Revised Proposed Plan
Kerr-McGee Chemical Corp. – Columbus Superfund Site
Columbus, Lowndes County, Mississippi

July 2025

This Proposed Plan is not a technical document. It presents the EPA's preferred alternative for site cleanup.

You Are Invited to Comment on this Revised Proposed Plan for the Kerr-McGee Chemical Corp. – Columbus Superfund Site, Operable Unit 5 (OU-5) in Columbus, Mississippi

INTRODUCTION

The U.S. Environmental Protection Agency invites comments on the Preferred Alternative presented in this Revised Proposed Plan for addressing potential unacceptable risks to human health and the environment from the Kerr-McGee Chemical Corp. – Columbus Superfund Site (Site), Operable Unit 5 (OU-5). Figure 1 shows the Site's location.

To manage the cleanup, the EPA divided the Site into multiple areas, or operable units (Figure 2). The Former Main Plant Area is divided into two operable units; the Southern Former Main Plant Area is OU-3 and the Northern Former Main Plant Area is OU-5. In October 2023, the EPA issued a Proposed Plan that addressed both OU-3 and OU-5. After considering public comments, the EPA decided to make the cleanup decision for only OU-3, and to address OU-5 in a stand-alone decision document. The EPA issued the ROD for OU-3 in September 2024. This Revised Proposed Plan supersedes the OU-5 portions of the October 2023 Proposed Plan.

This Revised Proposed Plan addresses surface soil contamination in OU-5 (soil 0 to 2 feet below ground surface) that was contaminated by wood-treating operations. The Northern Former Main Plant Area (OU-5) was primarily used for storage and operations not directly associated with the wood-treatment process. The EPA is addressing OU-5 as a separate operable unit because it contains relatively low levels of contamination compared to the Southern Former Main Plant Area (OU-3), which contains dense non-aqueous phase liquid (DNAPL). OU-5 addresses the part of the Northern Former Main Plant Area that does not contain DNAPL.

The operable units at the Site include:

- OU-1: addresses unsaturated soils contaminated by wood-treating operations in the Pine Yard. The EPA selected a cleanup plan for OU-1 in a decision document called a Record of Decision (ROD) in May 2019.
- OU-2: addresses surface soils on privately- and state-owned residential and commercial properties that have been contaminated by off-facility migration of chemicals of concern (COCs) (mainly dioxins/furans) associated with wood-treating operations. The EPA selected a cleanup plan for OU-2 in a September 2020 ROD.

- OU-3: addresses contaminated soil, wood treating chemicals present as dense, nonaqueous-phase liquid (DNAPL), and contaminated groundwater in the Southern Former Main Plant Area and the adjacent "3.7-acre parcel". The EPA finalized the OU-3 ROD in September 2024.
- OU-4: will address approximately 2 acres of the Pine Yard and adjacent property where contaminated creosote DNAPL impacts are present in subsurface soils and below the groundwater table. OU-4 will be the subject of a future decision document.

The EPA tentatively identifies two more operable units, which are under investigation and will be the subject of future decision documents.

- OU-6 will address contaminated groundwater that is not adequately addressed by actions taken in previous operable units, and the restoration of groundwater to beneficial use.
- OU-7 will address ecological risks in the wetlands in the northeast portion of the Pine Yard.

The EPA's Preferred Alternative for OU-5 is Alternative 3, Soil Removal and Disposal (Off-site and/or On-site). The EPA expects this Preferred Alternative will protect human health and the environment and will facilitate community-supported reuse of OU-5. This Proposed Plan summarizes and identifies key information from the 2018 Remedial Investigation Report, the 2025 OU-5 Feasibility Study Report, and other documents in the Site's Administrative Record file. The Administrative Record files are available at: https://semspub.epa.gov/src/collections/04/AR/MSD990866329.

The EPA is the lead agency at the Site. The MDEQ is the support agency. The EPA is issuing this Proposed Plan as part of the EPA's public participation requirements under Section 117(a) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended, 42 U.S. Code Section 9617, known as Superfund, and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), as set forth in 40 Code of Federal Regulations (CFR) Section 300.430(f)(2). The EPA will issue its final decision on the selected remedial action for OU-5 in a ROD. The public will be notified of the issuance of the ROD in a local newspaper notice and via the EPA's site profile page: www.epa.gov/superfund/kerr-mcgee-chemical-columbus. The ROD will include a Responsiveness Summary that summarizes the EPA's responses to any public comments provided on this Proposed Plan.

The EPA, in consultation with the Mississippi Department of Environmental Quality (MDEQ), may modify the proposed remedy presented in this Proposed Plan based on new information or public comments received during the public comment period. Therefore, the public is encouraged to review and provide input on all of the remedial alternatives described in this Proposed Plan.

The EPA will hold a public meeting on August 6, 2025, starting at 6:00 p.m. Central Time / 7:00 p.m. Eastern Time at Genesis Dream Center, 1820 23rd Street North, Columbus, Mississippi 39701. At the meeting, the EPA will present the Proposed Plan for the OU-5 remedy. This meeting will provide an opportunity for the community to ask questions of EPA staff. EPA staff will record questions and answers to assist in the final selection of the remedy and in preparation of a ROD. Register to join via Zoom at the following link www.epa.gov/superfund/kerr-mcgee-chemical-columbus OR Go here to register to attend the meeting virtually via Zoom.

The updated public comment period for the Proposed Plan starts on August 5, 2025, and ends on September 4, 2025. During this comment period, the EPA encourages the community to review the 2018 Remedial

Investigation Report and the 2025 OU-5 Feasibility Study Report. These materials and other site documents are available for viewing online at the Site's information repository:

Columbus-Lowndes Public Library
314 North Seventh Street
Columbus, Mississippi 39701

The materials are also available online at the EPA's site profile page: www.epa.gov/superfund/kerr-mcgee-chemical-columbus.

The community is encouraged to submit written or emailed comments to the EPA at the following addresses:

Ahmad Hassanein
Remedial Project Manager
EPA Region 4
61 Forsyth Street SW, Atlanta, Georgia 30303
Telephone: (404) 562-8163
Email: hassanein.ahmad@epa.gov

Zariah Lewis
Community Involvement Coordinator
EPA Region 4
61 Forsyth Street SW, Atlanta, Georgia 30303
Telephone: (404) 562-8342
Email: lewis.zariah@epa.gov

After the public comment period, the EPA will carefully consider all public comments before selecting a final remedy for OU-5. All comments submitted or postmarked by September 4, 2025, will be addressed in the Responsiveness Summary of a forthcoming ROD, as will the questions and answers discussed at the public meeting.

SITE BACKGROUND

Site Description and Background

The Site is located at 2300 14th Avenue North in Columbus, Lowndes County, Mississippi. It covers about 90 acres and is generally bounded by U.S. Highway 82 to the north, Moss Street and a railroad right of way to the east, Tuffy Lane to the south, and 21st Street North and 22nd Street North to the west (Figure 1). The Kerr-McGee Chemical Corporation (KMCC) wood-treating facility was shut down in 2003, and most former structures on the property were demolished or dismantled. There are no structures on the Northern Former Main Plant Area (OU-5). Two structures, a former office building and a groundwater treatment building, are present on the Southern Former Main Plant Area (OU-3). Other features remaining at the former KMCC facility include the closed former surface impoundments (one of which was regulated under the Resource Conservation and Recovery Act of 1980, as amended or RCRA), several concrete pads and foundations, groundwater monitoring wells, abandoned utility lines, and the wells, trenches and conveyance infrastructure of a DNAPL recovery system. A fence encloses the former KMCC facility property. The Multistate Trust owns the former KMCC facility property.

Contaminated Media

Historical wood-treating operations at the KMCC facility contaminated the groundwater, soil, and sediment with wood-treating compounds, including creosote, polycyclic aromatic hydrocarbons (PAHs), pentachlorophenol (also known as PCP), and dioxin/furans. DNAPL is present in the Southern Former Main

Plant Area (OU-3) but not the Northern Former Main Plant Area (OU-5), which is the subject of this Proposed Plan.

The only contaminated media that is addressed by OU-5 is the soil above the water table. There is no sediment in OU-5, and groundwater under OU-5 will be addressed by a future action as part of OU-6. The OU-5 COCs in soil are benzo[*a*]pyrene (a PAH) and dioxins/furans.

History of Site Operations

The T.J. Moss Tie Company built the wood-treating facility in 1928 and operated it until 1963. KMCC acquired the property in 1963 and continued wood-treating operations until the facility closed in 2003. Manufactured products included railroad wooden cross ties, switch ties, and preserved lumbers. Preservatives used in the operations were primarily creosote, creosote coal tar solutions, and pentachlorophenol.

During wood-treating operations, green lumber was received and sorted at the facility. It was later seasoned, either by natural air drying, which required the wood to be stacked in a drying yard for up to 12 months, or by artificial seasoning using the Boulton process. Wood allowed to dry naturally was stored in the Northern Former Main Plant Area (OU-5) and in the Pine Yard (OU-1). The Boulton process involved subjecting the green lumber to heated creosote under a vacuum, which boiled the sap water out of the wood. After seasoning, the wood was then pressure-treated in a cylinder, or retort, in the Southern Former Main Plant Area (OU-3). The pressure-treating process involved filling a cylinder with a treating solution, such as creosote or PCP, and applying pressure to force the treating solution into the wood. The treated wood was taken out of the retort chamber by rail for drying. Prior to construction of a concrete drip track in 1988, excess preservative dripped onto bare soil before the treated wood was moved to other locations at the former KMCC facility for storage and then shipment off-site.

The primary wood-treating operations, treated wood storage areas, and surface impoundments were in the Southern Former Main Plant Area (OU-3). Soil and DNAPL in certain areas within OU-3 are contaminated with RCRA-listed hazardous wastes (F032 and F034). The Northern Former Main Plant Area (OU-5) was used for wood storage and other operations not directly associated with the wood-treating process. Thus, contaminated soil in OU-5 does not contain RCRA-listed hazardous wastes. Figure 3 shows historical features in the Former Main Plant Area.

By 2003, the volume of wood storage at the former KMCC facility was significantly reduced. By 2004, there was no evidence of wood storage or manufacturing activities on-site, as indicated by aerial photographs. Structures were visible on-site through at least 2007. All above-grade structures, other than the former office and groundwater treatment building, appeared to have been demolished by 2010.

Previous Investigations and Response Actions

Response Actions Conducted Under RCRA and CERCLA Authorities

Since 1986, multiple remedial and removal actions have been completed at the Site. They include:

- 1986: Surface Impoundment Closure – Surface impoundments, identified as “Aeration Impoundment” and “Sedimentation Impoundment,” were operated under RCRA interim status standards until closure

finished in 1986. The bottom sludge associated with the impoundments was a K001 RCRA-listed hazardous waste.

- 1990 to present – A groundwater extraction and treatment and DNAPL recovery system operates at the Southern Former Main Plant Area (constructed for RCRA corrective action purposes under a Hazardous and Solid Waste Amendments [HSWA] permit issued in 1995). It will continue to operate until the remedy components selected in the September 2024 ROD for OU-3 (mainly, a barrier wall and engineered soil cover) are functioning as intended.
- 2005: Ditch Sediment Removal – Interim measures removed sediment impacted by PAHs in the ditch system along the eastern Former Main Plant Area boundary.
- 2006 to 2007: Ditch Sediment Removal – Creosote-impacted soil was found during a municipal drainage improvement project that began at Propst Park, about 2,200 feet southeast of the former facility, at the eastern end of 7th Avenue North. Removal activities were conducted in Propst Park and in a ditch at the eastern end of 7th Avenue.
- 2010 to 2011: Hunt School Removal Action – Tetra Tech, on behalf of the EPA, conducted removal evaluations and actions to address PAHs in soil at the Hunt Intermediate School, at a residential property, and at Maranatha Faith Center.
- 2011: National Priorities List (NPL) Listing – The EPA finalized the Site's listing on the Superfund NPL in September 2011. All operations and maintenance (O&M) activities, compliance monitoring, and inspections of the closed surface impoundments and the groundwater extraction and treatment and DNAPL recovery system became subject to applicable CERCLA requirements.
- 2014 to 2015: 14th Avenue Ditch Improvement Project – The Multistate Trust performed the excavation necessary to construct the new 14th Avenue North ditch and provide a clean work area for the city of Columbus to construct a new concrete-lined drainageway.
- 2016: Residential Yard Removal – Surface soil to depth of 1 foot was removed from the backyard of a residential property on 17th Avenue North where benzo[*a*]pyrene concentrations exceeded residential removal management levels at that time. The excavation was backfilled with clean soil and restored.
- 2016: 7th Avenue Storm Drainage Ditch Removal Action – Sediment and soil were removed from a ditch along the north side of 7th Avenue between the Maranatha Faith Center and North 28th Street. Work also included installation of a box culvert.
- 2019 to 2022: OU-1 Remedial Action – The EPA issued the OU-1 ROD in May 2019, selecting a soil excavation and institutional controls remedy. Work was substantially completed by 2021, making the Pine Yard available for community-supported redevelopment in as timely a manner as possible. The EPA approved the OU-1 Remedial Action Completion Report and addendum in April 2022.
- 2020 to 2022: Stormwater Ditch Removal Action – This removal action addressed PAH-contaminated ditch sediments in the Southeastern Ditch between Moss Street and Waterworks Street. The EPA issued the Action Memorandum in December 2019 and approved the Removal Action Completion Report in 2022.
- 2021 to 2024: OU-2 Remedial Action – The EPA issued the OU-2 ROD in September 2020. The OU-2 remedial action addressed privately-owned and state-owned residential and commercial properties near the former KMCC facility where dioxins and furans exceeded cleanup levels in surface soil (0 to 2 feet below ground surface). Work was substantially completed in 2021. The EPA approved the Remedial Action Completion Report in 2024.

