

**REMEDIAL ACTION WORK PLAN
OPERABLE UNIT 2**

Kerr-McGee Chemical Corp.—Navassa Superfund Site

**Navassa, North Carolina
EPA ID #NCD980557805**

Prepared for
Greenfield Environmental Multistate Trust LLC
Trustee of the Multistate Environmental Response Trust



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ACRONYMS AND ABBREVIATIONS

BaP	benzo[<i>a</i>]pyrene
bgs	below ground surface
BMP	best management practice
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
COC	constituent of concern
CQA	construction quality assurance
EPA	U.S. Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act
ERA	ecological risk assessment
ESCP	erosion and sediment control plan
HASP	health and safety plan
HAZWOPER	Hazardous Waste Operations and Emergency Response
HMW	high molecular weight
Integral	Integral Engineering, P.C.
Kerr-McGee	Kerr-McGee Chemical Corporation
Multistate Trust	Greenfield Environmental Multistate Trust LLC
NCDEQ	North Carolina Department of Environmental Quality
NCDOT	North Carolina Department of Transportation
NPDES	National Pollutant Discharge Elimination System
OU	operable unit
PAH	polycyclic aromatic hydrocarbon
PDI	pre-design investigation
PRG	preliminary remediation goal
RACR	remedial action completion report
RAO	remedial action objective
RAWP	remedial action work plan
RCRA	Resource Conservation and Recovery Act

RPM	EPA remedial project manager
RSL	regional screening level
Site	Kerr-McGee Chemical Corp.—Navassa Superfund site
SPCCP	spill prevention control and countermeasures plan
SRI	supplemental remedial investigation
SWPPP	stormwater pollution prevention plan
TCDD	2,3,7,8-tetrachlorodibenzo- <i>p</i> -dioxin
TEQ	toxic equivalency
VOC	volatile organic compound

CERTIFICATION

This Operable Unit 2 (OU2) remedial action work plan (RAWP) has been prepared by Integral Engineering, P.C. (Integral) in coordination with the Greenfield Environmental Multistate Trust LLC, Trustee of the Multistate Environmental Response Trust (Multistate Trust), to facilitate remediation of OU2 of the Kerr-McGee Chemical Corp.—Navassa Superfund site. This OU2 RAWP provides an overview of the remedial action and establishes performance requirements to support the safe and effective removal and disposal of soils in OU2 that contain contaminants at levels that pose an unacceptable risk to human health and ecology under potential future unrestricted use.

The OU2 RAWP is submitted to the U.S. Environmental Protection Agency (EPA) for approval, pursuant to Section V.12.d of the 2011 Consent Decree and Environmental Settlement Agreement between the Multistate Trust, EPA, and the North Carolina Department of Environmental Quality (NCDEQ). The OU2 RAWP will serve as a guide to the Multistate Trust in its management and oversight of the work. The OU2 RAWP will also support the remedial Contractor's construction planning, design of temporary construction elements, and project execution. Construction submittals describing the means and methods that will be used to satisfy the performance requirements stated herein will be prepared by the Contractor and submitted to the Multistate Trust for review and acceptance before the work is initiated.



Jane Sund, P.E.
Engineer of Record
Integral Engineering, P.C.

EXECUTIVE SUMMARY

This remedial action work plan (RAWP) addresses the Operable Unit 2 (OU2) remedial action being conducted by the Greenfield Environmental Multistate Trust LLC, Trustee of the Multistate Environmental Response Trust (Multistate Trust), as part of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) remediation of the Kerr-McGee Chemical Corp.—Navassa Superfund site (Site) in the Town of Navassa, Brunswick County, North Carolina.

The remediation activities defined in this OU2 RAWP will be conducted consistent with the OU2 Record of Decision, 2011 Consent Decree and Environmental Settlement Agreement between the Multistate Trust, the U.S. Environmental Protection Agency (EPA), and the North Carolina Department of Environmental Quality (NCDEQ) and will comply with relevant CERCLA regulations and guidance.

OU2 includes the 15.6-acre area south of OU1 and north of the process area. OU2 was used for treated and untreated wood storage. The extent of OU2 includes soils that require a cleanup under CERCLA, but to exclude the former process area and groundwater contamination. OU2 includes surface soils with constituents of concern (COCs) at concentrations that pose an unacceptable risk to human health based on a future residential land use and/or high molecular weight polycyclic aromatic hydrocarbons (PAHs) at concentrations that represent an unacceptable risk to ecological receptors. COCs identified for human receptors include PAHs, dioxins/furans, benzo[*a*]pyrene, naphthalene, and pentachlorophenol. Remedial action objectives and cleanup levels have been developed for OU2 to prevent unacceptable risks to future residents, commercial/industrial workers, construction workers, recreator, or ecological receptors that may come into contact with surface soil.

The OU2 remedial action involves excavation and removal of approximately 2,900 cubic yards of contaminated soil within OU2. Excavation and material handling will be performed using conventional earthwork equipment, such as excavators, bulldozers, loaders, and haul trucks. Excavated soils will be directly loaded into haul trucks when possible, or temporarily managed in stockpiles, if necessary, for subsequent offsite disposal at a Subtitle D landfill. Excavations will be backfilled to match existing grades as appropriate, regraded where necessary to manage stormwater runoff, and hydroseeded.

All remedial action construction activities will be completed in accordance with the performance requirements established in this OU2 RAWP. The Contractor will be required to prepare a series of submittals that will describe the means and methods for completing the work, the health and safety measures that will be taken to protect workers and the community, the quality control and documentation protocols that will be implemented, and that details the construction sequencing and schedule.

1 INTRODUCTION

This remedial action work plan (RAWP) addresses Operable Unit 2 (OU2) of the Kerr-McGee Chemical Corp.—Navassa Superfund site (Site). The OU2 remedial action includes removal of surface soils with constituents of concern (COCs) at concentrations that represent an unacceptable risk to potential future residents and/or concentrations of high molecular weight (HMW) polycyclic aromatic hydrocarbon (PAH) that represent an unacceptable risk to ecological receptors.

The OU2 remedial action is being conducted by the Greenfield Environmental Multistate Trust LLC, Trustee of the Multistate Environmental Response Trust (Multistate Trust), as part of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) remediation of the Site, under U.S. Environmental Protection Agency (EPA) and North Carolina Department of Environmental Quality (NCDEQ) oversight.

1.1 SITE DESCRIPTION AND HISTORY

The Site is located at 34°14'50.0" North latitude and 77°59'56.5" West longitude in Navassa, Brunswick County, North Carolina (Figure 1-1). The Site was an industrial wood treating facility operated by the Kerr-McGee Chemical Corporation (Kerr-McGee) and its predecessors/successors from 1936 to 1974. Tronox, LLC, a successor to Kerr-McGee, was the sole potentially responsible party. Following Tronox, LLC's bankruptcy and pursuant to a 2011 Consent Decree and Environmental Settlement Agreement, the Multistate Trust is responsible for implementing all environmental actions at the Site consistent with its obligations to the beneficiaries of the Multistate Trust, EPA, and NCDEQ (USEPA 2021).

Most of the Site consists of the property formerly owned and operated by Kerr-McGee. The Site includes a former wood treating facility (about 70 acres) and an approximate 30-acre area of tidally influenced marsh (termed the "Southern Marsh") situated to the south (Figure 1-2). The former wood treating facility is part of a larger property owned by the Multistate Trust. The Southern Marsh is owned by the State of North Carolina. The former wood treating facility is bounded to the north by Quality Drive and Pacon Manufacturing; to the west by Navassa Road; to the east by the Eastern Upland Area, Eastern Marsh, and the Brunswick River; and to the south by the Southern Marsh and Sturgeon Creek. Neither the Eastern Upland Area nor the Eastern Marsh are part of the Site (Figure 1-2; USEPA 2021).

The facility was in use for active operations—treating wood for utility poles, railroad ties, and pilings—between 1936 and 1974. Kerr-McGee discontinued operations in 1974 and dismantled the facility in 1980, selling as scrap all equipment, treatment cylinders, buildings, and tanks, although some building foundations remain on the property today. Kerr-McGee also reforested

the area by planting pine trees. In 1991, 92 acres of the property marsh land was transferred to the State of North Carolina (USEPA 2021).

As shown on Figure 1-2, the Site has been divided into five OUs:

- OU1, the northernmost 20.2 acres of the Site formerly used for wood storage. EPA released a Proposed Plan for OU1 on January 8, 2021, proposing no action for the revised OU1 area, and the Record of Decision for OU1 was signed April 1, 2021 (USEPA 2021). OU1 was delisted from the National Priorities List on September 14, 2021.
- OU2, the 15.6-acre area south of OU1 and north of the Process Area that was formerly used for wood storage.
- OU3, the Southern Marsh, which consists of an approximately 30-acre area of intertidal marsh that borders the former facility's southern boundary.
- OU4, the approximately 36-acre area at the southern end of the former facility, which includes the former facility Pond Area, Process Area, an area that was used for wood storage, and an area that is not known to have been part of Site operations.
- OU5, the groundwater impacted by the former facility operations, including groundwater underlying the southern end of OU4, the northern edge of OU3, and the area immediately southwest of OU4.

1.2 SUMMARY OF INVESTIGATIONS TO CHARACTERIZE OU2

The Site remedial investigation included several investigations to characterize the nature and extent of contamination at the Site, including:

- ENSR/AECOM Phase 1 Remedial Investigation in 2006
- ENSR/AECOM Phase 2 Remedial Investigation in 2008
- EPA Residential Sampling in 2010
- AECOM Supplemental Remedial Investigation (SRI) in 2012
- CH2M Hill SRI conducted in 2015 and 2016
- EarthCon SRI conducted in 2016 and 2017
- EarthCon trench evaluation conducted in 2018
- EarthCon surface soil study conducted in 2020
- Ramboll ecological uptake study conducted in 2020
- EarthCon and Integral 2021 subsurface soil sampling conducted in May 2021
- EarthCon and Integral OU2 Pre-design Investigation (PDI) conducted in fall/winter 2021.

The 2020 and May 2021 OU2 sampling were conducted to evaluate human health risks for a range of land uses; to evaluate ecological risks; and to evaluate the potential risks associated with dioxins and furans in soils. The sampling design involved subdividing OU2 into 91 parcels of 0.25 acre or less—the size of a potential future residential parcel as specified by NCDEQ. The 2021 subsurface sampling was designed to identify the vertical extent of dioxin/furan contamination per NCDEQ guidelines for assessment and remediation of contaminated sites for unrestricted use (NCDEQ 2020). The 2021 PDI was completed to establish the final area and volume of soil requiring removal to address unacceptable human health and ecological risks.

1.3 RISK ASSESSMENT FINDINGS

The human health risk assessment identified unacceptable risks (i.e., excess lifetime cancer risk greater than 1.0×10^{-4} or noncancer risk hazard index greater than 1.0) to potential future residential receptors in OU2 soils (Integral 2021a) with PAHs, dioxins/furans, benzo[*a*]pyrene (BaP), naphthalene, and pentachlorophenol identified as COCs. The excess lifetime cancer risks were less than 1.0×10^{-4} and the hazard index less than 1.0 for all other receptors evaluated, indicating no unacceptable risk to commercial/industrial workers, construction workers, trespassers, recreational youth sports players, and site visitors/trail walkers. The human health risk assessment identified a total of 19 parcels with COC concentrations in surface soils (0–1 ft below ground surface [bgs]) that represent a potential unacceptable risk to a potential future resident. Surface soils in 9 of the 19 parcels were further evaluated as part of the 2021 PDI (Integral 2021b). Eight of the parcels (Parcels SS-110, SS-119, TB 05, TB 08, TB-11, TB-12, TB-17, and TB-18) evaluated during the 2021 PDI were resampled to provide representative PAH and pentachlorophenol concentrations. The ninth parcel (Parcel CS-66) was resampled to confirm the previous 2,3,7,8-tetrachlorodibenzo-*p*-dioxin (TCDD) toxic equivalency (TEQ) results. The 2021 OU2 Human Health Risk Assessment Addendum (Integral 2021c) incorporated the PDI data and determined a total of 12 parcels have COC concentrations that represent an unacceptable risk to a potential future resident (Figure 1-3).

EPA, in collaboration with NCDEQ, has developed preliminary remediation goals (PRGs) to prevent unacceptable risks to potential future residents who may come into contact with surface soil. All or a portion of the 12 parcels require remediation to remove soils exceeding the PRGs to address unacceptable risks to a potential future resident. Four of these parcels were found to have isolated areas containing dioxins/furans in soils up to 2 ft bgs that exceed the residential PRG and thus require remediation to support unrestricted use, as defined under North Carolina General Statute § 143B-279.9(d)(1).

The ecological risk assessment (ERA; Ramboll 2021) evaluated potential risks to songbirds, mammals, and soil invertebrates. The ERA identified hazard quotients greater than 1 for the American robin, American woodcock, and the short-tailed shrew due to HMW PAHs in OU2 soils—indicating potentially unacceptable risks. The ERA also found hazard quotients greater

than 1 for soil invertebrates in 30 percent of the OU2 parcels based on HMW PAHs and 2 percent of the OU2 parcels based on low molecular weight PAHs—suggesting a potential that PAH concentrations may locally impact the availability of invertebrates as a food source in the food web or reduce other soil functions. EPA, in collaboration with NCDEQ, has established a PRG of 22 mg/kg HMW PAHs based on a 2-acre, surface area weighted concentration to achieve an acceptable ecological risk level. Remediation of soils in the 12 parcels with unacceptable human health risk to a potential future resident will achieve this PRG and result in an acceptable level of ecological risk.

2 PROJECT OVERVIEW

This section provides an overview of the remedial action objectives (RAOs), PRGs, and regulatory requirements for the proposed remedial actions.

2.1 REMEDIAL ACTION OBJECTIVES

RAOs are environmental medium- or operable unit-specific goals for protecting human health and the environment. The following RAOs have been identified for OU2:

- Prevent potential unacceptable risk to future child and adult residents from long-term exposure through incidental ingestion of, dermal contact with, and/or inhalation of surface soils (up to 1 ft bgs) with COC concentrations above the residential PRGs for BaP TEQ, TCDD TEQ, benzo[*a*]pyrene, naphthalene, and pentachlorophenol.
- Prevent potential unacceptable risk to future child and adult residents from long-term exposure through incidental ingestion of, dermal contact with, and/or inhalation of subsurface soils (1 to 2 ft bgs) with dioxin/furan concentrations above the residential PRG for TCDD TEQ should the subsurface soils be brought to the surface in the future.
- Prevent potential unacceptable risks to songbirds and small mammals due to exposure through the food chain, incidental ingestion of or direct contact with surface soils (up to 1 ft below ground surface) with a surface weighted average concentration of the sum of HMW PAHs above the ecological risk PRG for HMW PAHs across a 2-acre area.

