be static for each area. Rather, the aliquot number should be based on the proposed volume of excavation (e.g., a larger volume of waste would generally have more aliquots than a smaller volume of waste).	Approval of the waste profile sampling procedure change from ISM/discrete to an 8-point composite sample was provided by the Ohio EPA in the Response to Comments letter for the SAP document dated December 28, 2020. A follow-up clarification comment regarding waste profiling was provided by the Ohio EPA in a letter dated March 2, 2021, pertaining to whether 8-point composite sampling will be used across all AOCs where waste profile sampling is required. In the Load Line 9 SAP and QAPP Response to Comments letter dated March 16, 2021, Endpoint provided confirmation that this sampling method shall be used for all AOCs covered under the SAP, including the Sand Creek AOC. The SAP had been previously updated to state the following: "Waste profile sampling of impacted soil will consist of one 8-point composite sample per every 250 cubic yards of metals impacted soil (in-situ) to be excavated in each AOC prior to beginning excavation activities." The SAP also provides sampling procedures for 8-point composite sampling as it pertains to waste profile samples in Section 4.2.2.3. Additionally, the waste characterization methodology and analysis has been confirmed to meet and exceed all of the waste facility's Federal (e.g, RCRA) and State permit requirements.

Ohio Environmental Protection Agency

Mike DeWine, Governor
Jon Husted, Lt. Governor
Laurie A. Stevenson, Director

April 6, 2021

TRANSMITTED ELECTRONICALLY

Mr. Kevin Sedlak
Restoration Program Manager
ARNG-ILE Clean Up
Camp James A. Garfield JTC
1438 State Route 534 SW
Newton Falls, OH 44444

RE: US Army Ammunition Plt RVAAP
Remediation Response
Project Records
Remedial Response
Portage County
ID # 267000859137

Subject: Concurrence with Response to Ohio EPA Comments on the "Draft Non Time Critical Removal Action Work Plan for RVAAP-34 Sand Creek Disposal Road Landfill" Based on Conference call of March 24, 2021

Dear Mr. Sedlak:

The Ohio Environmental Protection Agency (Ohio EPA) has received and reviewed the response to Ohio EPA comments sent to you in our letter dated February 19, 2021 on the "Draft Non Time Critical Removal Action (NTCRA) Work Plan for RVAAP-34 Sand Creek Disposal Road Landfill" at the Former Ravenna Army Ammunition Plant, Portage and Trumbull Counties, Ohio (Camp Garfield). Your response was received via email at Ohio EPA's Northeast District Office (NEDO), Division of Environmental Response and Revitalization (DERR) on March 18, 2021. The response was prepared for the United States Army Corps of Engineers on behalf of the National Guard Bureau by Endpoint Consulting, Incorporated and Alaniz Associates Corporation under Contract Number W912QR-17-C-0045.

The remaining comment to be resolved was Ohio EPA Comment 5 related to Waste Profile Sampling. Although Ohio EPA still did not completely concur with your response in your letter to us dated March 17, 2021, the call we had with the Army and their consultant on March 24, 2021, and the incorporation of the action item below, serve to resolve the comment.

Waste Profiling

The March 17, 2021 response to comments and our telephone call on March 24, 2021 answered much of this comment. Ohio EPA noted during this telephone call that there was a typo in the Quality Assurance Project Plan, Table 2-1 regarding waste characterization. This table noted 50 vs 250 cubic yard was the waste sampling frequency.

ACTION ITEM: A page change should be adequate to address this edit. Please include on the revised Table 2-1 page the information that Endpoint discussed during our call that it had obtained from the landfill receiving the waste, affirming this sampling frequency meets the landfill's requirements.

As a precautionary response to COVID-19, Ohio EPA is currently operating with most staff working remotely. During this time, we will not be issuing hard-copy mail. This letter is an official response from Ohio EPA that will be maintained as a public record.

The response to Ohio EPA comments on the "Draft Non Time Critical Removal Action Work Plan for RVAAP-34 Sand Creek Disposal Road Landfill" was reviewed by personnel from Ohio EPA. Based on the agreements made in your response to Ohio EPA comments, and the conference call of March 24, 2021, the final document can be prepared. If you have questions or would like to set up a meeting to discuss, you can contact me by email at kevin.palombo@epa.ohio.gov, or at (330) 963-1292.

Sincerely,

Kevin M. Palombo
Environmental Specialist
Division of Environmental Response and Revitalization

KP/sc

ec: Rebecca Shreffler, Chenega Tri-Services
Katie Tait, OHARNG RTLS
Bob Princic, Ohio EPA, NEDO, DERR
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Thomas Schneider, Ohio EPA, SWDO, DERR
Carrie Rasik, Ohio EPA, CO, DERR
Steven Kvaal, USACE Louisville
Nat Peters, USACE Louisville
Mark Leeper, ARNG, Arlington

Ohio Environmental Protection Agency

Mike DeWine, Governor
Jon Husted, Lt. Governor
Laurie A. Stevenson, Director

May 11, 2021

TRANSMITTED ELECTRONICALLY

Mr. Kevin Sedlak
Restoration Program Manager
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1438 State Route 534 SW
Newton Falls, OH 44444

RE: US Army Ammunition Plt RVAAP
Remediation Response
Project Records
Remedial Response
Portage County
ID#267000859137

Subject: Approval of the "Final Non Time-Critical Removal Action Work Plan for RVAAP-34 Sand Creek Disposal Road Landfill"

Dear Mr. Sedlak:

The Ohio Environmental Protection Agency (Ohio EPA) has received the "Final Non Time-Critical Removal Action Work Plan for RVAAP-34 Sand Creek Disposal Road Landfill" at the Former Ravenna Army Ammunition Plant, Portage and Trumbull Counties, Ohio dated April 8, 2021. This document was received via email at Ohio EPA's Northeast District Office (NEDO), Division of Environmental Response and Revitalization (DERR) on April 9, 2021. The document was prepared for the U.S Army Corps of Engineers on behalf of the Army National Guard Directorate by Leidos.

The final document was reviewed by personnel from Ohio EPA's DERR. Pursuant to the Director's Findings and Orders paragraph 39 (b), Ohio EPA considers the document final and approved.

As a precautionary response to COVID-19, Ohio EPA is currently operating with most staff working remotely. During this time, we will not be issuing hard-copy mail. This letter is an official response from Ohio EPA that will be maintained as a public record. If you have any questions, please contact me at kevin.palombo@epa.ohio.gov, or call me at (330) 963-1292.

Sincerely,

RECEIVED
MAY 11 2021

Kevin M. Palombo
Environmental Specialist
Division of Environmental Response and Revitalization

KP/ams

ec: Rebecca Shreffler, Chenega
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