History of Enforcement Activities

This section summarizes the Site's regulatory history:

- KMCC submitted a RCRA Part A permit application in 1981 that notified the EPA of the presence of solid waste management units, including two hazardous waste surface impoundments containing RCRA-listed hazardous waste (K001).
- In 1989, KMCC entered into a Consent Order with the Mississippi Commission on Environmental Quality that required completion of a groundwater assessment and submittal of an addendum to the previously submitted RCRA Part B permit application.
- A state of Mississippi Hazardous Waste Management Permit (permit HW-90-329-01) was issued to KMCC in September 1990. The permit identified 15 solid waste management units and areas of concern that required a RCRA facility investigation. The permit expired in September 2000. The permit was renewed effective June 2001, for a term of 10 years. The permit expired again in May 2011 and was not reissued.
- The EPA issued the HSWA part of the RCRA permit to KMCC in August 1995. The HSWA part required that the facility investigate releases of hazardous waste or hazardous constituents and take appropriate corrective action for such releases. The HSWA part of the permit expired in August 2005. KMCC submitted a letter to the EPA in April 2005 requesting renewal of the HSWA part of the RCRA permit. In June 2019, the EPA approved a request to terminate the permit as a Class 1 modification given the active and long-term oversight of the investigation and associated cleanup by the Superfund program.
- Permit HW-90-329-01 transferred to Tronox in 2005 and then to Greenfield Environmental Multistate Trust, LLC, not individually but solely in its representative capacity as Trustee of the Multistate Environmental Response Trust, in February 2011. As noted previously, this permit expired in May 2011 and was not reissued.
- The Multistate Environmental Response Trust operates under the Tronox Consent Decree and Environmental Settlement Agreement (Settlement Agreement) and the Multistate Environmental Response Trust Agreement (Multistate Trust Agreement). The Settlement Agreement requires the Trust to seek EPA and state approval for work plans and budget ceilings for environmental actions at the Site. Environmental actions include the investigation and cleanup under CERCLA as well as operations, maintenance, and regulatory compliance for the groundwater recovery and treatment system, water pollution control permit, groundwater monitoring, and management of the closed surface impoundments.

Public Participation Activities

On October 17, 2023, the EPA released the OU-3/OU-5 Proposed Plan to the public, and held a 60-day public comment period from October 16, 2023, through December 18, 2023. The EPA held a public meeting on October 26, 2023, to present the OU-3/OU-5 Proposed Plan and to answer questions from meeting attendees. Community comments requested that contaminated soils in OU-5 that exceed the construction worker scenario be removed from OU-5. However, the OU-3/OU-5 Proposed Plan did not include an alternative for soil removal for OU-5. After considering public comments received during the fall 2023 comment period, the EPA decided to address OU-3 and OU-5 in separate RODs. The EPA issued the ROD for OU-3 in September 2024 and began working with the Multistate Trust and the MDEQ on a Feasibility Study for OU-5 that evaluated two additional remedial alternatives for OU-5 that were not included in the OU-3/OU-5 Proposed Plan.

The EPA finalized the standalone Feasibility Study Report for OU-5 in July 2025 and provided the Feasibility Study Report to the community on July 18, 2025. The EPA updated the public on the sitewide Remedial Investigation Reports, the 2025 OU-5 Feasibility Study Report and other Superfund actions through

community notification flyers, presentations, and updates in accordance with the EPA's Community Involvement Plan for the Site, available at: https://semspub.epa.gov/work/04/11214523.pdf.

The EPA also updated its site profile page to provide information to the community. The EPA's site profile page is available at: www.epa.gov/superfund/kerr-mcgee-chemical-columbus.

To ensure the community's concerns are being addressed, a public comment period for the OU-5 Proposed Plan begins on August 5, 2025, and ends on September 4, 2025. The EPA will hold a public meeting on August 6, 2025, starting at 6:00 p.m. Central Time / 7:00 p.m. Eastern Time at Genesis Dream Center located at 1820 23rd Street North, Columbus, MS 39701. Community members will be able to share input and ask questions about the proposed cleanup. Register to join via Zoom at the following link www.epa.gov/superfund/kerr-mcgee-chemical-columbus. OR Go here to register to attend the meeting virtually via Zoom.

SITE CHARACTERISTICS

Physical Characteristics

The former KMCC facility property and OU-5 is relatively flat. As a result, much of stormwater associated with the Site infiltrates into the ground surface. The surface water drainage patterns at the former KMCC facility changed when structures were demolished, and the area was regraded. Today, some stormwater may drain from localized areas of the Former Main Plant Area to ditches along the northern, southern, and eastern boundaries of the Former Main Plant Area.

Portions of the Site are within the Luxapalila Creek 100-year floodplain. The eastern part of the Northern Main Plant Area (OU-5) is within the 100-year floodplain (Figure 4).

Site Geology/Hydrogeology

Groundwater under OU-5 will be addressed in a future Proposed Plan for OU-6. The Site is underlain by two primary water-bearing units, the shallow alluvial aquifer and the Eutaw Formation. Both aquifers are considered EPA Class IIB per EPA's 1986 guidance *Guidelines for Ground-Water Classification under the EPA Ground-Water Protection Strategy*. Depth to groundwater in the shallow alluvial aquifer varies over time depending on rainfall. In OU-5 the water table is typically encountered between about 3 to 8 feet below ground surface. The groundwater flow direction in the shallow alluvial aquifer is southeasterly. The groundwater flow velocity is estimated to be approximately 95 feet per year based on an average hydraulic conductivity of 19 feet per day and an average horizontal gradient of 0.004 feet per foot.

The Upper Eutaw Formation is underlain by two relatively thick and laterally extensive units: the McShan (which makes up the Lower Eutaw Formation) and the Tuscaloosa group formations. The McShan Formation is composed of clay, sand and intermittent gravel and is approximately 200 feet thick. The Tuscaloosa group is a productive regional aquifer comprising the Gordo Formation, Coker Formation and a massive sand formation. The Tuscaloosa group varies in thickness from 500 to 1,500 feet in the vicinity of the Site and consists of gravels, sands, and clay.

Area potable water is supplied by Columbus Light & Water via four public water supply wells located approximately 200 to 750 feet to the east of the Pine Yard. These wells are completed within the Coker Formation of the Tuscaloosa group at depths ranging from 885 to 915 feet below ground surface and are isolated from the shallow alluvial aquifer and the Upper Eutaw Formation by the overlaying Tuscaloosa group units and the McShan Formation. The water supply wells have not been affected by former KMCC facility operations.

The groundwater and DNAPL recovery system in OU-3 (the Southern Former Main Plant Area) locally affects groundwater flow direction in the shallow alluvial aquifer. It was constructed in 1995 to contain the dissolved-phase contaminant plume for RCRA corrective action purposes under the HSWA permit issued. The system conveys treated wastewater to the Columbus Light & Water sanitary sewer system for secondary treatment at the wastewater treatment plant under water pollution control permit number MSP090021. The system remains operational, and some components of the system may be incorporated into the OU-3 remedy.

Nature and Extent of Contamination in OU-5

Multiple investigations have been completed at the Site since 1988, which provide a robust understanding of the nature and extent of contamination in OU-5. The distribution and concentrations of chemicals of concern in soils across the Former Main Plant Area reflect the history of wood-treating operations and waste management activities. This sampling informed the EPA's designation of OU-3 and OU-5 with the intent of addressing the most severe contamination in OU-3. The understanding of the nature and extent of contamination is based on multiple data sets, as summarized below.

- Soil borings (2015 to 2019), TarGOST borings (in 2016), and monitoring well observations helped define the extent of DNAPL contamination as summarized in Figure 5.
- In 2017, a backhoe was used to dig short trenches (or "potholes") to a depth of 4 to 8 feet below ground surface on transects throughout the Former Main Plant Area. Visibly impacted soils (e.g., dried creosote, stained soils, debris) were present in potholes across much of the Southern Former Main Plant Area (OU-3) but absent in the Northern Former Main Plant Area (OU-5) as summarized in Figure 6.
- The Southern Former Main Plant Area (OU-3) is more heavily contaminated than the Northern Former Main Plant Area (OU-5) as evidenced by more frequent exceedance of risk-based thresholds for chemicals of concern in collected surface and subsurface soil samples (1996 to 2019). In OU-5 surface soils, exceedances of risk-based concentrations are limited to benzo[*a*]pyrene based on potential construction worker exposure and to benzo[*a*]pyrene and dioxins/furans based on residential exposure.

Soil

Soil samples were collected from OU-5 during multiple sampling investigations between August 1996 and April 2019. The results of these investigations for PAHs commonly associated with creosote, PCP, and dioxins and furans are summarized in Table 1 below. As shown in Figure 7, benzo[*a*]pyrene exceedances of the construction worker preliminary remediation goal (PRG) are relatively limited in extent.

Table 1: OU-5 Surface Soil Results (0 to 2 feet below ground surface)

Analyte	Number of Samples	Median (mg/kg)	Minimum (mg/kg)	Maximum (mg/kg)	Samples > Construction Worker PRG
Benz[*a*]anthracene	38	0.371	0.0033	220	NA
Benzo[*a*]pyrene	38	0.501	0.0033	133	8
Benzo[*b*]fluoranthene	38	1.15	0.0033	273	NA
Benzo[*k*]fluoranthene	27	0.0815	0.0033	106	NA
Dibenz[*a,h*]anthracene	38	0.143	0.0033	23	NA
Indeno[1,2,3-*cd*]pyrene	38	0.432	0.0033	57.1	NA
Naphthalene	38	0.0626	0.0033	170	NA
Pentachlorophenol	38	0.96	0.0019	19	NA
TEQdf	20	0.0000329	0.0000000018	0.00032	NA

Notes:
NA = not applicable
mg/kg = milligrams per kilogram
TEQdf = toxicity equivalent concentrations of dioxins and furans
PRG = preliminary remediation goal

Groundwater

Groundwater beneath the Northern Former Main Plant Area is contaminated and being addressed by the source control action in OU-3 and a future action under OU-6.

Principal Threat Waste

The NCP establishes an expectation that the EPA will use treatment to address the principal threats posed by a site wherever practicable (NCP Section 300.430(a)(1)(iii)(A)) and to use engineering controls for waste that poses a relatively low long-term threat (NCP Section 300.430(a)(1)(iii)(B)). The "principal threat waste" concept is applied to the characterization of "source materials" at a Superfund site. Source material is waste or material that includes or contains hazardous substances, pollutants or contaminants that act as a reservoir for migration of contamination to groundwater, surface water or air, or acts as a source for direct exposure. There are no principal threat wastes known to be present in OU-5 soils. The contaminated soils in OU-5 are a relatively low long-term threat and disposal at an appropriately permitted RCRA landfill approved by the EPA under the CERCLA Off-Site Rule is consistent with the EPA's expectation to use engineering controls for such wastes. Remedial action in other OUs (such as OU-3) will address principal threats.

SCOPE AND ROLE OF OU-5

Site Cleanup Strategy

The EPA's site strategy has been to address ongoing exposure of nearby residents using removal or remedial actions and to use an operable unit strategy to work from the most straightforward to the most complex challenges at the Site.

The OU-5 cleanup follows several actions taken under RCRA and CERCLA to address historical releases, to stop treatment operations, to remove contamination from the ditches around the Site, and to address ongoing

human exposure. The 2003 closure of the facility stopped most of the new releases from plant operations into the environment. Starting in 2005, several cleanup actions were taken to address contamination that originated in the Former Main Plant Area and moved via runoff into ditches and onto other properties. Under CERCLA, the EPA's and Multistate Trust's removal and remedial actions have resulted in the cleanup of additional contaminated soil and sediment. The first remedial actions were to ongoing exposure in residential yards (OU-2), then addressed soil contamination in the Pine Yard (OU-1). The 2024 ROD for OU-3 selected a "source control" remedy, which will address wastes that are considered a "principal threat", that is, contamination that is an ongoing source for groundwater contamination.