2.2 CLEANUP LEVELS

Preliminary remediation goals are established for each COC that will achieve the RAOs for each medium and receptor. PRGs for contaminated soil are typically risk-based concentrations because there are not many federal promulgated cleanup levels. PRGs were developed to prevent unacceptable risks to ecological receptors and future residents who may come into contact with OU2 surface soil. Table 2-1 presents the PRGs for each COC.

As data are gathered during the risk assessments and feasibility study, PRGs may be refined and eventually become the final contaminant-specific cleanup levels in a decision document such as a Record of Decision. The proposed plan will seek public comment on the Preferred Alternative including the Site-specific cleanup levels. The final cleanup levels are selected in the OU2 Record of Decision.

2.3 REMEDIAL ACTION OVERVIEW

The remedial action involves excavation and removal of surface soils to a depth of up to 2 ft bgs with an initial estimate of approximately 2,900 cubic yards of contaminated soil over a total area of 1.6 acres. The excavation areas and volumes associated with each of the 12 OU2 parcels to be remediated are shown in Figures 2-1 and 2-2.

Excavation and material handling will be performed using conventional earthwork equipment, such as hydraulic excavators, bulldozers, loaders, and haul trucks. Based on analytical results to date, excavated OU2 soils are anticipated to be non-hazardous solid waste and thus suitable for disposal at an appropriately-permitted RCRA Subtitle D landfill. Contaminated soil will be directly loaded into haul trucks and transported to an appropriately-permitted RCRA Subtitle D landfill. Should any excavated soils be determined to be hazardous waste, those soils will be handled separately from the non-hazardous soils and disposed in an appropriately-permitted RCRA Subtitle C landfill. Alternatively, those soils may be treated as necessary for disposal at an appropriately-permitted Subtitle D landfill.

If necessary, some excavated soils may be managed in temporarily stockpiles prior to subsequent loading into haul trucks for transport to the landfill. Excavated areas will be backfilled with clean imported fill meeting gradation and compaction criteria suitable for equipment traffic and future development activities. Excavation, material handling, and stormwater will be managed and controlled to prevent cross-contamination and co-mingling of clean and impacted soil.

All remedial action construction activities will be completed in accordance with the performance requirements established in this OU2 RAWP. The Contractor will be required to prepare submittals that address the means and methods for completing the work, providing health and safety protection to workers and the community, ensuring quality control, and documenting the work. Contractor submittals will be reviewed and accepted by the Multistate Trust before the work is initiated.

2.4 REGULATORY REQUIREMENTS

Federal, state, and local regulatory requirements and guidance will be followed in the preparation of the remedial activities. Section 121(e) of CERCLA, 42 USC § 9621(d), and the National Contingency Plan at 40 Code of Federal Regulations (CFR) § 300.430(f)(1)(ii)(B) require that remedial actions at CERCLA sites attain applicable or relevant and appropriate federal and state requirements, standards, criteria, and limitations. Regulations and guidance that apply to the remedial design and remedial action process include, but are not limited to, the following requirements listed below; additional regulatory requirements are included in Table 3-1 (Action Specific ARARs) of the OU2 Feasibility Study report (Integral 2022):

- **Worker Safety**
 - Occupational Safety and Health Administration Hazardous Waste Operations and Emergency Response (HAZWOPER, 29 CFR 1910.120)
- **Waste Disposal**
 - Resource Conservation and Recovery Act (RCRA; 40 CFR 260)
 - Toxic Substances Control Act (40 CFR 761)
 - North Carolina Solid Waste Management (North Carolina Admin. Code Title 15A, Subchapter 13B)
- **Water Pollution Control/Stormwater Management**
 - Clean Water Act and National Pollutant Discharge Elimination System (NPDES; 40 CFR 100-149)
 - North Carolina NPDES Program (North Carolina Admin. Code Title 15A, Subchapter 02H .0100 through .1000)
 - North Carolina Erosion and Sediment Control (North Carolina Admin. Code Title 15A, Subchapter 4B)
 - North Carolina General Statutes Chapter 113A Pollution Control and Environment
 - Town of Navassa Phase II Stormwater Ordinance.
 - Brunswick County Stormwater Ordinance.
- **Noise Limitation**
 - Brunswick County, North Carolina Code of Ordinances Chapter 1-9 – Public Health and Safety, Article VIII, Noise Ordinance Sec. 1-9-56
- **Other Potential Criteria**
 - Details concerning how construction activities will be performed in compliance with applicable requirements are presented in Section 4 of this RAWP.

3 REMEDIAL ACTION TEAM ORGANIZATION

The Multistate Trust will provide overall management of the OU2 remedial action. EPA is the lead regulatory agency for the project and NCDEQ is the non-lead oversight agency. Remedial construction services will be provided by a prime contractor selected by the Multistate Trust and approved by EPA and NCDEQ. Integral will serve as the engineer of record for the remedial action, assist the Multistate Trust with oversight of the construction quality assurance (CQA) program, and prepare the remedial action completion report (RACR). The Multistate Trust’s CQA team may retain additional consulting support to provide onsite assistance. Names and contact information for the project team are provided below.

Greenfield Environmental Multistate Trust LLC	
Richard Elliott Director of Construction Services and Senior Project Manager re@g-etg.com (617) 953-1154	Claire Woods Director of Environmental Justice Policies and Programs and Senior Attorney cw@g-etg.com (323) 204-6943
Ngozi Ibe Senior Project Manager ni@g-etg.com (919) 695-9582	Gerald Couch Multistate Trust Representative Gerald.couch@jacobs.com (678) 488-8837
EPA Region 4	
Erik Spalvins Remedial Project Manager Spalvins.Erik@epa.gov (404) 562-8938	L'Tonya Spencer EPA Community Involvement Coordinator Spencer.LaTonya@epa.gov (404) 562-8463
NCDEQ	
David Mattison Remedial Project Manager David.Mattison@ncdenr.gov (919) 707-8336	
Integral	
Todd Martin, P.E. Principal tmartin@integral-corp.com (801) 277-6690	Jane Sund, P.E. Engineer of Record jsund@integral-corp.com (503) 943-3615 CQA Representative TBD

Prime Contractor—TBD	

4 CONSTRUCTION ACTIVITIES

This section outlines the sequence of activities to be completed by the Contractor and provides details on requirements for each of the construction tasks.

4.1 Construction Sequence

The following generally describes the anticipated sequence of construction activities to be performed in OU2, which may be performed by the Contractor or subcontractors:

- **Mobilization.** Transportation of Contractor equipment and materials to the Site and establishment of a support area, including trailer, storage areas, parking area, and perimeter security fencing, and monitoring well protection measures.
- **Erosion and Pollution Controls.** Implementation and/or modification of existing pollution control and temporary erosion and sedimentation control measures, as necessary to complete remaining site work.
- **Site Preparation.** Site preparation will include the following subtasks:
 - Excavation boundary survey
 - Utility locates (one-call and private locates, as needed)
 - Logging of trees
 - Brush clearing, concrete pads/structures and surface debris (i.e., railroad track, railroad ties, tires) removal and other materials
 - Establishment of haul routes, and support and staging areas.
- **Topographic Survey.** A topographic survey completed after logging and brush clearing and prior to excavation.
- **Excavation and Backfill.** Soil removal using conventional excavation equipment. The OU2 remedial action may begin any time after mobilization of equipment and implementation of erosion and pollution controls. Excavation procedures will include excavation and loading, and hauling soils for offsite disposal, onsite stockpiling (as necessary), equipment decontamination, water management, progress surveys, and backfill.
- **Site Restoration.** Hydroseed of final grades and repair/installation of perimeter security fencing, as needed.
- **Site Inspection.** Pre-final and final inspections/meetings among the Contractor, Multistate Trust, NCDEQ, and EPA to determine whether all required construction activities have been completed to the satisfaction of the Multistate Trust, NCDEQ, and

EPA. Any needed follow-up work will be documented after the pre-final inspection, and satisfactory completion of that work will be determined during the final inspection. All interim and final as-built surveys and construction quantities will be submitted to the Multistate Trust as part of the Contractor's final construction documentation.

- **Final As-Built Survey.** A final survey completed to document the excavated area has been returned to pre-existing conditions.
- **Demobilization.** Removal of Contractor equipment, materials, and support structures.

4.2 Contractor Submittals

Upon notice to proceed, the Contractor will prepare a Construction Work Plan that identifies and describes the methods, equipment, and personnel required to execute and complete the work. The Construction Work Plan shall include, at a minimum, the submittals identified in this OU2 RAWP (and summarized below) as one document or as separate documents included as part of the Construction Work Plan by reference. In addition, the Contractor will provide relevant drawings and other materials requiring review and acceptance by the Multistate Trust.

The Contractor will prepare all submittals and verify for accuracy, completeness, and compliance with the OU2 RAWP and any applicable contract requirements, prior to transmitting to the Multistate Trust. Each submittal will include a cover sheet, submittal number, Contractor's contact information, project title, transmittal date, and description. The Multistate Trust will complete its review of submittals and respond to the Contractor within 14 calendar days of receipt. The Contractor will finalize submittals within 7 calendar days of receipt of the Multistate Trust comments, and prior to initiating the subject work.

A list of submittals to be prepared by the Contractor is provided below:

- Stormwater Pollution Prevention Plan, Section 4.3.1 and Section 4.7.1
- Erosion and Sediment Control Plan, Section 4.3.1 and Section 4.7.1
- Traffic Control Plan, Section 4.3.2 and Section 4.10
- Health and Safety Plan, Section 4.4 and Section 4.7.3
- Construction Survey Plan, Section 4.5
- Spill Prevention Control and Countermeasures Plan, Section 4.7.2
- Site Security Plan, Section 4.11
- Site Preparation Plan, Section 4.13
- Excavation and Backfill Plan, Section 4.8, 4.14, 4.15, and 4.16
- Truck and Equipment Decontamination Plan, Section 4.17

- Restoration Plan, Section 4.16
- Construction Reporting, Section 5.1
- Construction Schedule, Section 6.0
- Contingency Plan, Section 7.0

All submittals will detail the means, methods and sequencing to complete the work.

4.3 Access Agreements and Permitting

The OU2 remedial action will be conducted on property owned by the Multistate Trust; therefore, access agreements will not be needed. As provided in CERCLA § 121(e), and Section 300.400(e) of the NCP, no permit is required for any portion of the remedial action conducted entirely onsite (i.e., within the areal extent of contamination or in very close proximity to the contamination and necessary for implementation of the remedial action). The formal permitting process must be completed for any offsite activities, because offsite activities are not exempt from having to obtain permits. Where any portion of the remedial action that is not onsite requires a federal or state permit or approval, the Contractor shall submit timely and complete applications and take all other actions necessary to obtain all such permits or approvals. The substantive requirements of applicable permits and County ordinances will be met and documented prior to initiation of the remedial actions. The anticipated requirements are discussed in the following sections.

4.3.1 Stormwater Permitting

During construction activities, stormwater will be managed and receiving waters protected following all local, state, and federal guidance. Permits will be secured through the Town of Navassa, Brunswick County, and the NCDEQ. A stormwater pollution prevention plan (SWPPP) and an erosion and sediment control plan (ESCP) will be prepared to meet the permit requirements. These plans will include implementation of best management practices (BMPs) to prevent discharge of pollutants to stormwater and shall also address potential runoff from OU2 to the stormwater ditch located on the east side of Navassa Road. As described in Section 4.7, the SWPPP will meet the requirements of the Town of Navassa, Brunswick County, and applicable NCDEQ guidance, and will identify an appropriate, qualified individual who will be responsible for implementation and management of BMPs.

4.3.2 Traffic Control Permitting

All truck drivers and haul trucks moving material from the Site will have current licenses and registrations as required by NCDOT. The contractor will prepare a traffic control plan that follows applicable NCDOT regulations, County ordinances, Town requirements, and any

required permits. As described in Section 4.10, the plan will describe control measures and notification requirements for streets that may be affected by the remediation activities.

Advanced notice will be provided to the Navassa Town Planner, Navassa Town Administrator, Navassa Town Clerk, and Navassa Town Sheriff 14 days prior to the start of site activities. The Multistate Trust shall be copied on communications providing the above-described notice to the Town of Navassa contacts. The Traffic Control Plan will be prepared by the Contractor and routinely updated to ensure that construction traffic does not create a safety hazard for local residents. Upon leaving the site, all haul trucks will remain on public roadways.

4.4 Health and Safety

A comprehensive Construction Health and Safety Plan (HASP) will be prepared and implemented by the Contractor to ensure protection of workers, visitors, property owners, and the public during all OU2 remedial activities. The Construction HASP will be developed in accordance with the Occupational Safety and Health Administration's HAZWOPER Standard (29 CFR 1910.120) and will identify all monitoring procedures, safety protocols, and response actions required to protect against physical harm and exposure to hazardous substances during the work.

The HASP will include protocols for managing construction operations during the COVID-19 pandemic to aid in preventing the spread of the virus, including social distancing requirements, use of personal protective equipment (e.g., face masks, gloves) and reporting and actions if workers experience symptoms. Construction will be completed in accordance with federal, state, and local emergency orders regarding COVID-19.

4.5 Surveying

The Contractor will retain an independent surveyor to lay out, control, and document the work. The surveyor will be a licensed professional land surveyor registered with the State of North Carolina. A construction Survey Plan will be submitted to the Multistate Trust by the Contractor before the work is initiated. The Survey Plan will identify the independent surveyor, the proposed surveys, and a preliminary list and schedule of survey activities and submittals noted herein. Surveying requirements will include, but not be limited to, the following:

- Verification of existing local monuments and control points
- Establishment of supplemental benchmarks, control points, etc., as needed to conduct the work
- Layout of all work elements and survey of existing grades
- Excavation and backfill layout

- Documentation of the horizontal and vertical extent of all completed excavations
- Preparation of as-built record survey drawings.

The pre-existing topographic survey will be conducted after logging and clearing operations are completed. Progress surveys will be conducted daily and compiled and submitted to the Multistate Trust throughout excavation and backfill activities, to document the progression of the work and any deviations from the project plans, and for construction quantity calculations. The surveys will be completed on a grid, at 10-ft spacing, including feature and grade breaks, excavation and backfill corners, toe and top of slopes.

The survey submittals will include AutoCAD electronic files and plan view drawings with 0.5-ft contour intervals, plotted at 1 in. = 10 ft. ASCII-format processed survey data will also be maintained for the project record. The final as-built record drawing and construction quantities will be prepared and sealed by the independent surveyor and submitted to the Multistate Trust for review and acceptance.

4.6 UTILITY LOCATION AND PROTECTION

The Contractor will implement measures to identify and protect existing utilities within the work area. The Contractor will identify active utilities in the areas of the work on figures included in the Site Preparation Plan. All reasonable actions shall be taken to further locate utility services in the vicinity of the project prior to excavation and subsurface work. In accordance with North Carolina General Statutes, Chapter 87 Article 8A, the Contractor will notify the Utility Notification Center prior to beginning subsurface work. The North Carolina 24-hour Utility Notification Center number is 1-800-632-4949 or 811 from a local landline. Construction activities within the vicinity of utilities must be conducted in accordance with North Carolina 811 requirements.

The Contractor will protect all known or suspected utilities, including but not limited to surface and subsurface utilities, such as existing utility lines, poles, wires, cables, transformers, risers, junction and meter boxes, vaults, and stormwater catch basins. In general, the excavation depths for the planned surface soil removals are too shallow to contact known buried utility lines. Care will be taken when excavating beneath active overhead power lines to keep all personnel and excavation equipment at least 10 ft away.

The Contractor will promptly notify the applicable utility purveyor and the Multistate Trust in the event an unknown utility line is encountered that conflicts with completion of the work. The Contractor will not abandon, remove, relocate, or replace any utility line without prior approval from the owner and applicable utility purveyor.

4.7 POLLUTION CONTROL AND MITIGATION

The Contractor will develop and implement pollution control and mitigation measures to protect water and air quality, and prevent spills and sedimentation, as needed. All pollutants, waste materials, contaminated materials, and debris will be handled and disposed of in a manner that does not cause further contamination of OU2, stormwater, or surrounding areas. Good housekeeping practices and preventive measures will be taken to ensure that the construction site will be kept clean, well-organized, and free of debris.

The Multistate Trust will require the Contractor submittals include plans that specify the means and methods that will be implemented to provide for pollution control and mitigation. The Contractor submittals must be approved by the Multistate Trust prior to the start of construction, and measures will be implemented and updated as necessary by the Contractor.

The following sections describe the plans that will be submitted as part of the pollution control and mitigation submittals.

4.7.1 Water Management

The Contractor will prepare a SWPPP and ESCP that outline the means and methods to be used to manage stormwater run-on or run-off during excavation activities. Non-contact stormwater (run-on originating in areas outside of exclusion zones that has not come into contact with contaminated soil) will be intercepted and diverted away from exclusion zones (described in Section 4.8) to the extent practical. BMPs installed to control erosion and prevent offsite migration of stormwater solids will be discussed in the SWPPP and shown on the ESCP. Appropriate BMPs shall be placed around excavation areas, stockpiles, haul routes, construction entrance/exits, and along any drainage feature. A stormwater ditch is present along the east side of Navassa Road that will require BMPs to prevent offsite migration of stormwater solids. The SWPPP shall also detail the means and methods for diversion, containment, and, if needed, collection of contact stormwater for offsite disposal. Generation of contact stormwater will be minimized to the extent practicable, and appropriate temporary erosion and sediment control BMPs will be used to prevent migration and cross-contamination of clean areas, including clean backfill. All temporary erosion and sediment control BMPs will comply with applicable state and local regulations and will be described in the SWPPP and shown on the ESCP.

BMPs will be installed, as appropriate, prior to any ground disturbing activity. The BMPs will be inspected at least daily and within 24 hours of runoff events in which stormwater discharges from the property. Any BMP deficiencies identified during daily or event-driven inspections will be repaired or replaced immediately. Daily and event-driven inspections will be documented. BMPs will remain in place and effective, and will continue to be inspected until work in that runoff area is complete.

Although dry methods primarily will be used for decontamination, the SWPPP will also include protocols for managing water that may be generated during decontamination activities.

4.7.1.1 Construction-Generated Wastewater

Water that is generated by decontamination activities and the truck wheel wash will be collected and disposed offsite at a permitted commercial facility. The Contractor may propose alternate means of handling and disposing of construction-generated wastewater in its submittals.

To the extent practicable, all stormwater that is intercepted by active excavation and stockpile areas will be contained and infiltrated in place. Berms or other BMPs will be used to prevent migration and cross-contamination of clean areas, including clean backfill. If accumulation of stormwater impedes the progress of excavation activities, or poses risk of cross-contamination, it may be collected (e.g., with vacuum trucks or pumped to onsite storage tanks) and disposed of as described above for other construction-generated wastewaters.

4.7.1.2 Non-contact Stormwater

Non-contact stormwater refers to run-on originating in areas outside of exclusion zones that has not come into contact with contaminated soil. Non-contact stormwater will be intercepted and diverted away from exclusion zones, with berms or other barriers, to prevent mixing with contact water and to promote onsite infiltration. BMPs will be installed to control erosion and prevent offsite migration of stormwater solids. All BMPs will comply with applicable state and local regulations.

4.7.2 Spill Prevention Control and Countermeasures

The Contractor will include in its submittals a spill prevention control and countermeasures plan (SPCCP). The SPCCP will identify potential spill sources and measures for preventing and responding to spills and will specify:

- Regular inspection of vehicles, equipment, and petroleum product storage/dispensing areas will occur to detect any leaks or spills, and to identify maintenance needs to prevent leaks or spills.
- Onsite fueling tanks and petroleum product storage containers will include secondary containment.
- Spill prevention measures, such as drip pans, will be used when conducting maintenance and repair of vehicles or equipment.
- If it is necessary to perform emergency repairs onsite, plastic will be placed beneath and, if raining, over the vehicle.

- Contaminated surfaces will be cleaned immediately following any discharge or spill incident.

The SPCCP will identify an appropriately qualified spill prevention coordinator who will be responsible for implementing the SPCCP, including training Contractor staff and reporting. The spill prevention coordinator will have a working knowledge of all applicable federal and local regulations and reporting requirements.

All spills regardless of size will be reported by onsite personnel to the spill prevention coordinator, who will determine which agencies are to be notified, if any, and will immediately communicate with the Multistate Trust.

4.7.3 Air Quality Control and Monitoring

Continuous real-time dust monitoring will be conducted by the Multistate Trust's CQA team. Baseline dust monitoring will be completed prior to the start of construction activities. During excavation, or any soil/surface intrusive activities, dust emissions will be monitored, consistent with protocols established in the CQA HASP. Air monitoring will include monitoring of worker breathing space and monitoring of air space adjacent to and downwind of the active excavation and materials handling areas, temporary stockpile and handling areas, and the area of grading operations. A portable weather station will be used to monitor wind direction and speed and other meteorological parameters.

Dust action levels and response measures will be defined in the CQA HASP, including notification procedures for potentially impacted residents. The CQA HASP will also include provisions for monitoring and mitigating nuisance dust that may affect the surrounding community. If real-time dust monitoring indicates there is an action level exceedance, the CQA team will collect dust samples for analysis and communicate results to the Contractor. The CQA HASP will identify specific response actions that will be implemented by the Contractor if construction-related air emissions exceed action levels. These response actions will include, but not be limited to:

- Suspending work activities
- Assessing emission source, nature, and concentration, and prevailing weather conditions
- Upgrading worker personal protective equipment as appropriate
- Implementing construction BMPs to control emissions (water spray, odor suppressing foams, modified construction procedures, etc.)
- Informing affected adjacent property owners, residents, and the Town of Navassa of potential temporary construction emissions and appropriate precautionary measures
- Developing a plan to proceed with the work in a manner that does not pose an unacceptable risk to workers and the community.

The dust monitoring data will be also be shared with the Contractor for consideration with respect to the Contractor's HASP.

4.7.4 Noise Reduction

Excavation and contaminated soil removal activities will require the use of heavy construction equipment (e.g., excavators, dozers, front-end loaders) and trucks that generate noise. It is anticipated that this will temporarily affect residents and the general public near the work site. Noise will be controlled to the extent practical by adhering to Brunswick County, North Carolina Code of Ordinances Chapter 1-9 – Public Health and Safety, Article VIII, Noise Ordinance Sec. 1-9-563. The ordinance does not define noise limits, but the following controls will be established to comply with the ordinance:

- Work hours will be between 7:00 a.m. to 7:00 p.m. on weekdays. Noise-intensive activities will not begin before 8:00 a.m.
- Haul routes will avoid streets adjacent to schools and other learning institutions, court (while in session), and hospitals.
- Noise generated from dumping loads from dump trucks will be minimized.
- Use of the “jake brake” will be prohibited on trucks.

In addition to the controls listed above, noise generation and potential impacts to the public will be considered during the selection of equipment (e.g., pumps, generators) and the identification of locations for its placement on the work site.

4.8 WORK ZONES AND SOIL MANAGEMENT

This section describes key performance requirements for managing the construction site during excavation activities and handling/disposal of construction-generated wastes. To minimize the potential for cross-contamination, the following distinct areas will be established and maintained. The location of each area is expected to be adjusted, as needed, to accommodate the sequence of construction activities. In the Site Preparation and Excavation and Backfill Plan submittals, the Contractor will outline the location, size, and methods to be used to construct these areas.

4.8.1 Exclusion Zones

All contaminated soils will be managed within an exclusion zone established to prevent cross-contamination and releases of contamination to clean areas of the property and adjacent land. The exclusion zone will contain the excavation area and the haul truck loading zone. Controls will be installed for security and to prevent access by the general public (Section 4.11). Fencing

or other provisions will be established to secure perimeter of and clearly mark the exclusion zones around each active excavation and any stockpile of excavated soil material. Access to these areas will be restricted to personnel and equipment responsible for completing the excavation and handling of excavated soils. All personnel and equipment exiting this zone will be decontaminated. Vehicles, equipment, personnel, and materials may not pass between exclusion zones and support areas without having been decontaminated. Haul routes will be designated and maintained onsite to facilitate the movement of excavated contaminated soil and clean materials. There will be onsite routes established for movement of contaminated soil to prevent cross-contamination. It is anticipated that haul routes will be adjusted to accommodate the sequence of excavation and backfill activities.

To the extent practical, contaminated soil will be directly loaded into lined haul trucks for transport to an appropriately permitted landfill (see above Section 2.3). However, area(s) will be designated, if/as needed, for stockpiling impacted soils to provide surge capacity to ensure that truck availability and rate of offsite hauling does not delay soil excavation. To minimize the potential for cross-contamination, excavated soils will be managed in clearly delineated stockpile area(s), to be established within an exclusion zone. Contaminated soil stockpile area(s) will be surrounded by a perimeter barrier (e.g., straw wattle, berm) and lined with an impermeable material to control soil migration and stormwater runoff. Contaminated soil stockpiles will be covered with plastic sheeting to prevent erosion and generation of fugitive dust. Odor suppression materials will be used, as needed, to control nuisance odor.

4.8.2 Contamination Reduction Zone

A contamination reduction zone will be established directly adjacent to each exclusion zone to be used for the purposes of decontaminating all vehicles, equipment, and personnel exiting the exclusion zone. Within the contamination reduction zone, facilities will be provided for decontamination of personnel, including but not limited to hand and boot washing stations. Equipment decontamination areas will be surrounded by berms, lined with an impermeable material and a durable working surface (e.g., geomembrane, steel plates). All liquid decontamination wastes will be collected and disposed of as described in Section 4.17.

4.8.3 Support Areas

Support areas will be clearly delineated from exclusion and contaminant reduction zones. Support areas will provide area for staging/storage of Contractor trailers, employee parking, employee break areas, and decontaminated equipment. Stockpiles of clean materials, including imported aggregate backfill material, will be maintained in support areas.

4.9 TRANSPORTATION AND DISPOSAL

Within the removal areas, excavated soil, stumps, root balls, and any anthropogenic debris (e.g., debris from concrete pads) will be transported to an appropriately permitted RCRA Subtitle D landfill for disposal. Should the soils from any of the removal areas be determined to be a hazardous waste, the excavated soil, stumps, root balls, and any anthropogenic debris from within these removal areas will be handled separately from the non-hazardous soils and disposed in an appropriately-permitted RCRA Subtitle C landfill. Alternatively, these materials (or a subset of thereof) may be treated as necessary for disposal at an appropriately-permitted Subtitle D landfill.

Aboveground vegetative debris, such as brush and trees (excluding the stump and roots) generated from the removal areas can be managed onsite, used for timber (in the case of the trees), or transported and disposed of at an offsite facility. All vegetative materials generated from no-action areas do not require disposal at the landfill. To the extent possible, these materials will be chipped and used as mulch, and disposed of onsite in a tidy manner that does not present an eyesore. The Contractor will be required to document the area of removal and receive pre-approval from the Multistate Trust regarding the final disposition site for no-action area materials.

Prior to construction commencing, the Multistate Trust's CQA team will assist the Contractor with waste profiling for OU2 soil. Concrete and below ground vegetation from removal areas are not anticipated to be more contaminated than OU2 soils, and separate waste profiling data will not be collected for concrete or vegetation. Existing sampling data for OU2 will be reviewed to determine if all analyses required by the landfill have been completed. Additional sampling may be required to meet all landfill requirements for waste profiling. The Multistate Trust will prepare the necessary waste profiles for disposal and will include representative sampling results to characterize the waste. Manifests of each truck load will be generated. A draft non-hazardous manifest is provided as Appendix A to this RAWP.

All trucks hauling contaminated soils and debris will utilize bed liners and tarps. Once filled with excavated soils or other materials, and prior to departing the Site, all truck beds will be covered and the exterior decontaminated. Truck wheels, body, and undercarriage will be dry brushed as needed to remove gross soil, debris, or other contamination prior to departure. Truck inspection and decontamination activities will be documented on the Contractor's truck inspection and decontamination form. Following decontamination, all trucks will be inspected by trained personnel to ensure that they are properly decontaminated to prevent cross-contamination and track out and that they are in a condition to travel public roads safely. All trucks will be appropriate placarded, if necessary, in accordance with DOT regulations.

The number of truck loads, and mass of excavated soil and debris will be tracked by the Contractor and the Multistate Trust's CQA representative. Loads transported to the landfill

will be tracked with non-hazardous waste manifests. The Contractor will maintain strict control and tracking of all offsite material shipments and associated waste manifests and disposal tickets.

4.10 TRAFFIC CONTROL

The Contractor will provide in its submittals a traffic control plan that describes protection and control of pedestrian and vehicle traffic during construction operations, parking for onsite workers, and haul routes. The plan will address any traffic control issues on nearby rights-of-way (e.g., if temporary lane closures or traffic flaggers are needed for trucks entering and leaving the Site), onsite traffic control measures, and any special provisions related to time restrictions on the use of haul route roadways, such as when children are entering/leaving schools. The traffic control plan will be prepared by the Contractor and routinely updated to ensure that construction traffic does not create a safety hazard for local vehicles and residents.

Haul routes will be selected that minimize potential impacts to the surrounding community and consider key constraints. All designated haul routes will be communicated in advance to hauling personnel and to the Navassa Town Planner, Navassa Town Administrator, Navassa Town Clerk, and Navassa Town Sheriff. Flaggers will be utilized as necessary at the entrance to work zones and at destination facilities to control vehicular traffic where trucks enter and exit staging/loading/ disposal locations.

Advanced notice will be provided to the Navassa Town Planner, Navassa Town Administrator, Navassa Town Clerk, and Navassa Town Sheriff 14 days prior to the start of site activities. Traffic control will be planned, implemented, and referenced using the U.S. Department of Transportation Manual on Uniform Traffic Control Devices.