OU-5 will address surface soils in the Northern Former Main Plant Area contaminated with benzo[*a*]pyrene and dioxins/furans. The proposed action for OU-5 will complement the other actions taken at the Site. In particular, the OU-5 action will complement the selected remedy for OU-3 (the Southern Former Main Plant Area). The containment remedy planned for OU-3 could be coordinated with the OU-5 cleanup to achieve overall management and cost efficiencies by designing final soil elevations in OU-5 to manage stormwater from OU-3.

SUMMARY OF SITE RISKS

Purpose of Risk Assessments

Risk assessments are documents that estimate the potential risks of contamination on human health and the environment. The results of the risk assessments document the basis for taking action and identify the contaminants and exposure pathways that need to be addressed by the remedial action.

The Multistate Trust conducted risk assessments to evaluate the potential human health and ecological risks from exposure to chemicals detected at OU-5. The 2018 Human Health Risk Assessment (HHRA) evaluated exposure to trespassers under current site conditions, and the potential exposures to residents, indoor workers, outdoor workers, and construction workers under future use conditions. The HHRA evaluated exposures to surface soils (0 to 2 feet below ground surface) and subsurface soils (2 to 8 feet below ground surface) separately.

The 2018 HHRA for the Northern Former Main Plant Area considered all of the soil data collected at the Site through 2017. Additional soil data were collected in 2019 to refine the HHRA for the Northern Main Plant Area (OU-5). The 2025 OU-5 Feasibility Study Report presents the 2019 sample results and incorporates them with the results of the 2018 HHRA.

Chemicals of Concern

The chemicals of concern (COCs) in OU-5 surface soils are benzo[*a*]pyrene and dioxins/furans.

Reasonably Anticipated Future Use

The Multistate Trust currently owns the former KMCC facility property. Nearby land use is mixed and includes industrial, commercial, and residential land uses. The current zoning for the OU-5 Northern Main Plant Area is commercial/industrial.

Determining future land use includes input from stakeholders like the community and the property owner, the Multistate Trust. One of the Multistate Trust's responsibilities is to ultimately sell or transfer the Site to an entity that can assume long-term responsibility for the Site and foster reuse that is protective of and beneficial to the community. As a result, there is some uncertainty about the future land use of OU-5 and the rest of the Trust's property. For the purposes of estimating risks in OU-5, the reasonably anticipated future use for the OU-5 Northern Former Main Plant Area is industrial/commercial land use. No ecological habitat was identified in OU-5.

Summary of Human Health Risk

The human health risk assessment process evaluates both cancer risk and noncancer risk for the soil COCs for the exposure pathways of concern. The likelihood of cancer resulting from a Superfund site exposure is generally expressed as an upper bound probability, for example, a "1 in 10,000 chance," also expressed as 1 x 10^{-4}. For noncancer health effects, a hazard index – a ratio of estimated exposure to an exposure unlikely to cause harm – is calculated. Under CERCLA, potential risk to human health is considered unacceptable if the excess lifetime cancer risk is greater than 1 x 10^{-4} or if the noncancer hazard index is greater than 1.

The 2025 OU-5 Feasibility Study Report summarizes the results from the 2018 HHRA, updated with data from the 2019 soil sampling. There is unacceptable cancer and noncancer risk to future residents (excess lifetime cancer risk is 7 x 10^{-4}, and the hazard index is 6) from exposure to benzo[*a*]pyrene and dioxins/furans in surface soils and to construction workers (the hazard index is 3) from exposure to benzo[*a*]pyrene in surface soils. Table 2 below summarizes risk levels and hazard indices from the OU-5 Feasibility Study Report. Cumulative cancer risks greater than 1 x 10^{-4} or noncancer hazard indices greater than 1 are shaded. There is no unacceptable risk to indoor workers, outdoor workers, or trespassers due to exposure to surface soils and no unacceptable risk to construction workers from exposure to subsurface soils.

The risk assessment found that OU-5 is not suitable for unrestricted use and while residential land use is not anticipated, the EPA has a basis to implement restrictions on land use to ensure unacceptable exposure does not occur. Based on the EPA's assumption of commercial/industrial land use, the only anticipated unacceptable exposure in OU-5 is for construction workers exposure to benzo[*a*]pyrene in surface soils.

Table 2: OU-5 HHRA Summary

Exposure Medium and Receptor	Excess Lifetime Cancer Risk	Noncancer Hazard Index
Surface Soil		
Resident	7 x 10^{-4}	6
Indoor Worker	2 x 10^{-5}	0.2
Outdoor Worker	4 x 10^{-5}	0.5
Construction Worker	6 x 10^{-6}	3
Trespasser	1 x 10^{-5}	0.1
Subsurface Soil		
Construction Worker	2 x 10^{-6}	1

Notes:
For the resident, the noncancer hazard index for the child, which is higher than that for the adult, is shown.
Shaded results indicate cumulative cancer risks greater than 1 x 10^{-4} and hazard indices greater than 1.

Summary of Ecological Risks

The sitewide baseline ecological risk assessment, completed in 2020, identified no ecological habitat within the Former Main Plant Area, which includes the OU-5 Northern Main Plant Area.

Basis for Taking Action

It is the lead agency's current judgment that the Preferred Alternative identified in this Proposed Plan, or one of the other active measures considered in the Proposed Plan, is necessary to protect public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment. The hazardous substances in OU-5 are benzo[*a*]pyrene and dioxins/furans.

REMEDIAL ACTION OBJECTIVES (RAOS)

Before developing cleanup alternatives for a Superfund site, the EPA establishes Remedial Action Objectives (RAOs) to protect human health and the environment. RAOs present a narrative statement of what the remedial action must achieve to protect human health and the environment. RAOs are typically statements that specify:

- Contaminants.
- Environmental media of concern.
- Potential exposure pathways to be addressed by remedial actions.
- Exposed populations and environmental receptors to be protected.
- Acceptable contaminant concentrations or concentration ranges (remediation goals) in each environmental medium.

The following RAO has been identified for OU-5:

- RAO 1: Prevent direct contact (inhalation, incidental ingestion, and/or dermal contact) with benzo[*a*]pyrene in surface soil above levels protective of a potential future construction worker.

Because residential land use is not anticipated in OU-5, there is not an RAO for protecting residents. However, there is unacceptable risk to future residents due to surface soil contaminated by dioxins/furans and benzo[*a*]pyrene, so the EPA has a basis to implement land use controls to ensure that unacceptable exposure does not occur, unless the State and the EPA approve a change in land use.

The ROD for OU-3 included an RAO to limit transport of contaminated soils by erosion. This is not needed as an RAO for OU-5, because the actions taken to date (including stopping historical releases, stopping treatment operations, and removing contamination already in the ditches around the Site) have addressed the potential for flooding to mobilize contaminants and carry them to off-facility areas.

Preliminary Remediation Goals

PRGs are developed based on chemical-specific applicable or relevant and appropriate requirements (ARARs) when available and are concentration limits for COCs in the environment that become the cleanup levels in the ROD. No chemical-specific ARARs were identified for OU-5. Therefore, the PRGs for OU-5 soil are risk-

based concentrations for protection of human health from direct exposure. The PRGs may be revised during the comment period as information is collected, and final cleanup goals (cleanup levels) will be specified when the remedy is selected and documented in the ROD.

The risk assessment concluded that benzo[*a*]pyrene concentrations in localized areas of surface soils pose an unacceptable risk to future construction workers. The benzo[*a*]pyrene PRG was calculated using the exposure parameters and toxicity criteria presented in the HHRA based on the noncancer risk (hazard index of 1) because exposure to construction workers is short-term. The benzo[*a*]pyrene PRG of 24 milligrams per kilogram (mg/kg) for OU-5 surface soils would achieve a noncancer hazard index of 1 for construction workers.

Summary of Remedial Alternatives

Section 121(b)(1) of CERCLA, 42 U.S.C. § 9621(b)(1) mandates that remedial actions must be protective of human health and the environment, cost-effective, comply with ARARs, and utilize permanent solutions and alternative treatment technologies and resource recovery alternatives to the maximum extent practicable. Section 121(b)(1) of CERCLA also establishes a preference for remedial actions that employ treatment as a principal element to reduce permanently and significantly the volume, toxicity or mobility of the hazardous substances, pollutants and contaminants at a site. Section 121(d)(2) of CERCLA, 42 U.S.C. § 9621(d) further specifies that a remedial action must attain a level or standard of control of the hazardous substances, pollutants and contaminants that at least attains ARARs under federal and state laws, unless a waiver can be justified pursuant to Section 121(d)(4) of CERCLA, 42 U.S.C. § 9621(d)(4).

The 2025 OU-5 Feasibility Study Report details how possible remedial technologies were identified, screened, and assembled into the remedial action alternatives. The first step screened remediation technologies based on technical implementability. For OU-5, the Feasibility Study retained these remediation technologies for further evaluation:

- Institutional Controls
- Containment via Soil Cover/Cap
- Removal via Soil Excavation
- *In Situ* Treatment via Stabilization
- Off-Site Disposal
- On-Site Consolidation (Disposal)

The OU-5 Feasibility Study Report then combines and groups the remediation technologies into four alternatives, including the “No Action” alternative (Alternative 1). These alternatives provide a range of options for achieving the RAOs and complying with ARARs. The Feasibility Study assembled the remedial technologies into the following remedial alternatives:

- Alternative 1: No Action
- Alternative 2: Institutional Controls
- Alternative 3: Soil Removal and Disposal (Off-site and/or On-site)
- Alternative 4: *In Situ* Stabilization of Soils

This Proposed Plan summarizes the components of each remedial alternative and the detailed evaluation of the alternatives contained in the OU-5 Feasibility Study Report.

Common Elements of the Remedial Alternatives

All of the remedial alternatives except for the "No Action" alternative (Alternative 1), would include institutional controls and five-year reviews.

- Institutional controls are non-engineered instruments, such as administrative and legal controls, which help to minimize the potential for exposure to contamination and/or protect the integrity of a response action. Institutional controls for each alternative include a combination of deed restrictions, zoning restrictions and/or restrictive covenants to limit future land use in OU-5 to industrial or commercial uses. Institutional controls would restrict uses such as schools, daycares, and playgrounds where risk is estimated using residential exposure assumptions, unless the EPA and the MDEQ approve a proposal that makes a specific use protective. Land use controls to limit land use generally require about one year to implement.
- Five-year reviews are required because hazardous substances will remain at the Site above levels that allow for unrestricted use and unlimited exposure.

Alternative 1: No Action

The "No Action" alternative is required under the NCP as a baseline against which all other alternatives are compared. Under the No Action alternative, no funds would be expended for remediation of OU-5 nor to establish institutional controls.

Alternative 2: Institutional Controls

Alternative 2 consists of institutional controls. In addition to the institutional controls discussed in the common elements section, Alternative 2 requires a soil management plan that would prescribe worker personal protective equipment and other protocols to prevent unacceptable exposure to contaminants in OU-5 soils during future construction activities. The soil management plan would specify monitoring requirements during construction. The soil management plan would allow a future landowner to cover (with pavement or building foundations) or remove surface soils in areas where PRG exceedances have been identified to facilitate redevelopment for commercial/industrial uses. The soil management plan would also specify soil characterization, transport, and disposal protocol if soil removal is a part of future construction activities. The coordination between the Trust, the EPA, the MDEQ and the Department of Justice to develop an approvable soil management plan is expected to take about 18 months.

The cost estimate for Alternative 2 includes the cost to implement and maintain the institutional controls and does not include the cost of any construction required by the soil management plan (soil cover, soil removal, disposal, sampling, etc.).

Because contaminants in OU-5 soils would be left in place above levels suitable for unlimited use and unrestricted exposure, Alternative 2 would include mandatory five-year reviews.

The net present value estimated for Alternative 2 using a 7% discount rate is $480,000 with an expected accuracy of +50 to -30 percent. Costs for Alternative 2 include the estimated administrative costs associated with implementing institutional controls of $60,000 and periodic costs of $195,000 every five years for inspections, maintenance of the soil management plan, and mandatory five-year reviews of the remedy. The

cost estimate for Alternative 2 does not include the costs of covering or excavating soils, or costs of measures to protect workers, or other requirements of the soil management plan.

Alternative 3: Soil Removal and Disposal (Off-site and/or On-site)

Alternative 3 includes the excavation and disposal of contaminated soils off-site and/or on-site. Alternative 3 includes the following elements:

- ***Excavation—***Excavation of OU-5 surface soils (0 to 2 feet below ground surface) that exceed the PRG. For the purposes of the Feasibility Study, the excavation was assumed to extend over an estimated 4.2 acres shown in Figure 8 and to extend 2 feet deep, resulting in the excavation of approximately 13,600 cubic yards of soil. The area and volume estimate is considered preliminary because it is based on eight sample results. Alternative 3 includes sampling to refine the volume estimate.

- ***Disposal—***Excavated soils would be disposed of in an EPA-approved landfill and/or consolidated and disposed on-site as part of the OU-3 (Southern Former Main Plant Area) remedy. Testing of soils from the Site indicates that all excavated soil will be nonhazardous and would be suitable for disposal at an EPA-approved, RCRA Subtitle D solid waste landfill. The OU-5 soils are less contaminated than the OU-3 soils and disposal of the excavated OU-5 soil as part of the engineered soil cover component of the OU-3 remedy would be protective.