Prior to the start of the remedial action, the Multistate Trust will mail a fact sheet to residents living in potentially affected areas and will provide notifications in the local paper and to local businesses and churches that may be affected by construction traffic. Traffic will be controlled during the implementation of the work using one or more of the following:

- Standard highway signs warning of and designating work zones, including reduced speed limits, and road/lane closures
- Cones, barrels, and/or barricades
- Flaggers for lane closures and/or to assist with equipment/truck access to work areas
- Assistance from police, if needed, when work occurs in high traffic areas.

Pedestrian routes will be closed, as needed, and rerouted in work zones using signage, barricades, and/or temporary fencing. Flaggers will be staged at appropriate locations, if needed, to assist with rerouting pedestrian traffic across roadways along public thoroughfares.

4.11 SITE SECURITY

A Security Plan will be developed by the Contractor for the completion of the OU2 remedial action. Temporary controls will be installed as needed to prevent access to the property by the general public during the remediation activities. This may include temporary fencing, perimeter tape, barricades, and signage. Existing access gates will be used for ingress/egress of the Site. The Contractor may modify the configuration of fencing and gates as needed to facilitate the work, provide controlled access to the Site, and maintain all active work zones.

Access to OU2 will be restricted to the authorized Contractor and approved subcontractors, Multistate Trust (including its designated representatives), and EPA/NCDEQ personnel. Provisions will be included in the Security Plan. All visitors to the exclusion zones will be required to sign in, participate in a health and safety briefing, and don appropriate personal protective equipment.

Appropriate signage will be installed along the roads to inform the public about truck traffic, restrict access, and provide contact information.

4.12 WORK HOURS

In accordance with the Brunswick County Code of Ordinances to limit noise from construction activities, construction activities will be limited to the hours of 7:00 a.m. to 7:00 p.m. on weekdays. Noise-intensive activities will not begin before 8:00 a.m. Construction activities are not expected to be necessary outside of these hours, including weekends. In the event that activities are required during the weekend (e.g., to complete a time-critical construction task in anticipation of impending weather), the Contractor will take the appropriate steps to notify the Navassa Town Planner, Navassa Town Administrator, Navassa Town Clerk, Navassa Town Sheriff, and advise the community.

4.13 SITE PREPARATION

The Contractor will prepare a Site Preparation Plan that details the means and methods for clearing the work areas and setting up temporary facilities to complete the work. The work plan will include the following information:

- Logging and clearing as described below.
- Surface debris removal (i.e., concrete pads/structures, railroad track, railroad ties, tires) as described below.
- Surveying as described in Section 4.5.
- Utility location and protection as described in Section 4.6.

- Temporary facilities such as field office, sanitary facilities, access roads/parking, equipment storage areas, and utilities.
- Security as described in Section 4.11.
- Temporary erosion sediment controls as described in Section 4.7.

The majority of the Site is heavily wooded, and clearing will need to be completed prior to surveying and excavation. Logging and clearing will be performed on the parcels identified for remediation, as well as in the access area, staging areas, and haul routes, as needed. Within the removal areas, the trees will be logged and stumps will remain for removal during excavation activities. Brush will be cut, and any brush with soil adhered will be stockpiled for disposal with excavated soils. Materials generated from areas requiring logging or brush clearing outside the removal area (i.e., no-action areas) can either be managed onsite (e.g., grinding and mulching) or transported and disposed of offsite, as described in Section 4.9. If material from no-action areas is to be managed offsite, these facilities will be provided in the Site Preparation Plan.

In addition to logging and brush removal, existing concrete pads/structures and other surface debris (i.e., railroad track, railroad ties, tires) will require removal prior to the start of excavation activities (Figures 2-1 and 2-2). Additional concrete pads/structures and surface debris may be encountered during the remedial action; however, these features have not been identified due to dense vegetation. Only concrete pads/structures and debris within the removal areas and demarcated “concrete pads” or “debris areas” on Figures 2-1 and 2-2 will be removed. Soils beneath a concrete pad/structure or surface debris outside of removal areas will be scraped to an anticipated depth of 4 in. below the base of the pad/debris. In the event that there is evidence of contamination (i.e., visual staining that is not indicative of natural organic material) that extends horizontally or vertically beyond 4 in. below the base of debris, the extent of soil excavation will be expanded as described in Section 4.14, below. Concrete pads/structures, surface debris, and scraped surface soils will be transported and disposed of offsite at an appropriately-permitted RCRA Subtitle D landfill.

4.14 EXCAVATION AND BACKFILL

Details on the means and methods to complete OU2 excavation and backfill will be included in the Contractor’s Excavation and Backfill Plan. Figures 2-1 and 2-2 provide the horizontal and vertical extent of each OU2 removal area.

Excavation and backfilling activities will be sequenced in a manner that minimizes the potential for track-out and cross-contamination of clean areas, including completed excavation areas that have been restored with clean fill. Sequencing will also endeavor to minimize open excavations and the generation of contact stormwater. To the extent practicable, contaminated soils will be loaded directly from the excavation area into haul trucks. Temporary stockpiling of

contaminated soils may be considered to facilitate the load out process. Any such stockpiles are to be located within the exclusion zone (Section 4.8.1) and BMPs will be put in place in accordance with the Erosion and Sediment Control Plan (Section 4.7.1), as appropriate. Temporary staging of stockpiles of clean materials, such as imported backfill, may be maintained in support areas (Section 4.8.3).

Excavated areas will be backfilled with clean fill, graded as appropriate to match previously existing grading and maximize stormwater infiltration, and hydroseeded to restore vegetation. Depending on the source of fill, agronomic soil testing may be performed to inform fertilizer and lime recommendations and improve revegetation. Interim as-built surveys will be conducted to track the extent and depth of excavated soils completed each day. Methods and tolerances for grade control will be specified to ensure removal depths are met. The backfill will be compacted to prevent subsidence.

Following completion of the OU2 excavation, backfill, and restoration, haul routes and contaminated soil stockpile areas will be stripped to remove potential cross-contamination and restored with clean materials.

4.14.1 Vertical Extent of Excavation

OU2 activities consist of the removal of shallow impacted soils and debris to an anticipated maximum depth of 2 ft bgs. In the event that there is evidence of contamination (i.e., visual staining that is not indicative of natural organic material) that extends vertically to a greater depth of excavation than that specified for a given removal area, the depth of soil excavation will be expanded as described further below.

The excavation/observation process at the base of each removal area is as follows:

1. Excavate to 1.0 ft or 2.0 ft bgs (as specified for each removal area).
2. Multistate Trust's CQA representative to observe conditions at the base of the specified excavation depth.
 - a. If visual evidence of contamination (i.e., staining that is not indicative of natural material) **IS NOT** observed at the base of planned excavation:
 - i. Complete progress survey as described in Section 4.5 to document excavation extents.
 - ii. Backfill excavation after the progress survey confirms excavation extents were met.
 - b. If visual evidence of contamination (i.e., staining that is not indicative of natural material) **IS** observed:

- i. Continue excavation vertically, to the extent that can be achieved practically and safely, until all evidence of contamination is removed or until groundwater is encountered.
- ii. When excavation reaches a visually clean base or encounters groundwater, the Multistate Trust's CQA representative will collect a five-point composite sample from base of excavation that was extended vertically.
- iii. Complete progress survey to document excavation extent.
- iv. Backfill excavation after confirmation sample is collected and progress survey completed.

Any necessary confirmation sampling and analysis will be completed by the Multistate Trust's CQA representative following the QAPP.

4.14.2 Horizontal Extent of Excavation

The minimum horizontal extent of excavation is shown in Figures 2-1 and 2-2. Should visual evidence of contamination be observed at the boundary of a given excavation area, the removal will extend horizontally into an adjacent parcel where the human health risk assessment found no unacceptable risk (i.e., a no-action area) until all visual evidence of contamination has been removed. Confirmation samples will not be collected from parcels with no unacceptable risks. Any deviations from the specified horizontal excavation extent will be surveyed and documented.

4.15 IMPORT BACKFILL REQUIREMENTS

Following soil removal, the excavated area will be backfilled with clean imported backfill (borrow material) and graded as appropriate to match existing grades and to support positive drainage. The final grading for parcels CS-56 (Figure 2-1) and SS-117 (Figure 2-2) will include provisions, as needed, to prevent stormwater from these areas draining offsite to the west. Backfill will be compacted to prevent subsidence. Import material tonnage will be measured by the supplier or recorded at a travel stop truck scale. Imported material tonnages will be tracked by the Contractor and provided in the quality control reports.

Backfill used onsite must be of suitable chemical quality such that the RAOs for OU2 are not compromised. Chemical acceptance criteria are described below. The backfill must also be of sufficient structural quality and be graded/compacted to support equipment traffic and future development activities. At a minimum, the imported backfill will satisfy the (NCDOT) North Carolina Standard Specifications for Roads and Structures, Section 1018 and Table 1018-2

(NCDOT 2012). Alternative material gradations may be proposed for the Multistate Trust's review and acceptance.

The Multistate Trust's CQA representative or the Contractor, with CQA oversight, will collect representative samples of borrow source material for physical and chemical testing. The Multistate Trust's CQA team will manage the analytical work under the existing QAPP, which will be updated if needed. Physical and chemical test results of materials will be reviewed by the Multistate Trust or its designated CQA representative, prior to importing any materials to the Site. Chemical quality of backfill sources must also be approved by EPA and NCDEQ. One sample per source will be analyzed for gradation/physical factors and chemistry. Each load of imported material will be visually inspected prior to placement. If significant changes in color, gradation, moisture content, etc. are observed, the load will require an additional sample for gradation/physical factors and chemistry or will be rejected. If the source of the import material changes, additional sampling will be required. At a minimum, import material will be tested for:

- Sieve analysis, in accordance with ASTM D-422
- Moisture density curve, in accordance with ASTM D-1557
- Analytical chemistry parameters, in accordance with methods to be coordinated with the Multistate Trust.

All imported materials are to be screened against residential regional screening levels¹ (RSLs) for VOCs, semivolatiles organic compounds, metals, polychlorinated biphenyls, TCDD TEQ, and total petroleum hydrocarbons (Appendix B). Any exceedances of residential RSLs will be evaluated on a case-by-case basis in collaboration with EPA and NCDEQ, in consideration of the risk-based remediation objectives.

Chemical test results for all backfill material sources that are conditionally accepted by the Multistate Trust must be submitted for EPA and NCDEQ approval prior to placement onsite. The Contractor will carefully track and record receipt of all imported material shipments.

Imported backfill materials will not be placed onsite until the sources have been accepted based on representative physical and chemical test results. Stockpiles of clean imported backfill will be maintained in designated support areas and handled using only clean equipment.

4.16 SITE RESTORATION

Upon completion of backfilling activities, the excavated areas of OU2 will be graded as appropriate to match existing grades and to support positive drainage. The final grading for

¹ RSLs are the lower of the cancer risk of 1×10^{-6} and hazard index of 1.

parcels CS-56 (Figure 2-1) and SS-117 (Figure 2-2) will include provisions, as needed, to prevent stormwater from these areas draining offsite to the west. The excavated areas of OU2 will be hydroseeded to further control potential dust and erosion. The seed mix will include grasses, binders, mulch, and fertilizers appropriate for vegetation of construction work sites. The Contractor will submit its proposed hydroseed mix to the Multistate Trust for review and acceptance, including analytical test results confirming that the proposed mulch does not contain chemical concentrations exceeding those established for import soil backfill materials.

4.17 TRUCK AND EQUIPMENT DECONTAMINATION

Haul trucks and construction equipment will be decontaminated as necessary to prevent contaminated soils and materials from leaving the Exclusion or Contamination Reduction Zones. Procedures for managing equipment decontamination will be specified by the Contractor in the Equipment Decontamination Plan. The plan will specify tools, methods, and techniques for managing dry and wet decontamination processes and containing all waste. Examples of tools include brooms, shovels, scrapers, and other implements to remove dry material from the equipment. The management of equipment requiring decontamination may include lining areas with plastic sheeting for placement of tools and using plastic containment cells during scrubbing or power washing. A wheel wash station will be installed at the construction exit to ensure haul trucks and work trucks exiting the site do not track out onto public roadways.

Haul trucks and construction equipment will be decontaminated and visually inspected by a designated and trained representative of the Contractor to ensure that decontamination is complete. Equipment inspection and decontamination activities will be documented on the Contractor's truck inspection and decontamination form.

Liquid wastes generated during construction activities will be characterized for proper disposal. The Contractor will coordinate liquid waste characterization sampling and disposal with the Multistate Trust and the CQA Team.

4.18 DEMOBILIZATION

Upon completion of the OU2 remedial action construction activities, the Contractor will coordinate with the Multistate Trust to perform a pre-final site inspection. Upon completion of any remaining work items identified during the pre-final site inspection and acceptance of the work by the Multistate Trust, the Contractor will decontaminate and demobilize remaining equipment, temporary support facilities (e.g., trailers, power and water supply), and construction-generated waste. Demobilization also includes submittal of all Contractor-generated construction documentation, as identified in Section 5.0.

5 CONSTRUCTION QUALITY CONTROL/QUALITY ASSURANCE

The Contractor will conduct construction quality control activities to ensure compliance with the performance requirements defined in this RAWP, including, but not limited to, surveying; waste disposal tracking; import material tracking; import soil testing; and dust monitoring and other field measurements. The Multistate Trust's CQA team will observe the Contractor's construction and quality control activities, respond to the Contractor's information requests, review Contractor submittals, and document overall compliance with the RAWP. The following sections summarize key elements of the construction quality control and quality assurance activities and provide additional details on management of the construction quality control and quality assurance program.

5.1 CONSTRUCTION QUALITY CONTROL AND REPORTING

The Contractor will complete daily quality control inspections and reporting for construction activities, and document the results in daily quality control reports. The format for the daily quality control report will be developed by the Contractor and approved by the Multistate Trust CQA team prior to the commencement of any remediation activities. A copy of the daily quality control report will be provided to the Multistate Trust's CQA team by the following work day. The daily quality control reports will be included in weekly quality assurance reports prepared by the CQA team and provided to the Multistate Trust.

The Contractor will assemble all information, data, photographs, and other materials to be included in the daily quality control reports and verify them for accuracy, completeness, and compliance with the contract requirements. The daily quality control reports shall provide sufficient detail on all completed activities to track progress and all events that occur during construction, along with documentation of any unforeseen conditions.

The scope of the quality control inspections to be included in the daily quality control report will be detailed in the Contractor's submittals, such as those included in the SWPPP, HASP, surveying plan, etc. Examples of Contractor quality control inspections and monitoring include air quality monitoring, surveying, environmental and safety control monitoring, and BMP inspection. The daily quality control report will also detail progress on removal, import, backfill, and disposal operations, including a tabulation of associated quantities. A copy of all monitoring documents and data collected will be included in the daily quality control report.

All monitoring, deficiencies in meeting quality control standards, and corrective actions will be documented in the daily quality control report. If results of a quality control inspection indicate that an item or action is noncompliant with the provisions of this RAWP or those outlined in Contractor submittals, that item or action will be identified in the daily quality control report,

including deficiencies that were immediately corrected. If possible, deficiencies will be addressed as soon as they are known. If the Contractor is unable to correct the deficiency, the situation will be discussed with Multistate Trust and the Multistate Trust CQA team, and the Contractor will develop a plan to address the deficiency.

In addition to day-to-day record keeping, the Contractor will submit waste disposal records, import material weight tickets, construction surveys, and other quality control documentation identified in this OU2 RAWP. The Contractor will submit these materials to the Multistate Trust's CQA team, and they will be included in a RACR to be prepared by the engineer of record and submitted to EPA (Section 5.5).

5.2 CONSTRUCTION QUALITY ASSURANCE

The Multistate Trust's CQA team will be responsible for CQA of the OU2 remedial activities including, but not limited to the following:

- Prior to construction, the Multistate Trust's CQA team will complete waste characterization of Site soils and confirm the landfill to receive the materials.
- Prior to implementation of the OU2 remedial action, the Multistate Trust's CQA team will be responsible for reviewing the Contractor's submittals outlined in Section 4.2.
- Prior to material procurement, the Multistate Trust's CQA team will review the Contractor's list of import material sources, along with available physical and chemical characterization data, as described in Section 4.15.
- During construction, the Multistate Trust's CQA team will observe construction activities and the Contractor's quality control activities, including reviewing the daily quality control reports.
- During construction, the Multistate Trust's CQA team will review pre- and post-excavation surveys submitted by the Contractor, as described in Section 4.5. The CQA will use the surveys to verify removal was completed to the required depths and within the removal boundary.
- The Multistate Trust's CQA team will review and sign the Contractor's waste manifests, including transportation-related shipping documents.
- The Multistate Trust's CQA team will prepare weekly CQA reports using information from the Contractor's daily quality control reports, surveys, waste disposal manifests, CQA field notes, and observations, and will submit them to the Multistate Trust. Weekly quality assurance reports will summarize the construction events that occurred during the previous month, as well as any delays and their causes. The report will describe the results of quality assurance inspections, testing, and monitoring activities, and the effectiveness of the Contractor's quality control activities.

5.3 PROGRESS MEETINGS

During construction, the Multistate Trust CQA team will hold and lead weekly progress meetings to be attended by the Multistate Trust, the Contractor, and the Multistate Trust CQA team. A typical meeting agenda includes a health and safety share and discussion, review of the schedule, review of submittals, review of security, review of monitoring requirements, requests for information, review of weather and Site conditions, and future tasks and schedule.

5.4 POST-CONSTRUCTION DOCUMENTATION

The Contractor's representative and the Multistate Trust's CQA representative shall conduct an inspection of the work and develop a pre-final punch list of items that do not conform to the respective construction work plan and agreement. This pre-final punch list shall be included in the construction quality control documentation prepared by the Contractor, and shall include the estimated date by which the deficiencies will be corrected. Once this is accomplished, the Contractor shall notify the Multistate Trust's CQA team that the Site is ready for a final inspection.

Following the final inspection, the Multistate Trust's CQA representative, in coordination with the Contractor, will prepare a final inspection report documenting the satisfactory completion of the pre-final punch list items.

The Contractor is required to submit final construction figures and supporting documents for various elements of the construction, including pre-and post-construction surveys, imported material characterization reports and approvals, modifications to this RAWP, and documentation of the restored site (completion checklist and photos).

5.5 REMEDIAL ACTION COMPLETION REPORT

Upon completion of remedial construction activities and final acceptance of the work by the Multistate Trust, a brief RACR will be prepared and certified by the engineer of record. The RACR will be prepared in general accordance with relevant EPA guidance on closeout procedures for National Priorities List sites (USEPA 2011) and will include the following elements:

- Overview of project background, site information, and project team organization
- Summary of remedial action construction activities, including construction methods and sequencing of the work, and any deviations from this RAWP, including supporting rationale, and daily construction reports, including photographs

- Summary of CQA and quality control protocols followed during construction, and relevant data, including quality assurance and quality control documentation, waste profiles and disposal receipts, import material analytical results and import tickets, construction monitoring and testing results, Contractor submittals, Contractor requests for information, field memorandums, photographs, confirmation surveys, as-built record drawings, and other monitoring documentation.

6 SCHEDULE

The OU2 remedial action is currently scheduled to be initiated in summer 2022 and is expected to take approximately 3 months to complete. The Contractor will prepare an appropriately detailed project schedule upon receiving the notice to proceed from the Multistate Trust. The project schedule will include estimated start and completion dates for each construction task. The schedule will be updated periodically to account for weather conditions and other factors that may impact the schedule. The following events, milestones, and submittals may be included in the schedule, as appropriate, to ensure work is planned efficiently:

- Construction kickoff meeting
- Contractor submittals
- Pre-construction activities, such as utility locating and surveys
- Construction permits
- Notifications to the community, Navassa Town Planner, Navassa Town Administrator, Navassa Town Clerk, and Navassa Town Sheriff
- Mobilization of equipment and personnel
- Health and safety measures and air monitoring program
- Site surveying (layout and as-built surveys)
- Implementation of stormwater pollution prevention program
- Construction of temporary facilities
- Construction of stockpile management areas
- Excavation activities and sequencing
- Site restoration
- Final site inspections
- Demobilization
- Construction quality control documentation and completion reporting.

In addition to these events, the Multistate Trust will facilitate meeting(s) and/or other updates to share information with community members and the Town of Navassa about the construction plans and schedule.

The construction schedule will be established to minimize disturbance of surrounding residents and the community to the extent possible. To the extent possible, the construction schedule will

be managed such that excavation will be backfilled within the same day, and no area will be left with an open excavation.

7 CONTINGENCY PLANNING

Construction contingency requirements will be carefully considered and incorporated into the Contractor's construction planning submittals identified in this OU2 RAWP. As described below, contingency actions will be developed for, but not limited to, potential unanticipated site conditions, major storm events, and potential life threatening events (fires, explosions, hazardous material spills) that could adversely affect construction activities and/or pose a risk to workers, the public, and/or the environment. In addition, emergency actions and release events have reporting requirements under CERCLA.

7.1 UNANTICIPATED SITE CONDITIONS

In the event that unanticipated contaminated media, debris, and/or structures are encountered during the remedial action, such conditions will be promptly communicated to the Multistate Trust. The Multistate Trust, in coordination with its CQA team and Contractor, will conduct necessary investigations to determine the nature and extent of the impacted area and to determine appropriate response actions. Investigations must be conducted under a QAPP and EPA-approved work plan. Unanticipated materials that may contain, or otherwise consist of, possible listed or characteristic hazardous wastes will be handled, characterized, and managed in accordance with applicable Occupational Safety and Health Administration and RCRA regulations and guidance.

7.2 MAJOR STORM EVENTS

The potential for major storm events and localized ponding or flooding within the OU2 remedial action area will be considered during remedial construction planning and will be addressed in the Contractor's SWPPP and related submittals identified in this RAWP. Specifically, response actions will be identified to protect exposed work areas from erosion, prevent cross-contamination of remediated work areas and non-impacted site areas, and prevent offsite migration of stormwater and stormwater solids. Such measures may include, but not be limited to, grading, creating berms to direct stormwater away from open excavations, and pumping as needed to prevent mixing of contact and non-contact stormwater. Excess stormwater will in turn be directed to temporary onsite containment/infiltration areas and/or storage tanks, as required. Visqueen tarps and berms will also be employed to protect excavations and stockpiles from erosion.

7.3 FIRES/EXPLOSIONS/SPILLS

Life-threatening incidents, such as fire, explosion, or a hazardous material spills or releases will be addressed in accordance with the site-specific HASP. All workers and potentially impacted

community populations will be removed from the affected area in accordance with the site emergency evacuation route. Medical assistance will be obtained if necessary. All onsite personnel and the Multistate Trust will be notified immediately of any emergency situation. The local fire department will be contacted to assist in a fire or spill, as appropriate. Caution will be exercised during field activities to prevent spilling materials generated during construction activities. In the event that a spill does occur, response actions will be immediately initiated. Proper personal protective equipment and spill cleanup materials will be available onsite. Hazardous materials spills will be contained immediately using appropriate spill cleanup materials maintained onsite.

7.4 EMERGENCY RESPONSE AND RELEASE EVENT REPORTING

Emergency actions and release events have reporting requirements under CERCLA. If any event occurs during performance of the work that causes or threatens to cause a release of waste material on, at, or from the Site and that either constitutes an emergency situation or that may present an immediate threat to public health or welfare or the environment, the Contractor and Multistate Trust CQA team shall 1) immediately take all appropriate action to prevent, abate, or minimize such release or threat of release; 2) immediately notify the EPA remedial project manager (RPM) orally; and 3) take such actions in consultation with the EPA RPM and in accordance with all applicable provisions of the Contractor HASP, the Emergency Response Plan, and any other appropriate submittal under the Construction Work Plan.

Upon the occurrence of any release event during performance of the work, the Contractor is required to immediately report the event to the Multistate Trust. Under CERCLA § 103 or Section 304 of the Emergency Planning and Community Right-to-Know Act (“EPCRA”), the Multistate Trust shall immediately notify the EPA RPM orally. In addition, for any Emergency Action or Release, the Contractor shall 1) within 14 days after the onset of such event, submit a report to EPA describing the actions or events that occurred and the measures taken, and to be taken, in response; and 2) within 30 days after the conclusion of such event, submit a report to EPA describing all actions taken in response to such event. Both reports must be approved by the Multistate Trust prior to submittal to EPA.

Upon the occurrence of any such release event during performance of the work, the Multistate Trust will provide notice of the event to the Navassa Town Planner, Navassa Town Administrator, Navassa Town Clerk, Navassa Town Sheriff, and community members via electronic mailing(s).

8 COMMUNITY OUTREACH

Maintaining community awareness and support of remedial construction activities will be critical to public safety and the overall success of the remedial action. This will be achieved in accordance with the EPA's Community Involvement Plan,² which provides a framework for community involvement and outreach relating to the Site, and through the Multistate Trust's routine community outreach efforts. The Multistate Trust's overall community outreach objectives for the Site are to:

- Share information with residents, businesses, and the community about the remedial action through quarterly meetings and written materials
- Work directly with local residents who may be impacted by remedial activities
- Provide information to the community about project milestones
- Provide consistent follow-up and clear messaging through the life of the project
- Engage public health agencies to assist with risk communication to residents and interested community members, as appropriate
- Provide meaningful opportunities to provide information to those not familiar with environmental remediation activities, including any limited-English speaking populations.
- Contract with prime Contractor, subcontractors, and vendors that are local to the Town of Navassa, wherever possible.

Community outreach activities may include, but not be limited to:

- Notifying the community of potential health and safety risks, hazards, and emergency conditions
- Establishing relationships with key community leaders to ensure they have access to the resources necessary to answer any questions or concerns
- Distributing project fact sheets, public announcement, notifications, and flyers
- Participating in community meetings, events, and briefings
- Convening one-on-one meetings with key community leaders and individual residents, including those located adjacent to the Site
- Posting signage indicating project details and contact information
- Coordinating with the media.

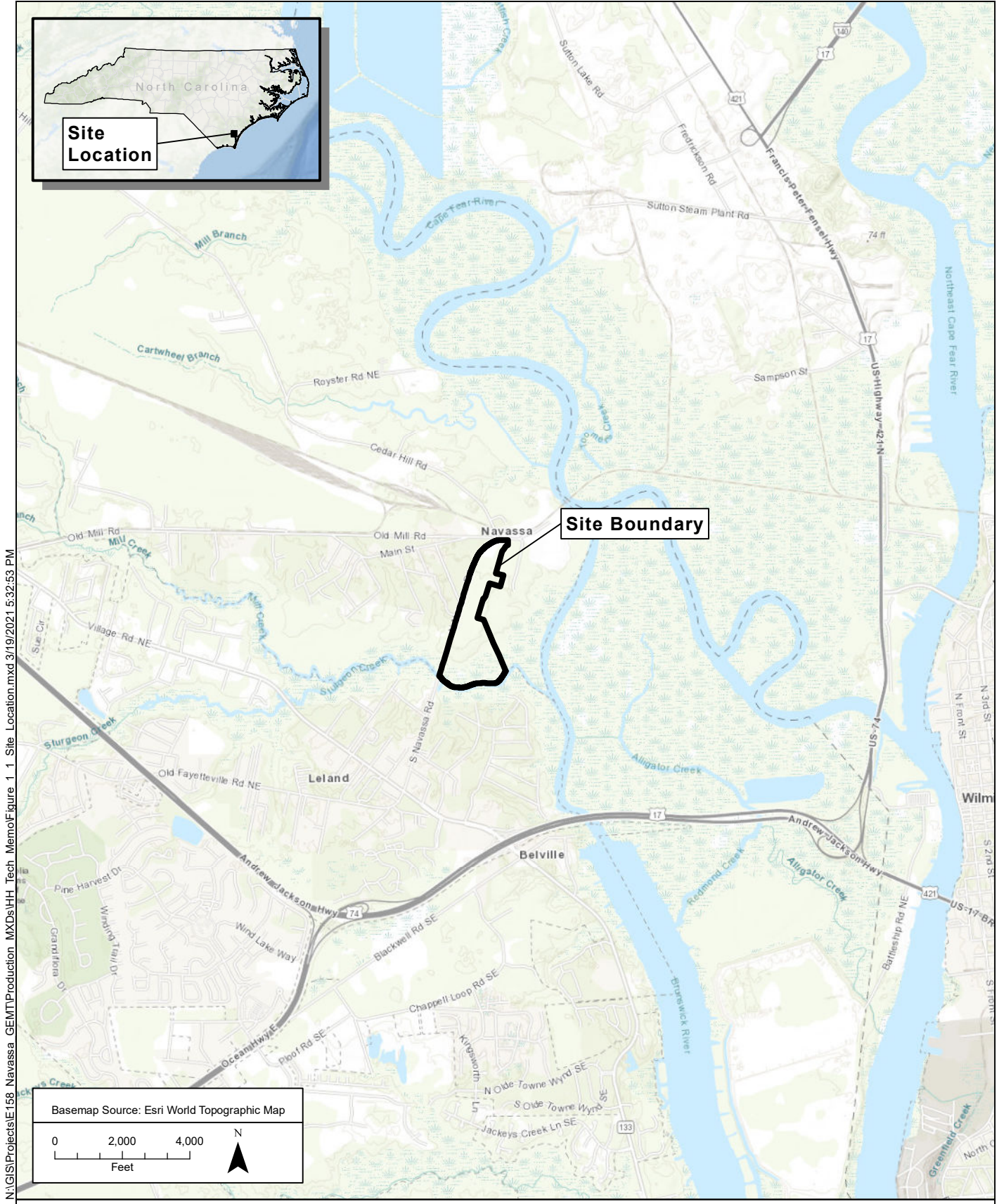
² Available from <https://semspub.epa.gov/work/04/11134955.pdf>

The community outreach will be developed and managed by the Multistate Trust, in close coordination with and support from its CQA team, the Contractor, EPA, and NCDEQ.