- ***Backfill—***Backfill would include placement and final grading of imported backfill material suitable for industrial/commercial land use in the OU-5 excavation areas. For cost estimating purposes, it is assumed that approximately 13,600 cubic yards of backfill are needed, but final grades and elevations will be determined in design.

- ***Institutional Controls—***Institutional controls, including, but not limited to deed restrictions and/or other proprietary controls to restrict future use to industrial/commercial uses without MDEQ and EPA approval.

- ***Monitoring—***Long-term O&M would be required for the institutional controls preventing residential land use. If OU-5 soils are disposed under the cap system in OU-3, that O&M would occur in OU-3.

- ***Mandatory Five-Year Reviews—***Five-year reviews would be required because soil contaminants remain in OU-5 above levels that allow for unlimited use and unrestricted exposure.

The net present value estimated for Alternative 3 using a 7% discount rate is $5,700,000 with an expected accuracy of +50 to -30 percent. Costs for Alternative 3 include $4,600,000 for direct costs, $1,000,000 for indirect costs, and periodic costs of $45,000 every five years to maintain the institutional controls and conduct mandatory five-year reviews of the remedy.

Alternative 4: *In Situ* Stabilization of Soils

Alternative 4 would involve mixing of a binding reagent, such as cement, into the soils to bind the contamination in place and create a solid monolith. Alternative 4 includes the following elements:

- ***In Situ Stabilization—****In situ* stabilization would involve mixing of a stabilizing reagent (e.g., cement or similar) in the soils to bind the contamination in the soils. For the purposes of the Feasibility Study, it was assumed that *in situ* stabilization would extend over an estimated 4.2 acres shown in Figure 8 and would extend 2 feet deep, resulting in the stabilization of approximately 13,600 cubic yards of soil. The area and volume estimate is considered preliminary and is based on eight sample results. Alternative 4 includes sampling to refine the treatment area during the remedial design.

  Treatability testing would be required during remedial design to confirm *in situ* stabilization effectiveness under site-specific conditions, to identify the optimal binding agents and addition rates, and to evaluate long-term stability of treated soils. Site conditions could affect the level of treatment (potentially uneven and/or incomplete) and result in some amount of residual source mass remaining following implementation of the remedy.

- ***Institutional Controls—***Institutional controls, including, but not limited to:
  - Deed restrictions and/or other proprietary controls to prevent disturbance of the stabilized soils.
  - Deed restrictions and/or other proprietary controls to restrict future use to industrial/commercial uses without MDEQ and EPA approval.

- ***Monitoring—***Periodic monitoring of the treated soils and maintenance as required. O&M of institutional controls.

- ***Mandatory Five-Year Reviews—***Five-year reviews would be required because soil contaminants remain in OU-5 above levels that allow for unlimited use and unrestricted exposure. Also, five-year reviews would be required because benzo[*a*]pyrene would remain in the stabilized soils.

The net present value estimated for Alternative 4 using a 7% discount rate is $4,200,000 with an expected accuracy of +50 to -30 percent. Costs for Alternative 4 include $3,300,000 for direct costs, $740,000 for indirect costs, and periodic costs of $105,000 every five years to inspect the treated soils, perform maintenance activities on the treated soils, maintain the institutional controls, and conduct mandatory five-year reviews of the remedy.

EVALUATION OF ALTERNATIVES

The EPA uses nine criteria specified in the NCP at 40 CFR § 300.430(e)(9)(iii) to evaluate the alternatives and select remedial actions. This section summarizes the relative performance of each alternative against the nine criteria and each other. A detailed analysis of alternatives is provided in the 2025 OU-5 Feasibility Study Report.

The nine criteria consist of two threshold criteria, five balancing criteria, and two modifying criteria. The threshold criteria are overall protectiveness of human health and the environment and compliance with ARARs. These two criteria must be met by any remedial alternative for it to be considered a viable remedial action. The five balancing criteria are long-term effectiveness and permanence; short-term effectiveness; reduction of toxicity, mobility, and volume through treatment; implementability; and cost. These are the primary criteria on which the detailed analysis was based. The two modifying criteria are state acceptance and community acceptance. The EPA typically evaluates the modifying criteria following the public comment period on the Proposed Plan and documents EPA's responses in the ROD.

EVALUATION CRITERIA FOR SUPERFUND REMEDIAL ALTERNATIVES
THRESHOLD CRITERIA
Overall Protection of Human Health and the Environment determines whether an alternative eliminates, reduces, or controls threats to public health and the environment through institutional controls, engineering controls, or treatment.
Compliance with ARARs evaluates whether the alternative meets federal and state environmental statutes, regulations, and other requirements that pertain to a site, or whether a waiver is justified.
EVALUATION CRITERIA
Long-term Effectiveness and Permanence considers the ability of an alternative to maintain protection of human health and the environment over time.
Reduction of Toxicity, Mobility, or Volume of Contaminants through Treatment evaluates an alternative's use of treatment to reduce the harmful effects of principal contaminants, their ability to move in the environment, and the amount of contamination present.
Short-term Effectiveness considers the length of time needed to implement an alternative and the risks the alternative poses to workers, residents, and the environment during implementation.
Implementability considers the technical and administrative feasibility of implementing the alternative, including factors such as the relative availability of goods and services.
Cost includes estimated capital and annual O&M costs, as well as present worth cost. Present worth cost is the total cost of an alternative over time in terms of today's dollar value. Cost estimates are expected to be accurate within a range of +50 percent to -30 percent.
MODIFYING CRITERIA
State/Support Agency Acceptance considers whether the state agrees with the EPA's analyses and recommendations, as described in the remedial investigation and feasibility study reports and the Proposed Plan.
Community Acceptance considers whether the local community agrees with the EPA's analyses and Preferred Alternative. Comments received on this Proposed Plan are an important indicator of community acceptance.

Comparison of Remedial Alternatives

Overall Protection of Human Health and the Environment

During every Feasibility Study, a “no action” alternative is developed as a baseline for comparative analyses purposes. Alternative 1 (“No Action”) would not satisfy the RAO or meet this threshold criterion.

Alternatives 2, 3, and 4 would satisfy the RAO and meet this threshold criterion. Alternative 2 would protect human health and the environment and achieve the RAO using protocols established under a soil management plan and institutional controls. Alternatives 3 and 4 would protect human health and the environment and achieve the RAO by removal or treatment in addition to institutional controls.

Compliance with ARARs

Per CERCLA Section 121(d)(2), remedial actions undertaken at any Superfund site must meet all identified ARARs under federal and state environmental laws/regulations or provide a justification for invoking a waiver

of those requirements pursuant to CERCLA Section 121(d)(4). ARARs include requirements related to land disturbing activities to control fugitive dust and control stormwater runoff during excavation of soil as well as characterization of any wastes/contaminated soil that is generated for disposal.

Alternative 1 would not satisfy the RAO or meet this threshold criterion. Because Alternative 1 does not meet the threshold criteria, it is not considered further in the remedy selection process.

Alternatives 2, 3, and 4 would satisfy the RAO, comply with ARARs, and be protective of human health and the environment. Alternative 4 would meet ARARs; however, *in situ* treatment for OU-5 soils in the 100-year floodplain would require additional coordination with governing agencies to assure ARAR compliance.

Long-Term Effectiveness and Permanence

Long-term effectiveness and permanence refer to the expected residual risk and the ability of a remedy to maintain reliable protection of human health and the environment over time once cleanup levels have been met. This criterion includes the consideration of residual risk that will remain on-site following remediation, and the adequacy and reliability of controls.

Alternative 2 would achieve long-term effectiveness and permanence through implementation of institutional controls, primarily a soil management plan, which includes options for capping or excavation during site redevelopment. It would reduce risk to construction workers by prescribing worker personal protective equipment and other protocols to prevent unacceptable exposure to contaminants. Under Alternative 2, soil that exceeds the PRG would remain on-site and long-term maintenance and inspections would be needed. Institutional controls would also limit future land use to commercial/industrial uses. Alternative 2 requires long-term management to ensure that the requirements of the soil management plan are being implemented. Once OU-5 is redeveloped, it is possible that soil with benzo[*a*]pyrene concentrations that exceed the PRG for construction workers would still remain on-site under Alternative 2. In such a case, long-term maintenance and inspections would be needed to ensure construction workers are not exposed.

Alternative 3 would achieve long-term effectiveness and permanence by removing contaminated soils and backfilling with clean fill. Institutional controls would limit future land use to commercial/industrial uses.

Alternative 4 would achieve long-term effectiveness and permanence by solidifying contaminated soils and using institutional controls to protect the treated soils. Institutional controls would also limit future land use to commercial/industrial uses. Alternative 4 would also require indefinite inspections and maintenance of the stabilized soils. Future redevelopment options may also be limited by Alternative 4 due to the nature of the stabilized soils left in place.

Alternative 3 is superior to Alternatives 2 and 4 in that it would permanently remove all surface soils with benzo[*a*]pyrene concentrations above the PRG from OU-5, and dispose of soils either off the Site in a permitted RCRA Subtitle D landfill or on-site in the OU-3 remedy under the cap. No long-term management of contaminated soil or treated soils is required in OU-5. This approach would be highly effective and permanent with a high degree of confidence because all OU-5 soils exceeding the benzo[*a*]pyrene PRG would be removed from OU-5.

Reduction of Toxicology, Mobility, and/or Volume Through Treatment

This criterion addresses the preference under CERCLA for remedial alternatives that permanently and significantly reduce the mobility, toxicity, or volume of hazardous substances through treatment. This preference is satisfied when treatment is used to reduce the principal threats at a site through destruction of toxic contaminants, reduction of the total mass of toxic contaminants, irreversible reduction in contaminant mobility, or reduction of total volume of contaminated media.

There is no principal threat waste at OU-5. The EPA considers the contaminated surface soils in OU-5 a relatively low long-term threat. However, Alternative 4 would reduce the toxicity of benzo[*a*]pyrene in OU-5 soils through treatment, and thus is superior to Alternatives 2 and 3 with respect to this criterion. The excavation components of Alternative 3, and potentially Alternative 2 depending on the end use of the property, would reduce the volume of affected soil on-site, but not by treatment.

Short-Term Effectiveness

The short-term effectiveness balancing criterion considers the short-term risks to the community and site workers and the potential for negative environmental impacts during the implementation of the remedial alternative. Short-term effectiveness also considers the time required for the remedy to achieve protection of human health and the environment.

Alternatives 2, 3, and 4 can be completed within a short time frame. All three alternatives include various levels of potential hazards and nuisances to the community and site workers associated with significant construction projects. With well-established best management practices in place, risks associated with these factors would be limited or prevented. The primary difference between Alternative 2 and Alternatives 3 and 4 is that with Alternative 2, construction activities associated with covering or excavating soil exceeding the PRG would not take place until the property's future land use is determined. Until that time, the protocols established in the soil management plan would be used to prevent unacceptable exposures to OU-5 soil.

Some of the specific factors related to short-term effectiveness include:

- Inherent hazards associated with the use of heavy machinery.
- Potential to generate dusts, chemical vapors and odors that can represent a hazard or at least a nuisance to both workers and the adjacent community without proper controls.
- Truck traffic and associated risks (e.g., potential for truck-related accidents, exposure to truck air emissions) and nuisance (e.g., noise, odor, traffic) posed to the community.
- Noise associated with use of heavy machinery and truck traffic.
- Potential for release of contaminants to the environment during handling and transport of excavated soils and due to potential stormwater contact with excavated surfaces and stockpiles.

Alternatives 2, 3, and 4 have similar time frames for active construction and implementation of institutional controls (12 to 18 months). Overall, Alternatives 2, 3, and 4 are about the same in terms of short-term effectiveness. The possibility that Alternative 2 would require less construction work is offset by the delay for Alternative 2 to achieve the soil PRG, since any actions to remove or cap soil would be conducted later, if at all.

Implementability

Implementability considers technical feasibility, administrative feasibility, and the availability of services and materials. Rating of the implementability of each alternative was based on the following considerations:

- Alternative 2 is straightforward from a technical standpoint, but from an administrative feasibility standpoint would require significant coordination between the Trust, the EPA, the MDEQ, and the Department of Justice. The development of a soil management plan would require about 18 months and multiple reviews and revisions. Land use controls to limit land use without MDEQ and EPA approval are more common and generally require about one year to implement. Once a soil management plan was in place, it would require coordination among the MDEQ, the EPA, and the Trust and future property owners and/or developers to ensure that the soil management plan is followed during future construction activities.

- Alternative 3 is readily implemented from a technical and administrative standpoint. It involves the use of readily available and highly reliable technologies and equipment and would not require a high degree of specialized expertise. Further, existing site infrastructure does not pose a significant hindrance to implementation of the alternative. Because all OU-5 surface soils with benzo[*a*]pyrene concentrations above the PRG would be removed, there would be no constraints to redevelopment for commercial/industrial uses or impediments to future remedial actions. Alternative 3 requires the least administrative coordination among the EPA, the MDEQ, Department of Justice, the Trust, and future landowners.