9 REFERENCES

- Integral. 2021a. OU2 Soil sampling results and human health risk assessment, Kerr-McGee Chemical Corp. – Navassa Superfund Site, Navassa, North Carolina. September.
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- Integral. 2022. Draft Feasibility study report, Operable Unit 2, Kerr-McGee Chemical Corp. – Navassa Superfund Site, Navassa, North Carolina. March.
- NCDEQ. 2020. Guidelines for assessment and cleanup of contaminated sites. North Carolina Department of Environmental Quality July.
- NCDOT. 2012. Standard specification for roads and structures. North Carolina Department of Transportation Raleigh. January.
- Ramboll. 2021. OU2 ecological risk assessment technical memorandum, Kerr-McGee Chemical Corp-Navassa Superfund Site, Navassa, North Carolina. September.
- USEPA. 2011. Close out procedures for National Priorities List sites. OSWER Directive 9320.2-22. U.S. Environmental Protection Agency. May.
- USEPA. 2021. Record of Decision Kerr-McGee Chemical Corp-Navassa Superfund Site, Operable Unit 1, Navassa, Brunswick County, North Carolina, EPA Site ID: NCD980557805. April. U.S Environmental Protection Agency. April.

Figures




N:\GIS\Projects\E158 Navassa GEMTIProduction.MXD\HH Tech Memo\Figure 1 Site Location.mxd 3/19/2021 5:32:53 PM

Basemap Source: Esri World Topographic Map

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Prepared for:  Greenfield Environmental Multistate Trust LLC
Trustee of the Multistate Environmental Response Trust


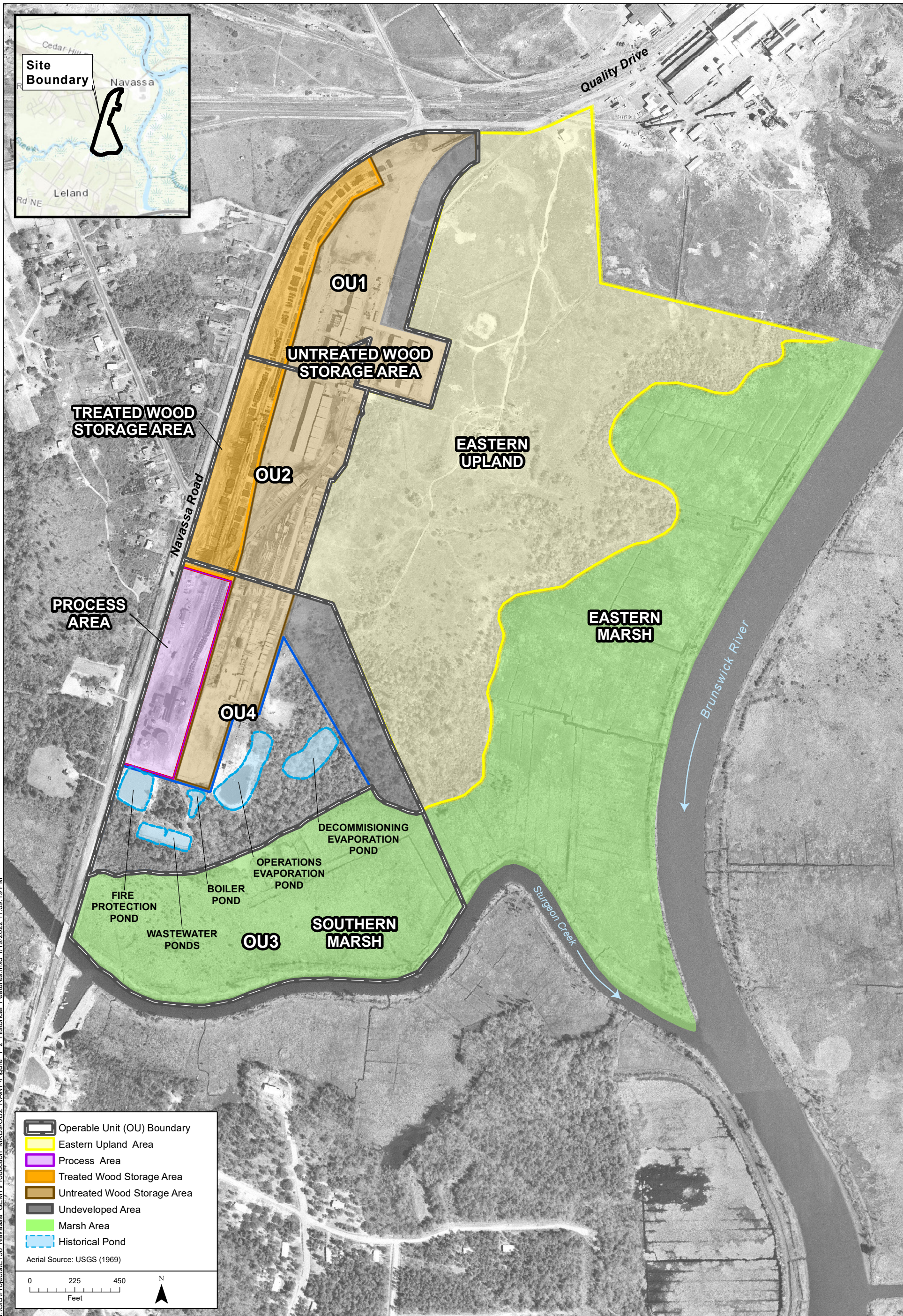
Prepared by:  integral
engineering pc

Figure 1-1.
Site Location
Kerr-McGee Chemical Corp. - Navassa Superfund Site
Navassa, North Carolina
March 2022



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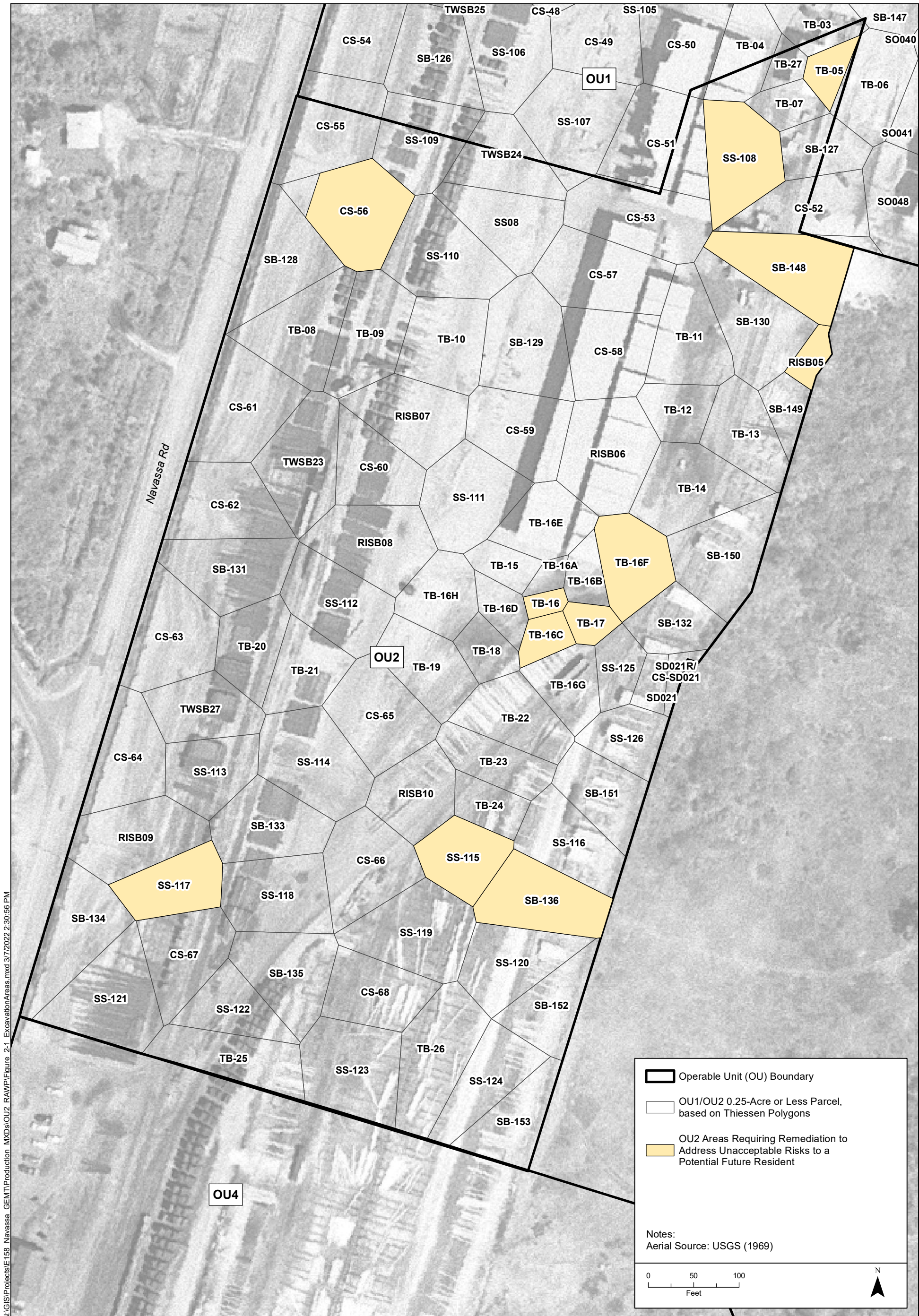


Greenfield Environmental Multistate Trust LLC
Trustee of the Multistate Environmental
Response Trust

Prepared by:



Figure 1-2.
Site Features
Kerr-McGee Chemical Corp. - Navassa Superfund Site
Navassa, North Carolina
March 2022



N:\GIS\Projects\E158 Navassa GEMTTProduction MXDs\OU2 RAWP\Figure 2-1 ExcavationAreas.mxd 3/7/2022 2:30:56 PM

	Operable Unit (OU) Boundary
	OU1/OU2 0.25-Acre or Less Parcel, based on Thiessen Polygons
	OU2 Areas Requiring Remediation to Address Unacceptable Risks to a Potential Future Resident

Notes:
Aerial Source: USGS (1969)

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Figure 1-3.
OU2 Areas Requiring Remediation to Address Unacceptable Risks to a Potential Future Resident
Kerr-McGee Chemical Corp. - Navassa Superfund Site
Navassa, North Carolina
March 2022

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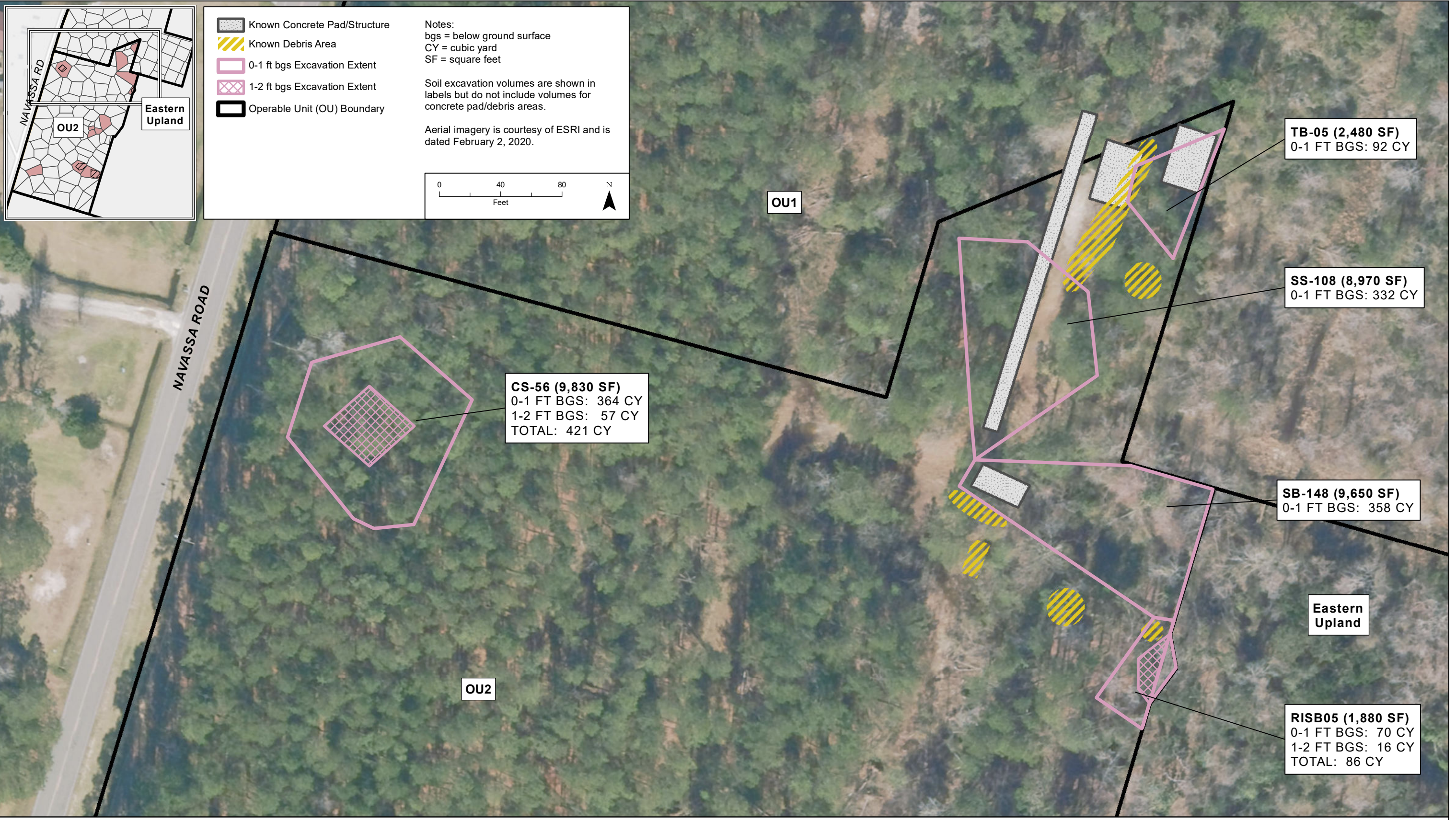
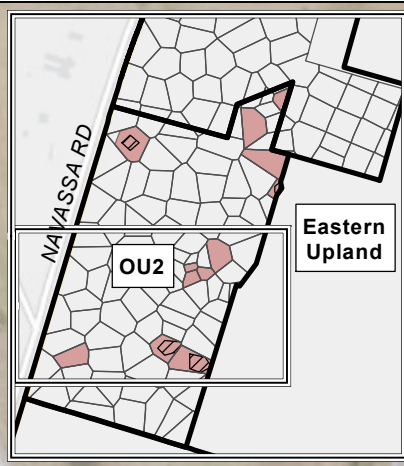


Figure 2-1.
 OU2 Removal Area Excavation Extents - Northern Parcels
 Kerr-McGee Chemical Corp. - Navassa Superfund Site
 Navassa, North Carolina
 March 2022

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Known Debris

0-1 ft bgs Excavation Extent

1-2 ft bgs Excavation Extent

Operable Unit (OU) Boundary

Notes:
 bgs = below ground surface
 CY = cubic yard
 SF = square feet

Soil excavation volumes are shown in labels but do not include volumes for concrete pad/debris areas.

Aerial imagery is courtesy of ESRI and is dated February 2, 2020.

0 40 80
 Feet

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Figure 2-2.
 OU2 Removal Area Excavation Extents - Southern Parcels
 Kerr-McGee Chemical Corp. - Navassa Superfund Site
 Navassa, North Carolina
 March 2022

Tables

Table 2-1. Soil PRGs

Risk Assessment	COC	PRG	Units	Basis
Human Health	BaP TEQ	1.1	mg/kg	Cancer, ELCR = 1.0x10 ⁻⁵
Human Health	BaP	18	mg/kg	Noncancer, HI = 1
Human Health	Naphthalene	17	mg/kg	Cancer, ELCR = 1.0x10 ⁻⁵
Human Health	Pentachlorophenol	10	mg/kg	Cancer, ELCR = 1.0x10 ⁻⁵
Human Health	TCDD TEQ	50	pg/g	Noncancer, HI = 1
Ecological	HMW PAHs	22	mg/kg	2-acre SWAC

Notes:

BaP = benzo[a]pyrene

COC = constituent of concern

ELCR = excess lifetime cancer risk

HI = hazard index

HMW PAH = high molecular weight polycyclic aromatic hydrocarbon

PRG = preliminary remediation goal

SWAC = surface weighted area concentration

TCDD = 2,3,7,8-tetrachlorodibenzo-*p*-dioxin


TEQ = toxic equivalency

Appendix A

Kerr-McGee Chemical Corp.-
Navassa Superfund Site,
Example Non-hazardous Waste
Manifest for Operable Unit 2

NON-HAZARDOUS WASTE MANIFEST

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No.		Manifest Document No.	2. Page
3. Generator's Name and Mailing Address					
4. Generator's Phone					
5. Transporter 1 Company Name		6. US EPA ID Number		A. State Transporter's ID	
7. Transporter 2 Company Name		8. US EPA ID Number		B. Transporter 1 Phone	
9. Designated Facility Name and Site Address		10. US EPA ID Number		C. State Transporter's ID	
				D. Transporter 2 Phone	
				E. State Facility's ID	
				F. Facility's Phone	
11. WASTE DESCRIPTION			12. Containers		13. Total Quantity
			No.	Type	14. Unit Wt./Vol.
a.					
b.					
c.					
d.					
G. Additional Descriptions for Materials Listed Above				H. Handling Codes for Wastes Listed Above	
15. Special Handling Instructions and Additional Information					
					
16. GENERATOR'S CERTIFICATION: I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.					
Printed/Typed Name				Signature	
				Date	
				Month Day Year	
17. Transporter 1 Acknowledgement of Receipt of Materials					
Printed/Typed Name				Signature	
				Date	
				Month Day Year	
18. Transporter 2 Acknowledgement of Receipt of Materials					
Printed/Typed Name				Signature	
				Date	
				Month Day Year	
19. Discrepancy Indication Space					
20. Facility Owner or Operator; Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.					
Printed/Typed Name				Signature	
				Date	
				Month Day Year	

NON-HAZARDOUS WASTE

GENERATOR

TRANSPORTER

FACILITY

Appendix B

Chemical Acceptance Criteria for Imported Fill Material

Table B-1. Analytical Methods and Screening Levels for Evaluating Imported Fill Materials

Chemical	CAS No.	Analytical Method	Method Detection Limit (mg/kg)	Reporting Detection Limit (mg/kg)	EPA RSL (mg/kg)
Volatile Organic Compounds					
1,1,1,2-Tetrachloroethane	630-20-6	8260B	0.00030	0.00100	2
1,1,1-Trichloroethane	71-55-6	8260B	0.00037	0.00100	8,100
1,1,2,2-Tetrachloroethane	79-34-5	8260B	0.00023	0.00100	0.6
1,1,2-Trichloroethane	79-00-5	8260B	0.00043	0.00100	1.1
1,1-Dichloroethane	75-34-3	8260B	0.00027	0.00100	3.6
1,1-Dichloroethene	75-35-4	8260B	0.00036	0.00100	230
1,2,3-Trichloropropane	96-18-4	8260B	0.00024	0.00250	0.0051
1,2,4-Trichlorobenzene	120-82-1	8270C	0.01040	0.33300	24
1,2-Dibromo-3-chloropropane	96-12-8	8260B	0.00190	0.00500	0.0053
1,2-Dibromoethane	106-93-4	8260B	0.00025	0.00100	0.036
1,2-Dichlorobenzene	95-50-1	8260B	0.00043	0.00100	1,800
1,2-Dichloroethane	107-06-2	8260B	0.00045	0.00100	0.46
1,2-Dichloropropane	78-87-5	8260B	0.00016	0.00100	2.5
1,4-Dichlorobenzene	106-46-7	8260B	0.00083	0.00100	2.6
1,4-Dioxane	123-91-1	8260B	0.07600	0.10000	5.3
2-Butanone (MEK)	78-93-3	8260B	0.00468	0.01000	27,000
2-Chloroethanol	107-07-3	--	--	--	1,600
2-Hexanone	591-78-6	8260B	0.00179	0.01000	200
2-Nitropropane	79-46-9	--	--	--	0.064
2-Propanol	67-63-0	--	--	--	5600
4-Methyl-2-pentanone (MIBK)	108-10-1	8260B	0.00095	0.01000	33,000
Acetone	67-64-1	8260B	0.02070	0.05000	61,000
Acetonitrile	75-05-8	8260B	0.03670	0.05000	810
Acrolein (Propenal)	107-02-8	8260D	0.0775	0.1	0.14
Acrylonitrile	107-13-1	8260B	0.00202	0.01000	0.25
Allyl alcohol		--	--	--	3.5
Allyl chloride	107-05-1	8260B	0.00400	0.00500	0.72
Benzene	71-43-2	8260B	0.00038	0.00100	1.2
Benzyl chloride	100-44-7	--	--	--	1.1
Bromochloromethane	74-97-5	8260D	0.00148	0.005	150

Table B-1. Analytical Methods and Screening Levels for Evaluating Imported Fill Materials

Chemical	CAS No.	Analytical Method	Method Detection Limit (mg/kg)	Reporting Detection Limit (mg/kg)	EPA RSL (mg/kg)
Bromodichloromethane	75-27-4	8260B	0.00073	0.00100	0.29
Bromoform	75-25-2	8260B	0.00042	0.00100	19
Bromomethane	74-83-9	8260B	0.00117	0.00500	6.8
Carbon disulfide	75-15-0	8260B	0.00070	0.00100	770
Carbon tetrachloride	56-23-5	8260B	0.00025	0.00100	0.65
Chlorobenzene	108-90-7	8260B	0.00019	0.00100	280
Chlorodibromomethane	124-48-1	8260B	0.00022	0.00100	8.3
Chloroethane	75-00-3	8260B	0.00100	0.00500	14,000
Chloroform	67-66-3	8260B	0.00103	0.00500	0.32
Chloral hydrate	302-17-0	--	--	--	7800
Chloromethane	74-87-3	8260B	0.00065	0.00250	110
Chloroprene	126-99-8	8260B	0.00130	0.05000	0.01
cis -1,4-Dichloro-2-butene	1476-11-5	8260D	0.00136	0.00500	0.0074
Dibromomethane	74-95-3	8260B	0.00035	0.00100	24
Dichlorodifluoromethane	75-71-8	8260B	0.00029	0.00500	87
Diethyl ether	60-29-7	8260D	0.00178	0.00500	16,000
Diisopropyl ether (DIPE)	108-20-3	8260D	0.00135	0.00500	2,200
Epichlorohydrin	106-89-8	--	--	--	19
Ethyl acetate	141-78-6	8260D	0.00665	0.1	620
Ethyl methacrylate	97-63-2	8260B	0.00182	0.00500	1,800
Ethylbenzene	100-41-4	8260B	0.00030	0.00100	5.8
Ethylene oxide	75-21-8	--	--	--	0.002
Hexachlorobutadiene	87-68-3	8260D	0.00818	0.01	1.2
Hexachloroethane	67-72-1	8270C	0.01310	0.33300	1.8
Isobutyl alcohol	78-83-1	8260D	0.054	0.1	23,000
Isopropylbenzene	98-82-8	8260D	0.0017	0.00500	1,900
Malononitrile	109-77-3	--	--	--	6
Methacrylonitrile	126-98-7	8260B	0.01730	0.05000	7.5
Methanol	67-56-1	--	--	--	120,000

Table B-1. Analytical Methods and Screening Levels for Evaluating Imported Fill Materials

Chemical	CAS No.	Analytical Method	Method Detection Limit (mg/kg)	Reporting Detection Limit (mg/kg)	EPA RSL (mg/kg)
Methyl methacrylate	80-62-6	8260B	0.00180	0.00500	4,400
Methyl <i>tert</i> -butyl ether (MTBE)	1634-04-4	8260D	0.00187	0.00500	47
Methylene chloride	75-09-2	8260B	0.00100	0.00500	57
Naphthalene	91-20-3	8270C	0.00836	0.03330	2
Nitrobenzene	98-95-3	8270C	0.01160	0.33300	5.1
n-Butanol	71-36-3	--	--	--	7,800
N-Nitroso-di-n-butylamine	924-16-3	8270E	0.109	0.33	0.099
<i>o</i> -Toluidine	95-53-4	8270C	0.11100	0.33300	34
<i>o</i> -Xylene	95-47-6	8260D	0.00221	0.00500	650
Pentachloroethane	76-01-7	8270C	0.07070	0.33300	7.7
Propargyl alcohol	107-19-7	--	--	--	160
<i>m</i> -Xylene	108-38-3	--	--	--	550
<i>p</i> -Xylene	106-42-3	--	--	--	560
<i>m</i> & <i>p</i> -Xylene	179601-23-1	8260D	0.00342	0.01	550
Pyridine	110-86-1	8270C	0.02200	0.33300	78
Styrene	100-42-5	8260B	0.00022	0.00100	6,000
Tetrachloroethene	127-18-4	8260B	0.00033	0.00100	24
Toluene	108-88-3	8260B	0.00123	0.00500	4,900
<i>trans</i> -1,2-Dichloroethene	156-60-5	8260B	0.00050	0.00100	70
<i>trans</i> -1,4-Dichloro-2-butene	110-57-6	8260B	0.00095	0.00250	0.0074
Trichloroethene	79-01-6	8260B	0.00020	0.00100	0.94
Trichlorofluoromethane	75-69-4	8260B	0.00036	0.00500	23,000
Vinyl acetate	108-05-4	8260B	0.00099	0.01000	910
Vinyl chloride	75-01-4	8260B	0.00023	0.00100	0.059
Semivolatile Organic Compounds					
1,1-Biphenyl	92-52-4	8270E	0.0782	0.33	47
1,2,4,5-Tetrachlorobenzene	95-94-3	8270C	0.01590	0.33300	23
1,2,4-Trichlorobenzene	120-82-1	8270C	0.01040	0.33300	24
1,2-Dibromo-3-chloropropane	96-12-8	8260B	0.00190	0.00500	0.0053

Table B-1. Analytical Methods and Screening Levels for Evaluating Imported Fill Materials

Chemical	CAS No.	Analytical Method	Method Detection Limit (mg/kg)	Reporting Detection Limit (mg/kg)	EPA RSL (mg/kg)
1,2-Dichlorobenzene	95-50-1	8260B	0.00043	0.00100	1,800
1,2-Dinitrobenzene	528-29-0	--	--	--	6
1,2-Diphenylhydrazine	122-66-7	8270E	0.0918	0.33	0.68
1,3,5-Trinitrobenzene	99-35-4	8270C	0.05700	0.33300	2,200
1,3-Dinitrobenzene	99-65-0	8270E	0.0729	0.33	6.3
1,4-Dichlorobenzene	106-46-7	8260B	0.00083	0.00100	2.6
1,4-Dinitrobenzene	100-25-4	8270E	0.103	0.33	6.3
1,4-Phenylenediamine	106-50-3	8270E	0.66	0.66	63
2,3,4,6-Tetrachlorophenol	58-90-2	8270C	0.01260	0.33300	1,900
2,4,5-Trichlorophenol	95-95-4	8270C	0.01130	0.33300	6,300
2,4,6-Trichlorophenol	88-06-2	8270C	0.01070	0.33300	49
2,4-Dichlorophenol	120-83-2	8270C	0.00970	0.33300	190
2,4-Dimethylphenol	105-67-9	8270C	0.00870	0.33300	1,300
2,4-Dinitrophenol	51-28-5	8270C	0.07790	0.33300	130
2,4-Dinitrotoluene	121-14-2	8270C	0.00955	0.33300	1.7
2,6-Dinitrotoluene	606-20-2	8270C	0.01090	0.33300	0.36
2-Acetylaminofluorene	53-96-3	8270C	0.05460	0.33300	0.14
2-Chloronaphthalene	91-58-7	8270C	0.00585	0.03330	4,800
2-Chlorophenol	95-57-8	8270C	0.01100	0.33300	390
2-Cyclohexyl-4,6-dinitro-phenol	131-89-5	--	--	--	130
2-Methylnaphthalene	91-57-6	8270C	0.00432	0.03330	240
2-Methylphenol	95-48-7	8270C	0.01000	0.33300	3,200
2-Naphthylamine	91-59-8	8270C	0.06530	0.33300	0.3
2-Nitroaniline	88-74-4	8270C	0.01070	0.33300	630
3,3-Dichlorobenzidine	91-94-1	8270C	0.01230	0.33300	1.2
3,3-Dimethoxybenzidine	119-90-4	--	--	--	0.34
3,3-Dimethylbenzidine	119-93-7	8270C	0.07240	0.33300	0.049
3-Methylcholanthrene	56-49-5	8270C	0.05960	0.33300	0.0055
3-Methylphenol	108-39-4	--	--	--	3,200

Table B-1. Analytical Methods and Screening Levels for Evaluating Imported Fill Materials