- Alternative 4 is implementable from a technical and administrative standpoint. Alternative 4 involves *in situ* stabilization of soils. Although *in situ* stabilization is well established in the environmental industry, it is not commonplace in the general construction industry and would require specialized equipment and expertise that are unlikely to be readily available in the area. Because Alternative 4 would leave solidified soil in place, it requires more administrative coordination among the EPA, the MDEQ and future landowners to be aware of the solidified soil and perform maintenance activities on the treated soils left in place.

Overall, Alternative 3 is the easiest to implement and Alternatives 2 and 4 are about the same, though they have different strengths and weaknesses.

Cost

Cost includes the estimated capital and annual O&M costs, as well as estimated present worth cost. Present worth cost is the total cost of an alternative over time expressed in terms of today's dollar value. The Feasibility Study calculates present value using a 7% discount rate, consistent with the EPA's current policy. At the Feasibility Study stage, costs are expected to be accurate within +50 to -30 percent. Table 3 provides a cost-estimate summary for Alternatives 2, 3, and 4.

Table 3: Cost Summary, Alternatives 2, 3, and 4

Cost Category	Alternative 2: Institutional Controls	Alternative 3: Soil Removal and Disposal (Off-site and/or On-site)	Alternative 4: *In Situ* Stabilization of Soils
Direct Capital Costs	$0	$4,600,000	$3,300,000
Indirect Costs	$60,000	$1,000,000	$740,000
Periodic Costs (incurred every five years for thirty years)	$195,000	$45,000	$105,000
Total Present Value[a]	**$480,000**	**$5,700,000**	**$4,200,000**
a) In 2020 dollars, assuming a 7% discount rate on periodic costs over a 30-year period.			

The EPA's *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA* provides for feasibility studies to include a cost sensitivity analysis when there is significant uncertainty concerning assumptions underlying an alternative. Three of the sources of uncertainty in the cost estimate are: the volume and area of soil that needs to be addressed; inflation that has occurred since 2020, the year the Multistate Trust first completed the cost estimates; and inconsistent assumptions about whether "rail removal" would be part of the cost estimates for the remedial alternatives.

There is significant uncertainty about the preliminary volume estimate of soil contaminated above the PRG because eight grab samples are used to represent concentrations across 4.2 acres. The sensitivity analysis in the 2025 Feasibility Study Report evaluated costs based on assuming half the volume of contaminated soil (about 6,800 cubic yards of soil instead of about 13,600 cubic yards of soil). The results of the sensitivity analysis are presented in Appendix B of the 2025 Feasibility Study Report (Tables B.5 to B.7) and the net present values using a 7% discount rate are:

- Alternative 2 (assuming 50% of the preliminary volume estimate): $480,000
- Alternative 3 (assuming 50% of the preliminary volume estimate): $3,300,000
- Alternative 4 (assuming 50% of the preliminary volume estimate): $2,600,000

Inflation is another source of uncertainty. The Feasibility Study cost estimate was developed for a 2020 report and does not reflect inflation since 2020. The Multistate Trust estimated that inflation would add about 20% to the cost estimates. The EPA used an online Consumer Price Index Inflation Calculator provided by the U.S. Bureau of Labor Statistics (https://www.bls.gov/data/inflation_calculator.htm), which indicates that $1 in January 2020 has the same buying power as $1.25 in June 2025. Adjusting the Total Present Value to account for inflation would increase costs to:

- Alternative 2: $480,000 adjusted for inflation = $600,000
- Alternative 3: $5,700,000 adjusted for inflation = $7,100,000
- Alternative 4: $4,200,000 adjusted for inflation = $5,300,000

Because Feasibility Study cost estimates are used to compare alternatives to each other, a uniform increase in cost does not change the result of a relative analysis. The uncertainty introduced from inflation is relatively small compared to the uncertainty from the volume estimates. The EPA's position is that using the 2020 cost estimate to compare remedial alternatives is adequate.

One other source of uncertainty is that about $390,000 is included for "rail removal" in Alternatives 3 and 4. There are no costs for rail removal in Alternative 2, so the cost estimates assume that any needs for rail

removal would be addressed by a future landowner under Alternative 2. Including rail removal would nearly double the cost of Alternative 2.

Support Agency Acceptance

Support agency (MDEQ) acceptance of the Preferred Alternative will be evaluated after the public comment period ends and will be described in the ROD.

Community Acceptance

Community acceptance of the Preferred Alternative will be evaluated after the public comment period ends and all comments are reviewed. Comments received during the public comment period will be addressed in the Responsiveness Summary section of the Site's ROD.

SUMMARY OF THE PREFERRED ALTERNATIVE

Alternative 3, Soil Removal and Disposal (Off-site and/or On-site), is the EPA's Preferred Alternative. This approach will achieve the RAO quickly. There is no known source material or principal threat waste in OU-5, so while OU-5 does not meet the statutory preference for treatment, it does meet the NCP's expectation to use engineering controls for low-level threat wastes. The Preferred Alternative can change in response to public comment or new information.

This Alternative is recommended because it is easily implementable and provides the highest degree of permanence and protectiveness in the long-term. The Preferred Alternative removes soil contaminated above the proposed cleanup level from OU-5 and limits the need for long-term maintenance and management of residual contamination by future landowners. The Alternative requires the least amount of land use restrictions, coordination between organizations in the long term, and future actions by the EPA, the State, and current/future property owners. Alternative 3 is also the alternative recommended by the community during the public comment period for the OU-3/OU-5 Proposed Plan.

There is some uncertainty regarding the volume of soils that pose unacceptable risk. The EPA will manage this uncertainty during the design process. The uncertainty in cost does not change the relative comparison of alternatives and cost is not a determining factor in EPA's preference for Alternative 3 above Alternatives 2 and 4.

The expected outcome for Alternative 3 is for the soil to attain standards that allow industrial/commercial reuse and construction without requiring special measures to protect construction workers from soil contamination. Also, Alternative 3 limits the need for long-term maintenance and management of residual contamination by future landowners.

The MDEQ, the support agency, has been involved in the response and the development of the OU-5 Feasibility Study. The EPA expects that the MDEQ will concur with the Preferred Alternative.

The remedial components of Alternative 3 are:

- ***Excavation—***Excavation of OU-5 surface soils (0 to 2 feet below ground surface) that exceed the PRG. For the purposes of the Feasibility Study, the excavation was assumed to extend over an estimated 4.2

acres shown in Figure 8 and to extend 2 feet deep, resulting in the excavation of approximately 13,600 cubic yards of soil. The area and volume estimate is considered preliminary because it is based on eight sample results. Alternative 3 includes sampling to refine the volume estimate.

- ***Disposal—***Excavated soils would be disposed of in an EPA-approved landfill and/or consolidated and disposed on-site as part of the OU-3 (Southern Former Main Plant Area) remedy. Testing of soils from the Site indicates that all excavated soil will be nonhazardous and would be suitable for disposal at an EPA-approved, RCRA Subtitle D solid waste landfill. The OU-5 soils are less contaminated than the OU-3 soils and disposal as part of the engineered soil cover component of the OU-3 remedy would be protective.

- ***Backfill—***Backfill in OU-5 would include placement and final grading of imported backfill material suitable for industrial/commercial land use. For cost estimating purposes, it is assumed that approximately 13,600 cubic yards of backfill are needed, but final grades and elevations will be determined in design.

- ***Institutional Controls—***Institutional controls, including, but not limited to deed restrictions and/or other proprietary controls to restrict future use in OU-5 to industrial/commercial uses without MDEQ and EPA approval. Institutional controls would also restrict uses such as schools, daycares, and playgrounds where risk is estimated using residential exposure assumptions, unless the EPA and the MDEQ approve a proposal that makes a specific use protective. At this Site, another institutional control is the Settlement Agreement between the Multistate Trust and the government, which serves as an enforcement tool with institutional control components.

- ***Monitoring—***Long-term O&M would be required for the institutional controls preventing residential land use. If OU-5 soils are disposed under the cap system in OU-3, O&M would also occur in OU-3.

- ***Mandatory Five-Year Reviews—***Five-year reviews would be required because soil contaminants such as dioxins/furans remain in OU-5 above levels that allow for unlimited use and unrestricted exposure.

Based on the information currently available, the EPA believes the Preferred Alternative meets the threshold criteria and provides the best balance of tradeoffs among the other alternatives with respect to the balancing and modifying criteria. The EPA expects the Preferred Alternative to satisfy the following statutory requirements of CERCLA 121(b): (1) be protective of human health and the environment; (2) comply with ARARs; (3) be cost-effective; (4) utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable; and (5) satisfy the statutory preference for treatment as a principal element to the extent practicable. The Preferred Alternative does not satisfy the statutory preference for treatment but it does meet the NCP's expectation to use engineering controls for low-level threat wastes. In the event that the EPA selects Alternative 3 and decides to take the OU-5 excavated soil for on-site disposal as part of the OU-3 remedy, then the ROD issued for OU-5 will also include a decision by the EPA to revise the selected remedy for OU-3 to include such disposal as part of the engineered soil cover component of the OU-3 remedy.

Support Agency Coordination

The MDEQ reviewed the 2025 OU-5 Feasibility Study Report, concurred with the alternatives evaluated, and concurred with how the alternatives were screened and analyzed. The MDEQ will have an opportunity to

review this Proposed Plan and provide its feedback indicating concurrence, or lack thereof, with the Preferred Alternative. The MDEQ's response will be documented in a Responsiveness Summary, which will be included in the ROD.

Five-Year Reviews

Because hazardous substances will remain at the Site above levels that allow for unlimited use and unrestricted exposure, the EPA will review the remedial action in OU-5 no less than every five years, per CERCLA Section 121(c) and the NCP at 40 CFR § 300.430(f)(4)(ii) until the levels of COCs in soil allow for unrestricted use and unlimited exposure. If results of the five-year reviews reveal that remedy integrity is compromised and protection of human health and the environment is insufficient, then the EPA and the MDEQ will evaluate additional remedial actions.

COMMUNITY PARTICIPATION

The 2018 Remedial Investigation Report, risk assessment documents, the 2025 OU-5 Feasibility Study Report, this Proposed Plan, and all supporting documents are available online at www.epa.gov/superfund/kerr-mcgee-chemical-columbus and have been placed in the Site's Administrative Record. The public is encouraged to review and comment on all the alternatives presented in the Proposed Plan. The public comment period for the Proposed Plan begins on August 5, 2025, and ends on September 4, 2025.

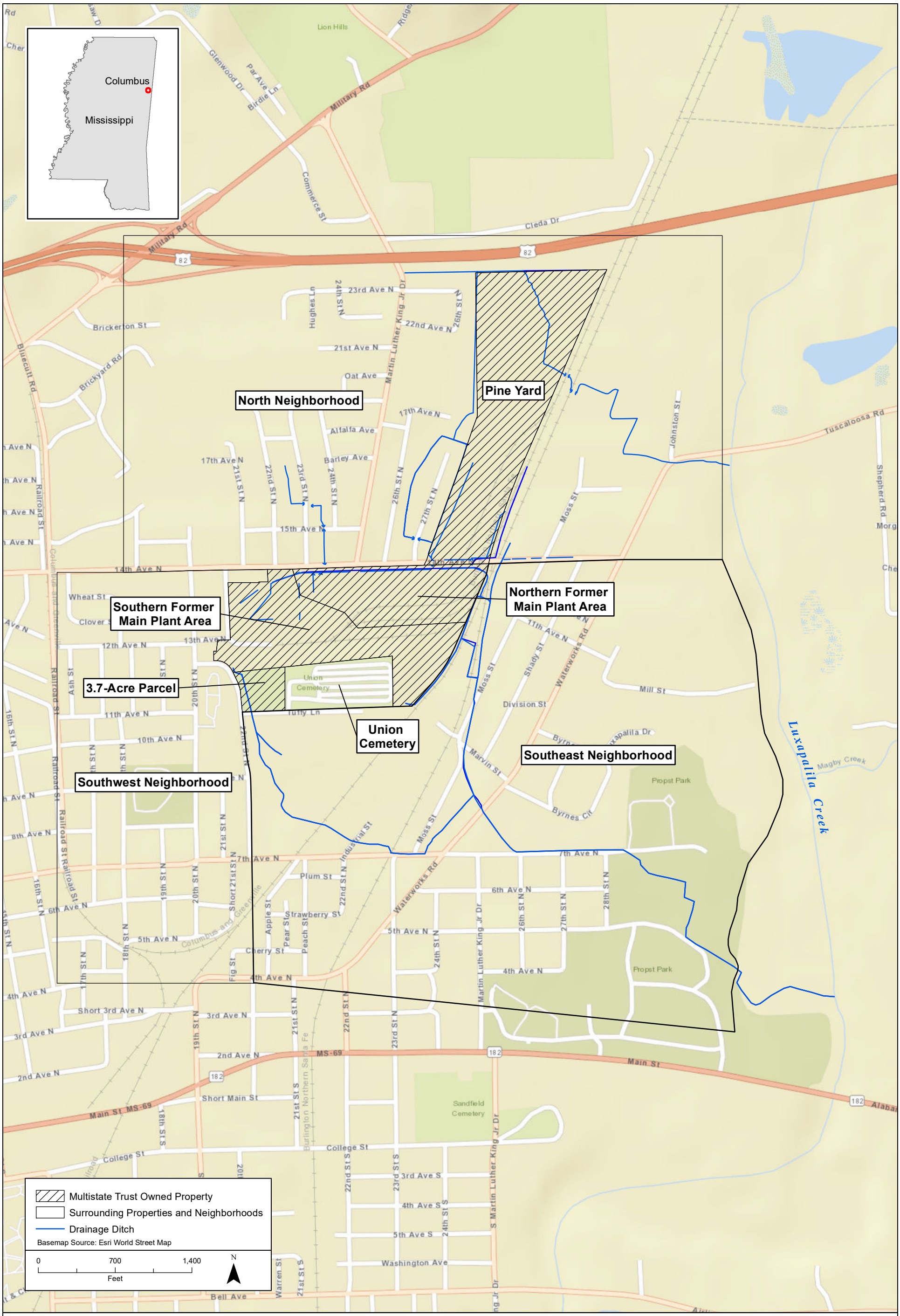
A public availability session will be held on August 6, 2025, at Genesis Dream Center, 1820 23rd Street North, Columbus, MS 39701. The presentation will start at 6:00 pm. A court recorder will be available to record verbal comments after the presentation. Written comments may be provided that evening or mailed before the close of the comment period to the address below:

Ahmad Hassanein
Remedial Project Manager
EPA Region 4
61 Forsyth Street SW, Atlanta, Georgia 30303
Telephone: (404) 562-8163
Email: hassanein.ahmad@epa.gov

Zariah Lewis
Community Involvement Coordinator
EPA Region 4
61 Forsyth Street SW, Atlanta, Georgia 30303
Telephone: (404) 562-8342
Email: lewis.zariah@epa.gov

Mailing Address: U.S. EPA Region 4, 61 Forsyth Street, S.W., 11th Floor, Atlanta, GA 30303-8960

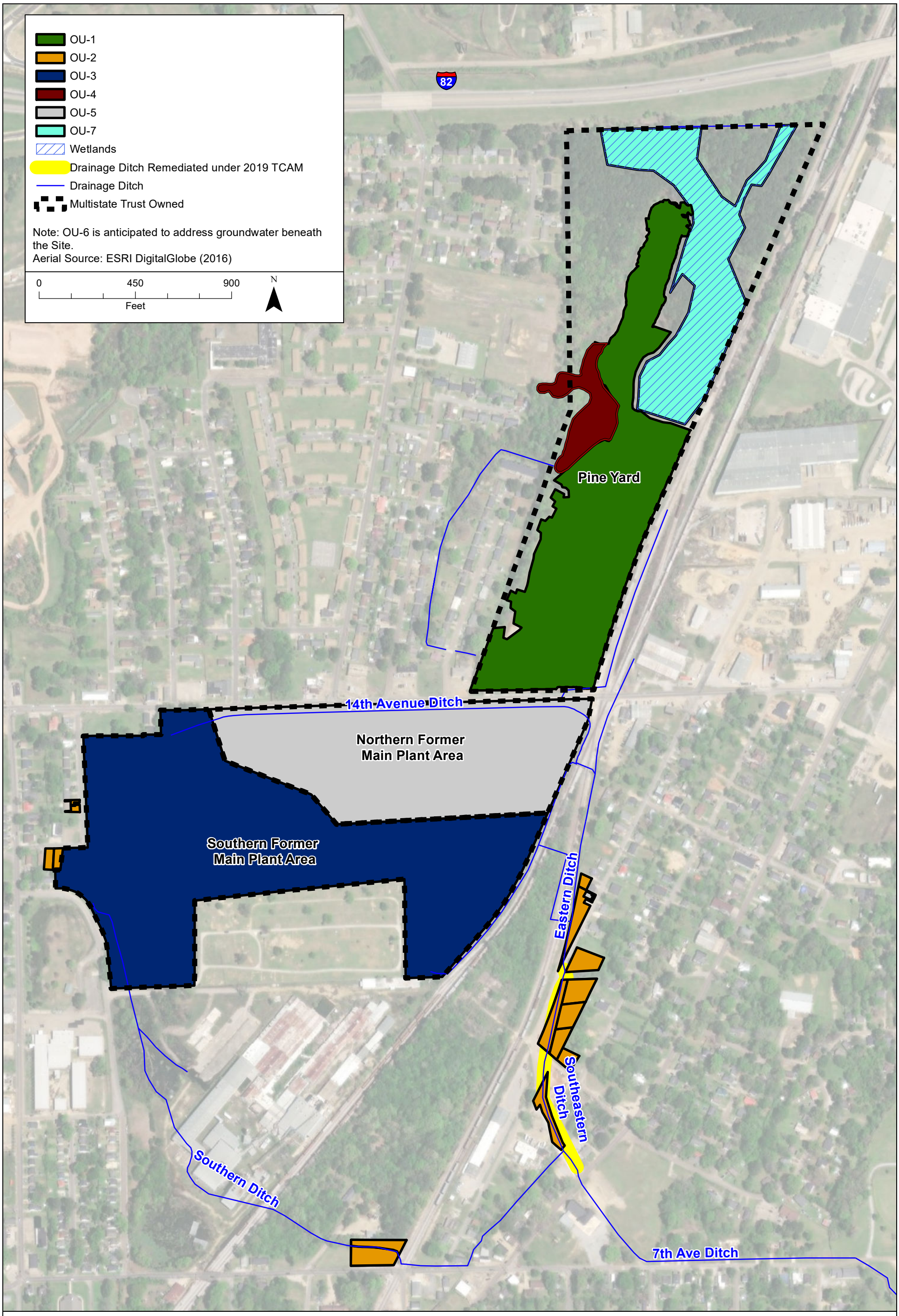
The Preferred Alternative may change in response to public comment or new information acquired during the designated public comment period. Responses to comments received will be provided in the ROD, which will identify the selected remedial action to be implemented.



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

Prepared by: integral consulting inc.

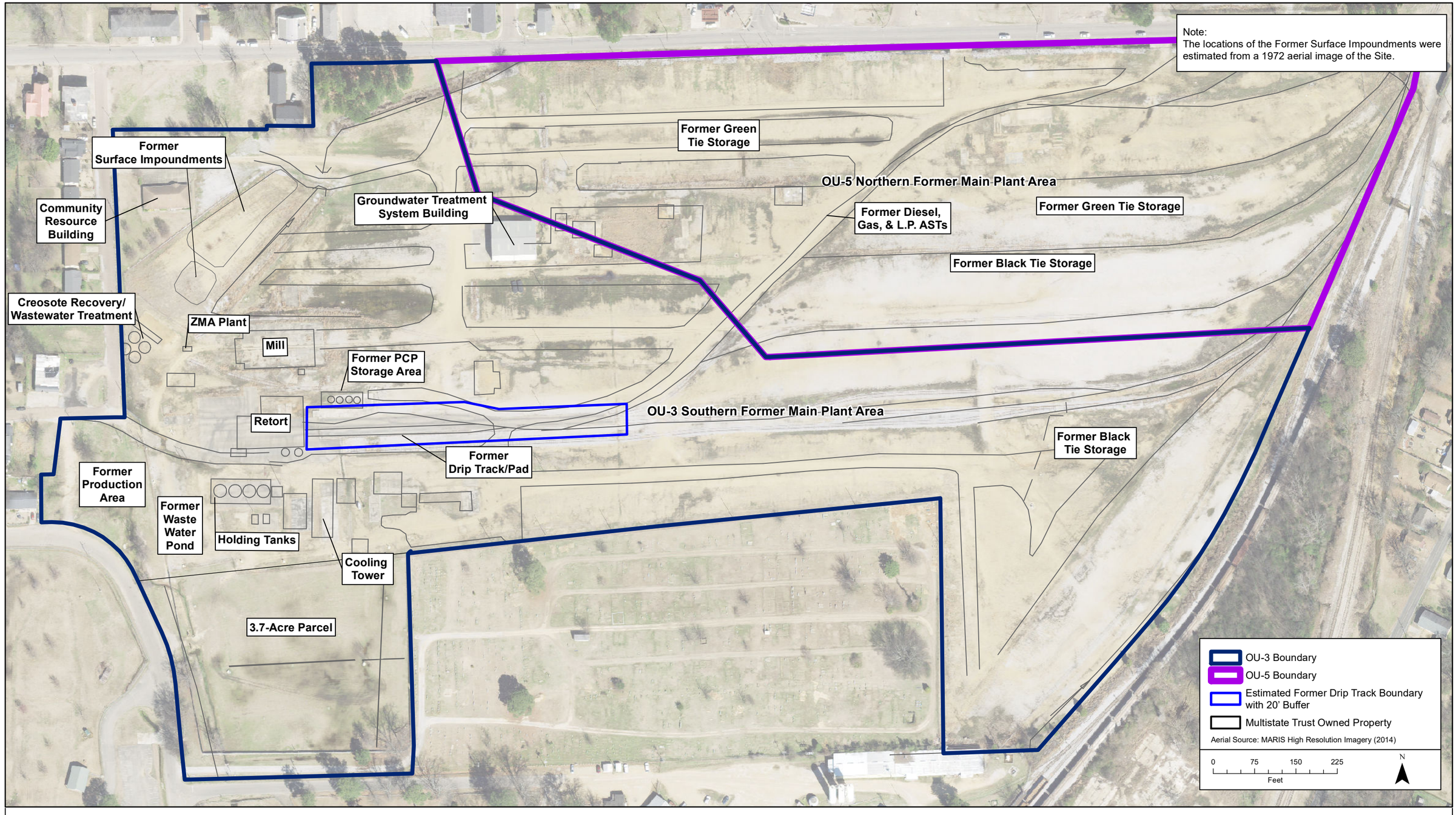
Figure 1
Vicinity Site Map
Kerr-McGee Chemical Corp. - Columbus Superfund Site
Columbus, Mississippi
Proposed Plan, OU-5
July 2025



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

Prepared by: integral consulting inc.

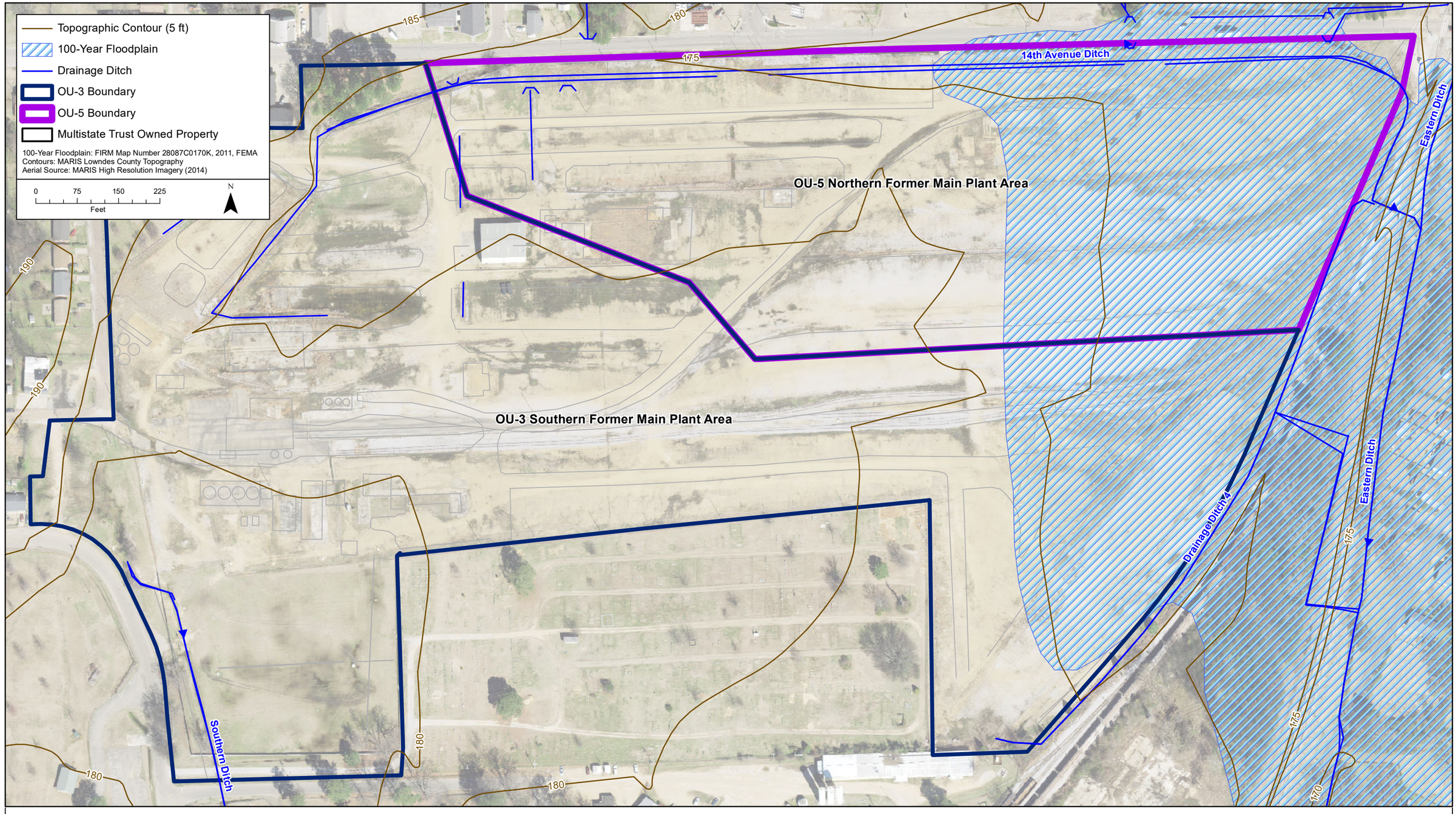
Figure 2
Operable Units 1-7 and Drainage Ditch Remedial Action Area
Kerr-McGee Chemical Corp. - Columbus Superfund Site
Columbus, Mississippi
Proposed Plan, OU-5
July 2025



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

Prepared by: integral consulting inc.