Chemical	CAS No.	Analytical Method	Method Detection Limit (mg/kg)	Reporting Detection Limit (mg/kg)	EPA RSL (mg/kg)
4,4-Methylenebis (2-chloroaniline)	101-14-4	8270E	0.164	0.66	1.2
4,4-Methylenebis(N,N-dimethyl- aniline)	101-61-1	--	--	--	12
4,6-Dinitro-2-methylphenol	534-52-1	8270C	0.07550	0.33300	5.1
4-Aminobiphenyl	92-67-1	8270C	0.04860	0.33300	0.026
4-Chloro-3-methylphenol	59-50-7	8270C	0.01080	0.33300	6,300
4-Chloroaniline	106-47-8	8270C	0.01200	0.33300	2.7
4-Methylphenol	106-44-5	--	--	--	6,300
4-Nitroaniline	100-01-6	8270C	0.00971	0.33300	27
5-Nitro-o-anisidine	99-59-2	--	--	--	11
5-Nitro-o-toluidine	99-55-8	8270C	0.06720	0.33300	60
7,12-Dimethylbenz[a]anthracene	57-97-6	8270E	0.182	0.33	0.00046
Acenaphthene	83-32-9	8270C	0.00539	0.03330	3,600
Acenaphthylene	208-96-8	8270C	0.00469	0.03330	NA
Acetophenone	98-86-2	8270C	0.01040	0.33300	7,800
Aniline	62-53-3	8270C	0.03110	0.33300	95
Anthracene	120-12-7	8270C	0.00593	0.03330	18,000
Aramite	140-57-8	8270E	0.0808	1.65	22
Azinphos-methyl	86-50-0	--	--	--	190
Benz[a]anthracene	56-55-3	8270C	0.00587	0.03330	1.1
Benzidine	92-87-5	8270C	0.06260	1.67000	0.00053
Benzo[a]pyrene	50-32-8	8270C	0.00619	0.03330	0.11
Benzo[b]fluoranthene	205-99-2	8270C	0.00621	0.03330	1.1
Benzo[ghi]perylene	191-24-2	8270C	0.00609	0.03330	NA
Benzo[k]fluoranthene	207-08-9	8270C	0.00592	0.03330	11
Benzoic acid	65-85-0	8270E	0.356	1.65	250,000
Benzyl alcohol	100-51-6	8270C	0.01230	0.33300	6,300
Bis(2-chloroethoxy)methane	111-91-1	8270C	0.01000	0.33300	190
Bis(2-chloroethyl) ether	111-44-4	8270C	0.01100	0.33300	0.23
Bis(2-chloroisopropyl) ether	108-60-1	8270E	0.0917	0.33	3,100

Table B-1. Analytical Methods and Screening Levels for Evaluating Imported Fill Materials

Chemical	CAS No.	Analytical Method	Method Detection Limit (mg/kg)	Reporting Detection Limit (mg/kg)	EPA RSL (mg/kg)
Bis(2-ethylhexyl) phthalate	117-81-7	8270C	0.04220	0.33300	39
Bromoxynil	1689-84-5	--	--	--	5.3
Butyl benzyl phthalate	85-68-7	8270E	0.0879	0.33	290
Captafol	2425-06-1	--	--	--	3.6
Captan	133-06-2	--	--	--	240
Carbaryl	63-25-2	--	--	--	6,300
Carbazole	86-74-8	8270E	0.0854	0.33	NA
Carbofuran	1563-66-2	--	--	--	320
Chlorfenvinphos	470-90-6	--	--	--	44
Chlorobenzilate	510-15-6	8270C	0.05700	0.33300	4.9
Chrysene	218-01-9	8270C	0.00662	0.03330	110
Diallate (cis or trans)	2303-16-4	8270C	0.05930	0.33300	8.9
Dibenz[<i>a,h</i>]anthracene	53-70-3	8270C	0.00923	0.03330	0.11
Dibenzo[<i>a,e</i>]pyrene	192-65-4	8270E	0.219	1	0.042
Dibenzofuran	132-64-9	8270C	0.01090	0.33300	78
Dichlorovos	62-73-7	8141	0.03	0.1	1.9
Dicrotophos	141-66-2	--	--	--	1.9
Diethyl phthalate	84-66-2	8270C	0.01100	0.33300	51,000
Diethylstilbestrol	56-53-1	--	--	--	0.0016
Dimethoate	60-51-5	8141	0.03340	0.10000	140
Dimethylaminoazobenzene	60-11-7	8270C	0.06360	0.33300	0.12
Di-n-butyl phthalate	84-74-2	8270C	0.01140	0.33300	6,300
Di-n-octyl phthalate	117-84-0	8270C	0.02250	0.33300	630
Dinoseb	88-85-7	8270C	0.09700	0.33300	63
Diphenylamine	122-39-4	8270C	0.02520	0.33300	6,300
Disulfoton	298-04-4	8270C	0.06590	0.33300	2.5
EPN	2104-64-5	8141	0.02760	0.10000	0.63
Ethion	563-12-2	--	--	--	32
Ethyl carbamate	51-79-6	--	--	--	0.12

Table B-1. Analytical Methods and Screening Levels for Evaluating Imported Fill Materials

Chemical	CAS No.	Analytical Method	Method Detection Limit (mg/kg)	Reporting Detection Limit (mg/kg)	EPA RSL (mg/kg)
Fluoranthene	206-44-0	8270C	0.00601	0.03330	2,400
Fluorene	86-73-7	8270C	0.00542	0.03330	2,400
Hexachlorobenzene	118-74-1	8270C	0.01180	0.33300	0.21
Hexachlorobutadiene	87-68-3	8270E	0.0802	0.33	1.2
Hexachlorocyclopentadiene	77-47-4	8270C	0.01750	0.33300	1.8
Hexachloroethane	67-72-1	8270E	0.0752	0.33	1.8
Hexachlorophene	70-30-4	8270C	0.11000	0.33300	19
Hexamethylphosphoramide	680-31-9	8270C	0.00941	0.03330	25
Hydroquinone	123-31-9	8270C	0.00941	0.03330	9
Indeno(1,2,3-cd)pyrene	193-39-5	8270C	0.00941	0.03330	1.1
Isophorone	78-59-1	8270E	0.0717	0.33	570
Kepone	143-50-0	8270C	0.04910	0.33300	0.054
Malathion	121-75-5	8141	0.01790	0.10000	1,300
Maleic anhydride	108-31-6	--	--	--	6,300
Methoxychlor	72-43-5	8081	0.00484	0.02000	320
Methyl methanesulfonate	66-27-3	8270E	0.0729	0.66	5.5
Methyl parathion	298-00-0	8141	0.02030	0.10000	16
Mirex	2385-85-5	--	--	--	0.036
Naled	300-76-5	8141	0.04800	0.10000	160
Naphthalene	91-20-3	8270C	0.00836	0.03330	2
Nitrobenzene	98-95-3	8270C	0.01160	0.33300	5.1
N-Nitrosodiethylamine	55-18-5	8270C	0.06700	0.33300	0.00081
N-Nitrosodimethylamine	62-75-9	8270C	0.04940	0.33300	0.002
N-Nitrosodi-n-butylamine	924-16-3	8270C	0.11000	0.33300	0.099
N-Nitrosodi-n-propylamine	621-64-7	8270C	0.01110	0.33300	0.078
N-Nitrosodiphenylamine	86-30-6	8270C	0.02520	0.33300	110
N-Nitrosomethylethylamine	10595-95-6	8270C	0.11100	0.33300	0.02
N-Nitrosomorpholine	59-89-2	8270C	0.15000	0.33300	0.081
N-Nitrosopiperidine	100-75-4	8270C	0.06000	0.33300	0.058

Table B-1. Analytical Methods and Screening Levels for Evaluating Imported Fill Materials

Chemical	CAS No.	Analytical Method	Method Detection Limit (mg/kg)	Reporting Detection Limit (mg/kg)	EPA RSL (mg/kg)
N-Nitrosopyrrolidine	930-55-2	8270C	0.06700	0.33300	0.26
Octamethyl pyrophosphoramidate	152-16-9	--	--	--	130
o-Toluidine	95-53-4	8270C	0.11100	0.33300	34
Parathion	56-38-2	8270E	0.103	0.33	380
Pentachlorobenzene	608-93-5	8270C	0.04830	0.33300	63
Pentachloronitrobenzene	82-68-8	8270C	0.07390	0.33300	2.7
Pentachlorophenol	87-86-5	8270C	0.00896	0.33300	1
Phenacetin	62-44-2	8270E	0.0927	0.66	250
Phenanthrene	85-01-8	8270C	0.00661	0.03330	NA
Phenol	108-95-2	8270C	0.01340	0.33300	19,000
Phorate	298-02-2	8270C	0.11100	0.33300	13
Phosmet	732-11-6	--	--	--	1,300
Phthalic anhydride	85-44-9	8270E	2.5	2.5	130,000
Pronamide	23950-58-5	8270C	0.07600	0.33300	4,700
Pyrene	129-00-0	8270C	0.00648	0.03330	1,800
Safrole	94-59-7	8270C	0.06330	0.33300	0.55
Strychnine	57-24-9	--	--	--	19
Terbufos	13071-79-9	--	--	--	2
Tetrachlorvinphos	961-11-5	--	--	--	23
Tetraethyl dithiopyrophosphate (Sulfotepp)	3689-24-5	8270E	0.082	0.33	32
Thiophenol (Benzenethiol)	108-98-5	--	--	--	78
Toluene diisocyanate	584-84-9	--	--	--	6.4
Trifluralin	1582-09-8	--	--	--	90
Trimethyl phosphate	512-56-1	--	--	--	27
Tris(2,3-dibromopropyl) phosphate	126-72-7	8270E	0.206	1.65	0.28
Organochlorine Pesticides					
4,4'-DDD	72-54-8	8081	0.00370	0.02000	1.9
4,4'-DDE	72-55-9	8081	0.00366	0.02000	2
4,4'-DDT	50-29-3	8081	0.00627	0.02000	1.9

Table B-1. Analytical Methods and Screening Levels for Evaluating Imported Fill Materials

Chemical	CAS No.	Analytical Method	Method Detection Limit (mg/kg)	Reporting Detection Limit (mg/kg)	EPA RSL (mg/kg)
Aldrin	309-00-2	8081	0.00376	0.02000	0.039
a-BHC	319-84-6	8081	0.00368	0.02000	0.086
Chlordane (NOS)	57-74-9	8081	0.10296	0.30000	NA
b-BHC	319-85-7	8081	0.00379	0.02000	0.3
Dieldrin	60-57-1	8081	0.00344	0.02000	0.034
Endosulfan I	959-98-8	8081	0.00363	0.02000	NA
Endosulfan II	33213-65-9	8081	0.00335	0.02000	NA
Endosulfan sulfate	1031-07-8	8081	0.00364	0.02000	380
Endrin	72-20-8	8081	0.00350	0.02000	19
Y-BHC (Lindane)	58-89-9	8081	0.00344	0.02000	0.57
Heptachlor	76-44-8	8081	0.00428	0.02000	0.13
Heptachlor epoxide	1024-57-3	8081	0.00339	0.02000	0.07
Toxaphene	8001-35-2	8081	0.12380	0.40000	0.49
Perfluoroalkyl Substances (PFAS)					
Perfluorohexanoic Acid (PFHxA)	307-24-4	537.M	0.00025	0.0005	NA
Perfluoroheptanoic Acid (PFHpA)	375-85-9	537.M	0.00025	0.0005	NA
Perfluorooctanoic acid (PFOA)	335-67-1	537.M	0.00025	0.0005	NA
Perfluorononanoic acid (PFNA)	375-95-1	537.M	0.00025	0.0005	NA
Perfluorodecanoic acid (PFDA)	335-76-2	537.M	0.00025	0.0005	NA
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	537.M	0.00025	0.0005	NA
Perfluorododecanoic acid (PFDoDA)	307-55-1	537.M	0.00025	0.0005	NA
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	537.M	0.00027	0.0005	NA
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	537.M	0.00025	0.0005	NA
Perfluorobutanesulfonic Acid (PFBS)	375-73-5	537.M	0.00025	0.0005	NA
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	537.M	0.00025	0.0005	NA
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	537.M	0.00025	0.0005	NA
Polychlorinated Biphenyls					
Aroclor 1016	12674-11-2	8082	0.01182	0.03400	4.1
Aroclor 1221	11104-28-2	8082	0.01182	0.03400	0.2

Table B-1. Analytical Methods and Screening Levels for Evaluating Imported Fill Materials

Chemical	CAS No.	Analytical Method	Method Detection Limit (mg/kg)	Reporting Detection Limit (mg/kg)	EPA RSL (mg/kg)
Aroclor 1232	11141-16-5	8082	0.01182	0.03400	0.17
Aroclor 1242	53469-21-9	8082	0.01182	0.03400	0.23
Aroclor 1248	12672-29-6	8082	0.00738	0.01700	0.23
Aroclor 1254	11097-69-1	8082	0.00738	0.01700	0.24
Aroclor 1260	11096-82-5	8082	0.00738	0.01700	0.24
Metals					
Aluminum	7429-90-5	6020	1.38000	10.00000	77,000
Antimony	7440-36-0	6020	0.03320	0.60000	31
Arsenic	7440-38-2	6020	0.02000	0.20000	0.68
Barium	7440-39-3	6020	0.03040	0.50000	15,000
Beryllium	7440-41-7	6020	0.02760	0.50000	160
Boron	7440-42-8	6020	1.38000	10.00000	16,000
Cadmium	7440-43-9	6020	0.01710	0.20000	71
Cobalt	7440-48-4	6020	0.00925	0.20000	23
Copper	7440-50-8	6020	0.02650	1.00000	3,100
Iron	7439-89-6	6020	1.79000	10.00000	55,000
Lead	7439-92-1	6020	0.01980	0.40000	400
Lithium	7439-93-2	6020	0.04090	0.30000	160
Mercury	7439-97-6	7471A	0.01800	0.04000	11
Molybdenum	7439-98-7	6020	0.02020	0.50000	390
Nickel	7440-02-0	6020	0.03940	0.50000	1,500
Phosphorus	7723-14-0	--	--	--	2
Selenium	7782-49-2	6020	0.03590	0.50000	390
Silica	7631-86-9	--	--	--	4,300,000
Silver	7440-22-4	6020	0.01730	0.10000	390
Strontium	7440-24-6	6020	0.11400	1.00000	47,000
Thallium	7440-28-0	6020	0.01300	0.40000	0.78
Tin	7440-31-5	6020	0.32300	2.00000	47,000
Vanadium	7440-62-2	6020	0.03740	0.50000	390

Table B-1. Analytical Methods and Screening Levels for Evaluating Imported Fill Materials

Chemical	CAS No.	Analytical Method	Method Detection Limit (mg/kg)	Reporting Detection Limit (mg/kg)	EPA RSL (mg/kg)
Zinc	7440-66-6	6020	0.14800	5.00000	23,000
Dioxin/Furans					
TCDD TEQ	--	1613	0.000000199	0.000001	0.000005

Notes:

MDL/MRLs flagged as '--' are compounds that are not typically analyzed.

EPA RSLs are based on the 2021 residential values for cancer risk of 1×10^{-6} and hazard index of 1.

CAS = Chemical Abstracts Service

EPA = U.S. Environmental Protection Agency

NA = not available

RSL = Regional Screening Level

TCDD TEQ = 2,3,7,8- tetrachlorodibenzo-*p*-dioxin toxic equivalency