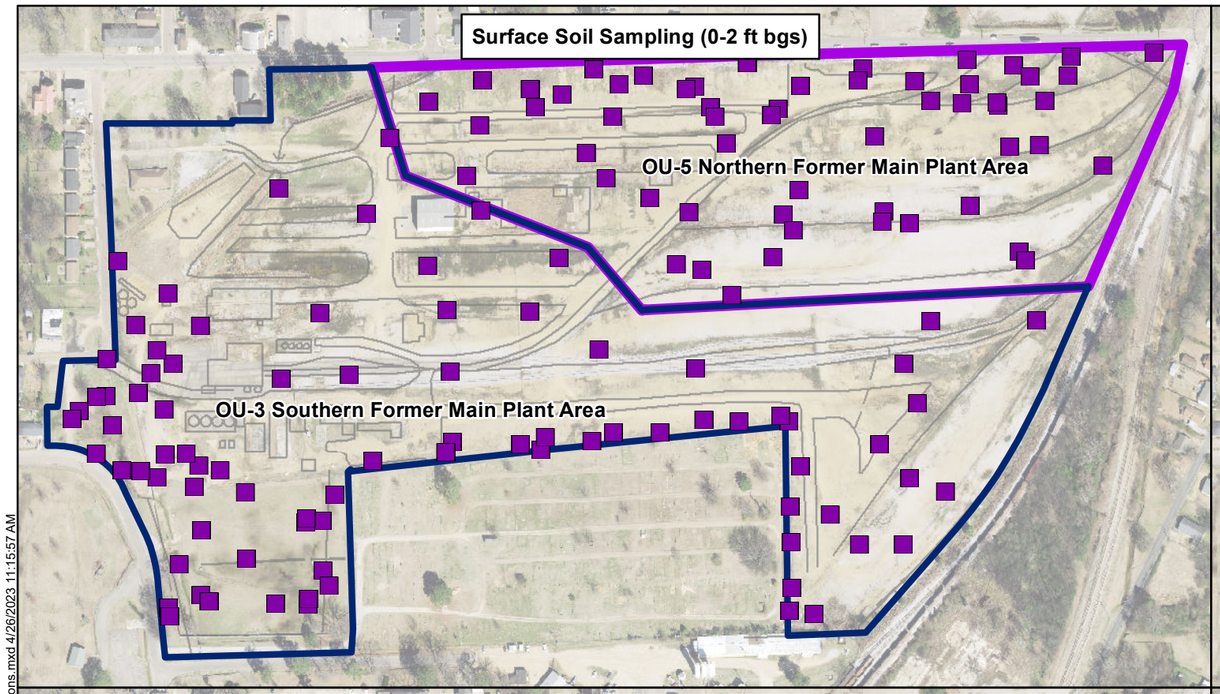
Figure 3
Historical Operations
Kerr-McGee Chemical Corp. – Columbus Superfund Site
Columbus, Mississippi
Proposed Plan, OU-5

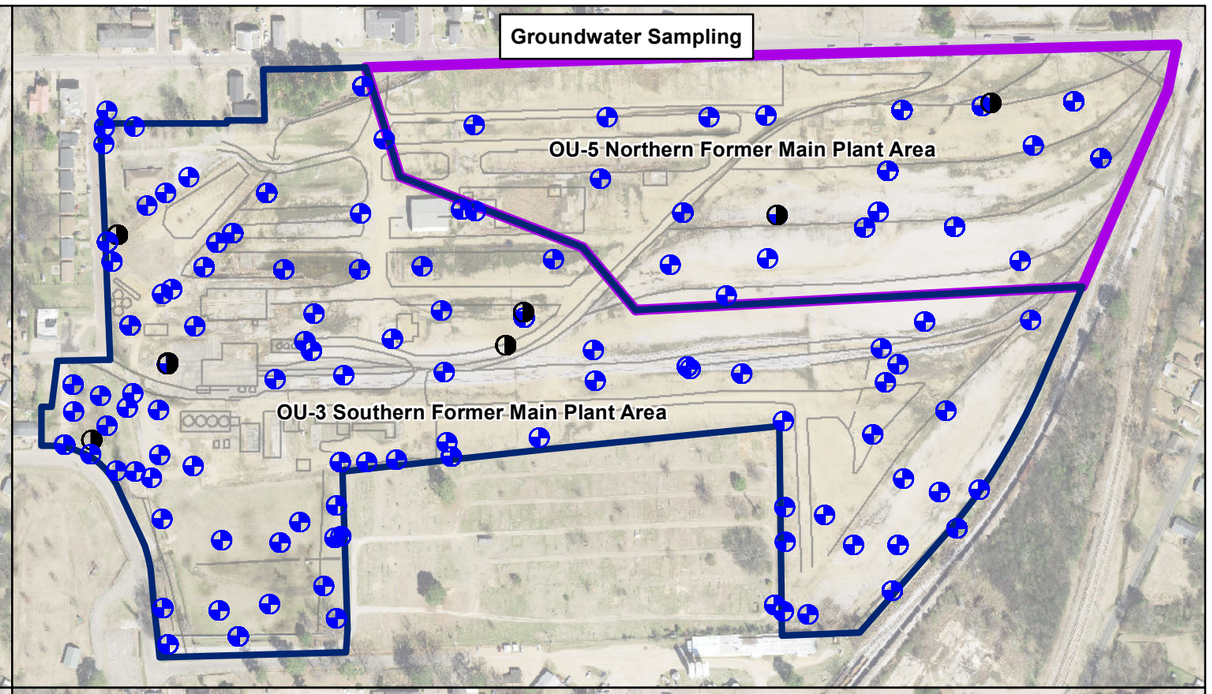


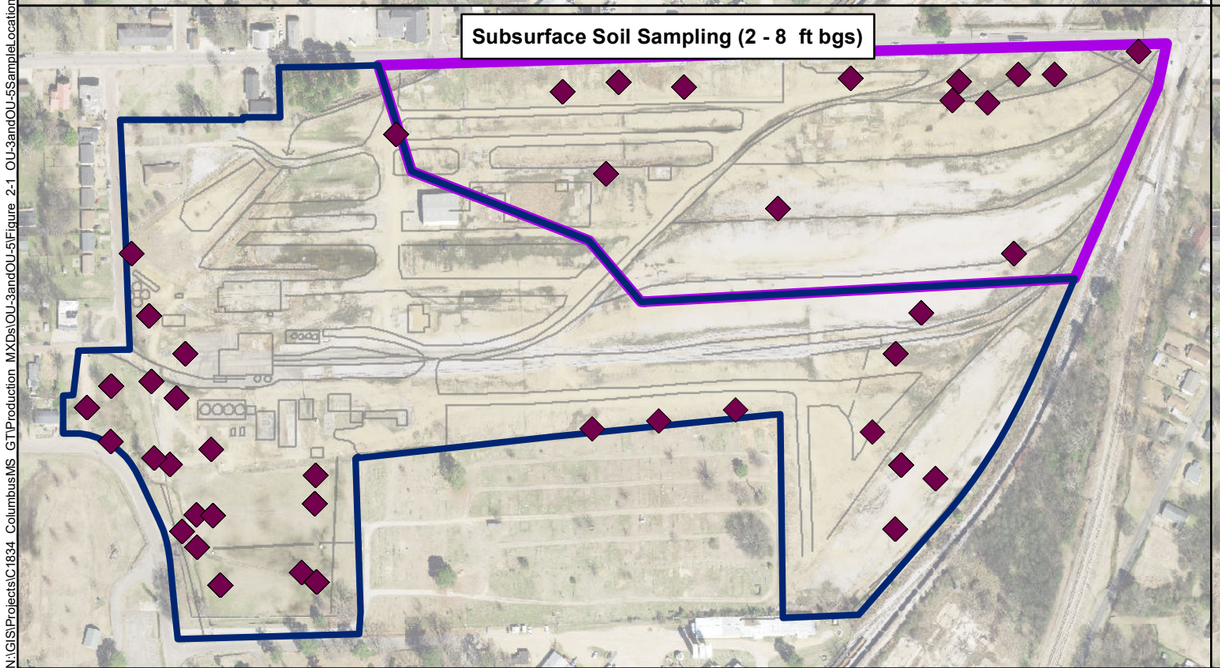
Prepared for: Greenfield Environmental Multistate Trust LLC
Trustee of the Multistate Environmental Response Trust

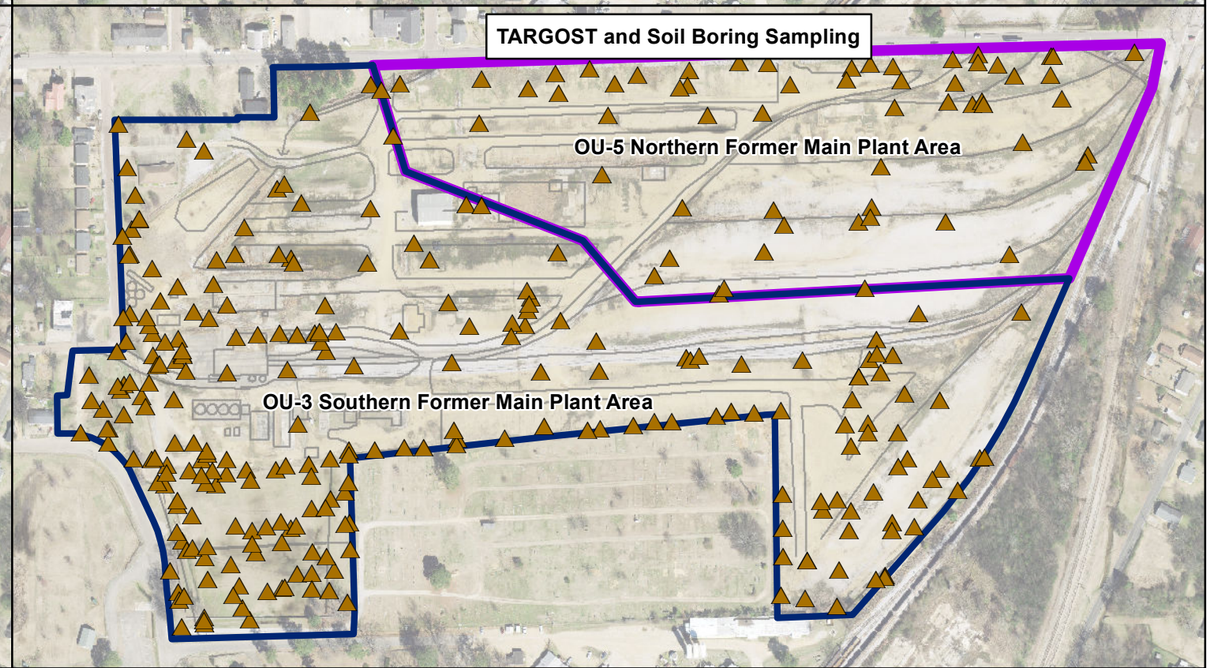
Prepared by: integral consulting inc.

Figure 4
Site Topography and Drainage
Kerr-McGee Chemical Corp. - Columbus Superfund Site
Columbus, Mississippi
Proposed Plan, OU-5
July 2025









N:\GIS\Projects\C1834_ColumbusMS_GT\Production MXDs\OU-3andOU-5\Figure 2-1_OU-3andOU-5SampleLocations.mxd 4/26/2023 11:15:57 AM

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

Prepared by: integral consulting inc.

Surface Soil Sample Location (0-2 ft bgs)
Subsurface Soil Sample Location (2-8 ft bgs)

Groundwater Sample Location by Aquifer Type
Alluvium
Eutaw

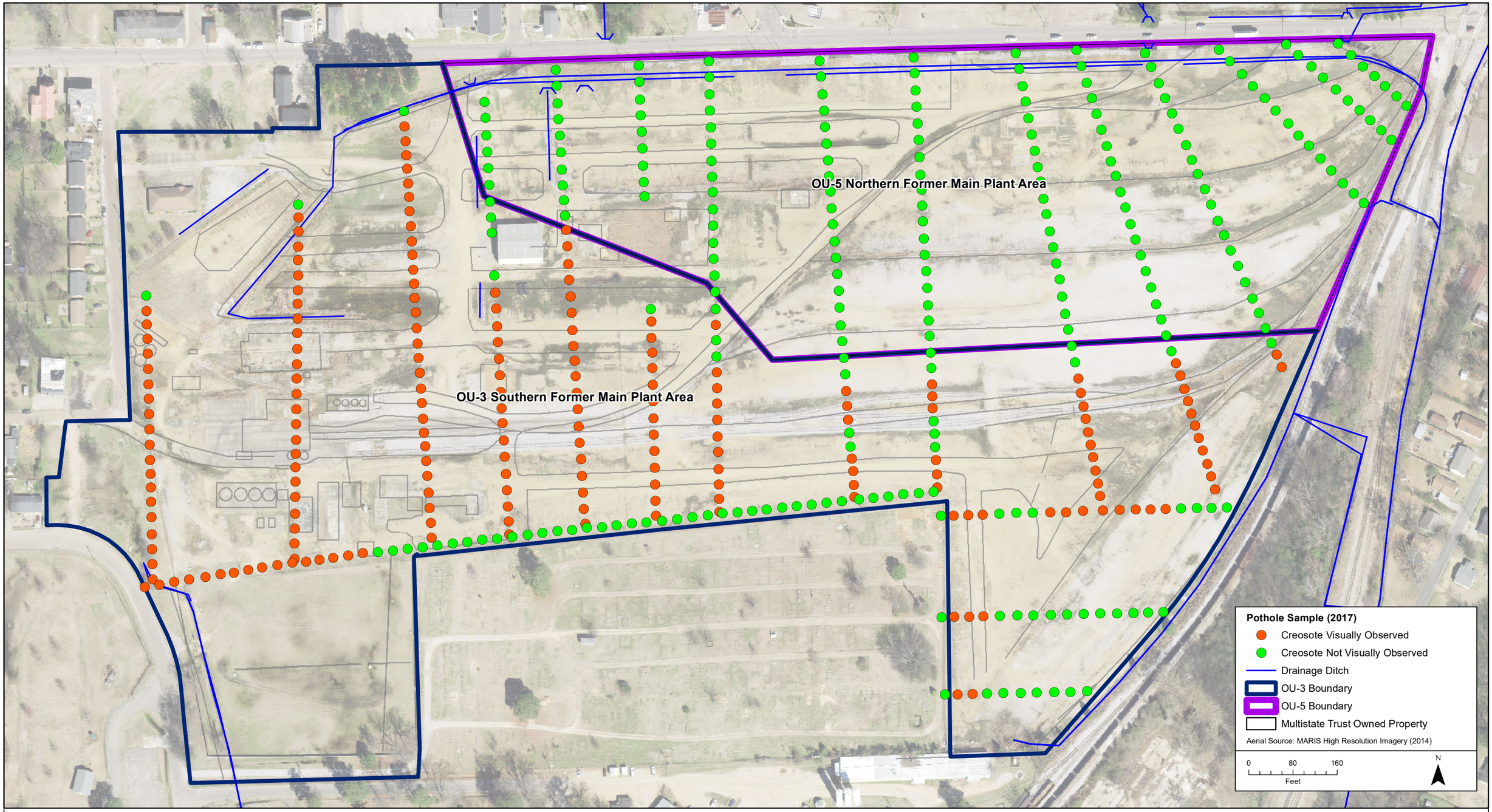
TARGOST or Soil Boring
OU-3 Boundary
OU-5 Boundary
Multistate Trust Owned

0 160 320
Feet

N

Aerial Source: MARIS High Resolution Imagery (2014)

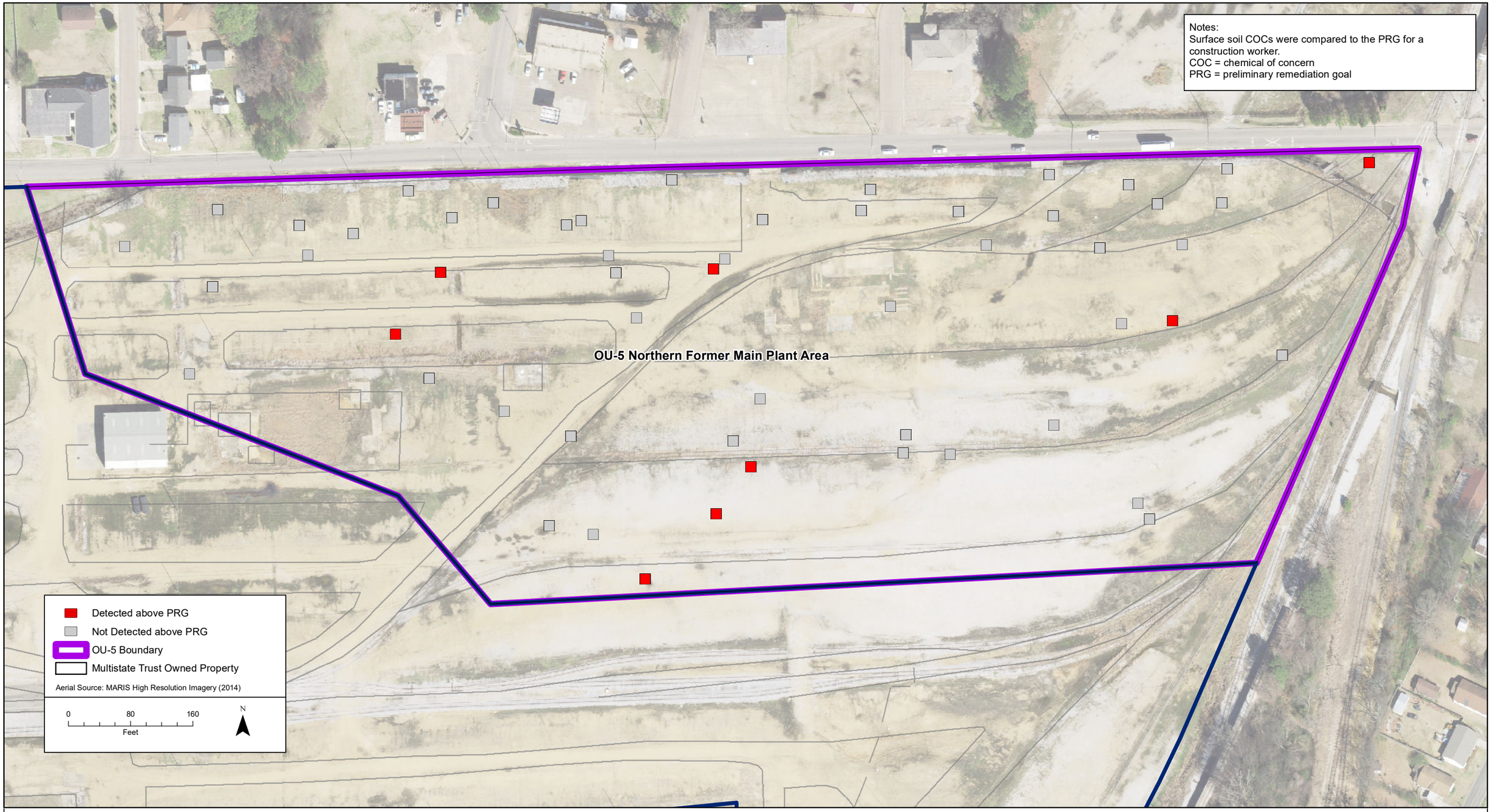
Figure 5
OU-3 and OU-5 Sample Locations
Kerr-McGee Chemical Corp. - Columbus Superfund Site
Columbus, Mississippi
Proposed Plan, OU-5
July 2025



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

Prepared by: integral consulting inc.

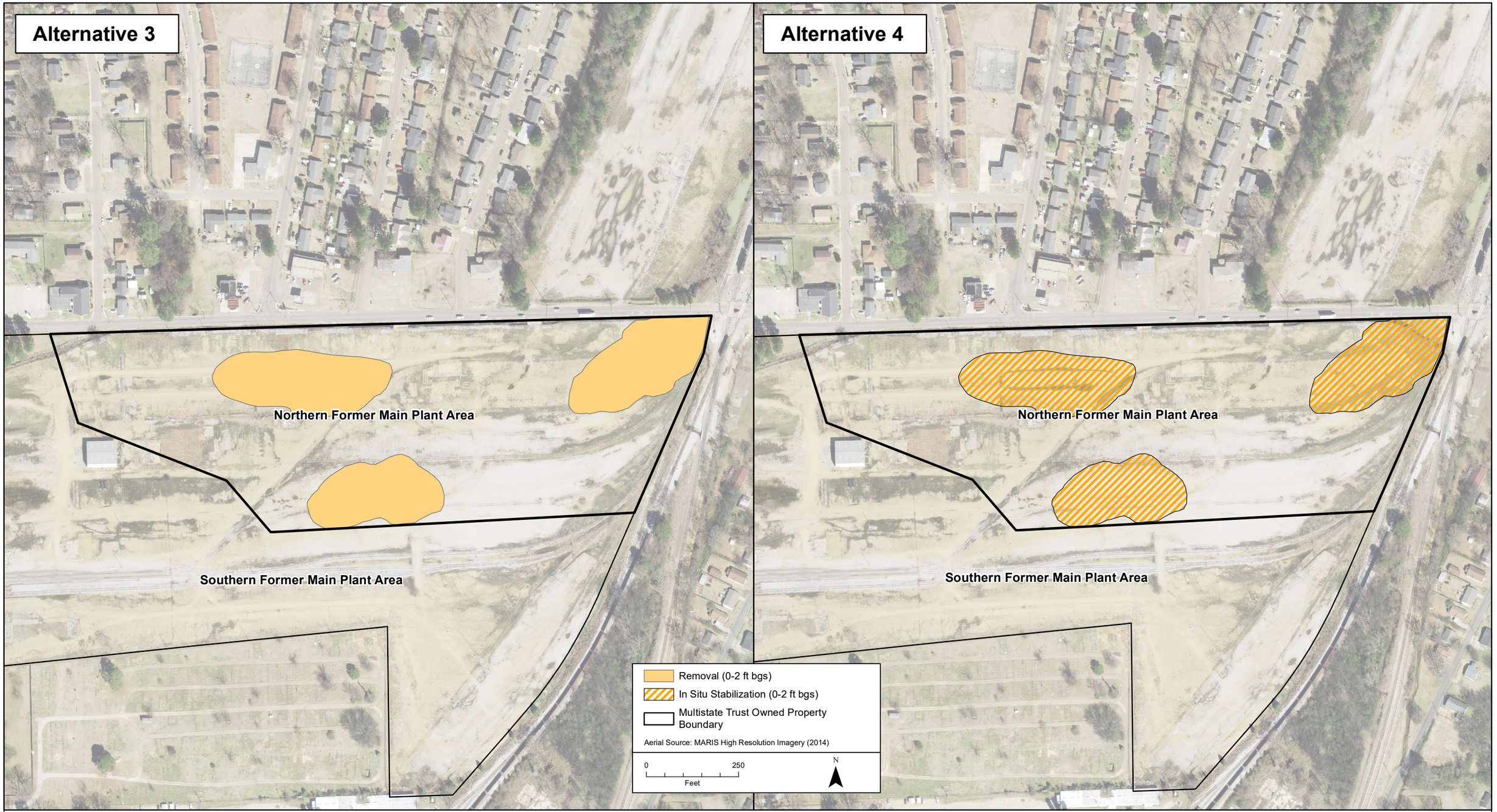
Figure 6
Visibly-Impacted Soils Observed in Near Surface Soils during Trenching
Kerr-McGee Chemical Corp. - Columbus Superfund Site
Columbus, Mississippi
Proposed Plan, OU-5
July 2025



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

Prepared by: integral consulting inc.

Figure 7
Distribution of Benzo[a]pyrene in OU-5 Surface (0-2 ft bgs) Soils
Kerr-McGee Chemical Corp. - Columbus Superfund Site
Columbus, Mississippi
Proposed Plan, OU-5
July 2025



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

Prepared by: integral consulting inc.

Figure 8
Conceptual Layout for Remedial Alternatives 3 and 4
Kerr-McGee Chemical Corp. – Columbus Superfund Site
Columbus, Mississippi
Proposed Plan, OU-5