

**SECOND FIVE-YEAR REVIEW REPORT FOR
AMERICAN CREOSOTE WORKS INC (LOUISVILLE) SUPERFUND SITE
WINSTON COUNTY, MISSISSIPPI**



August 2022

Prepared by

**U.S. Environmental Protection Agency
Region 4
Atlanta, Georgia**

**Chaffins,
Randall**

Digitally signed by Chaffins,
Randall
Date: 2022.08.09 08:48:30
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**Carol J. Monell, Director
Superfund & Emergency Management Division**

Date

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LIST OF ABBREVIATIONS AND ACRONYMS

ACW	American Creosote Works Inc
ARAR	Applicable or Relevant and Appropriate Requirement
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COC	Contaminant of Concern
DSM	Deep Soil Mixed
EPA	United States Environmental Protection Agency
FYR	Five-Year Review
HQ	Hazard Quotient
IC	Institutional Control
MBPC	Mississippi Bureau of Pollution Control
MCL	Maximum Contaminant Level
MDEQ	Mississippi Department of Environmental Quality
µg/L	Micrograms per Liter
mg/kg	Milligrams per Kilogram
mg/L	Milligrams per Liter
MW	Monitoring Well
NCP	National Contingency Plan
NPL	National Priorities List
O&M	Operation and Maintenance
OU	Operable Unit
PAH	Polycyclic Aromatic Hydrocarbon
PCP	Pentachlorophenol
PRP	Potentially Responsible Party
RAO	Remedial Action Objective
RCRA	Resource Conservation and Recovery Act
RI/FS	Remedial Investigation and Feasibility Study
ROD	Record of Decision
RPM	Remedial Project Manager
RSL	Regional Screening Level
SVOC	Semi-Volatile Organic Compound
TCDD	Tetrachlorodibenzo-p-dioxin
TEQ	Toxicity Equivalent
tPAH	Total Polycyclic Aromatic Hydrocarbon
TRG	Target Remedial Goal
UU/UE	Unlimited Use and Unrestricted Exposure

I. INTRODUCTION

The purpose of a five-year review (FYR) is to evaluate the implementation and performance of a remedy to determine if the remedy is and will continue to be protective of human health and the environment. The methods, findings and conclusions of reviews are documented in FYR reports such as this one. In addition, FYR reports identify issues found during the review, if any, and document recommendations to address them.

The U.S. Environmental Protection Agency is preparing this FYR pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 121, consistent with the National Contingency Plan (NCP) (40 Code of Federal Regulations (CFR) Section 300.430(f)(4)(ii)), and considering EPA policy.

This is the second FYR for the American Creosote Works Inc (Louisville) Superfund site (the Site). The triggering action for this statutory review is the completion date of the previous FYR. The FYR has been prepared because hazardous substances, pollutants or contaminants remain at the Site above levels that allow for unlimited use and unrestricted exposure (UU/UE). The Site consists of one operable unit (OU). The OU addresses contaminated groundwater, soil and sediment.

The EPA remedial project manager (RPM) Shelby Johnston led the FYR. Participants included the EPA community involvement coordinator Ronald Tolliver, Armed Rasberry of the Mississippi Department of Environmental Quality (MDEQ), and Melissa Oakley and Kelly MacDonald from the EPA support contractor Skeo. The city of Louisville (City) owns most of the site properties and is responsible for some operation and maintenance (O&M) activities, and therefore was notified about this FYR. The review began on 12/2/2021.

Site Background

The 120-acre Site is located in Louisville in Winston County, Mississippi (Figure 1). Several companies, including American Creosote Works Inc (ACW), operated a wood-treating facility at the Site from 1912 until the facility's closure in 1998. Facility activities included the use of creosote oil, coal tar solutions and pentachlorophenol (PCP) to pressure-treat wood products. Creosote wastes were stored in unlined lagoons. Operations contaminated soil, sediment and groundwater in the former process area, a former wood chip pile, a former lagoon and other site areas. Current site features include fenced capped waste areas, monitoring wells, a culvert, forested and grassy areas, Hughes Creek and an East Mississippi Electric Power Association electric substation. Baremore Street runs through the Site. Apart from the substation, the Site is not currently in use. Most site parcels are owned by the City. The East Mississippi Electric Power Association, Southrail Corporation and private landowners own several small site parcels. The City plans to redevelop the Site as an industrial park with a rail line. The City is coordinating with regulatory agencies to ensure the compatibility of the reuse with the remedy. Railroad Avenue and the Kansas City Southern rail line border the Site to the east. Mixed industrial and residential uses are also east of the Site. Residential and forested areas are immediately west, northwest and northeast of the Site. A lumber business, a church and residences are north and northwest of the Site. Land uses in the area immediately south of the Site include forested, commercial and residential areas.

The primary hydrogeologic units at the Site are the unconfined surficial aquifer and the confined Middle Wilcox Aquifer, which are separated by several layers of clay. Groundwater flow in both aquifers is generally south-southwest, toward Hughes Creek. There is a small area of the remedy that is west of

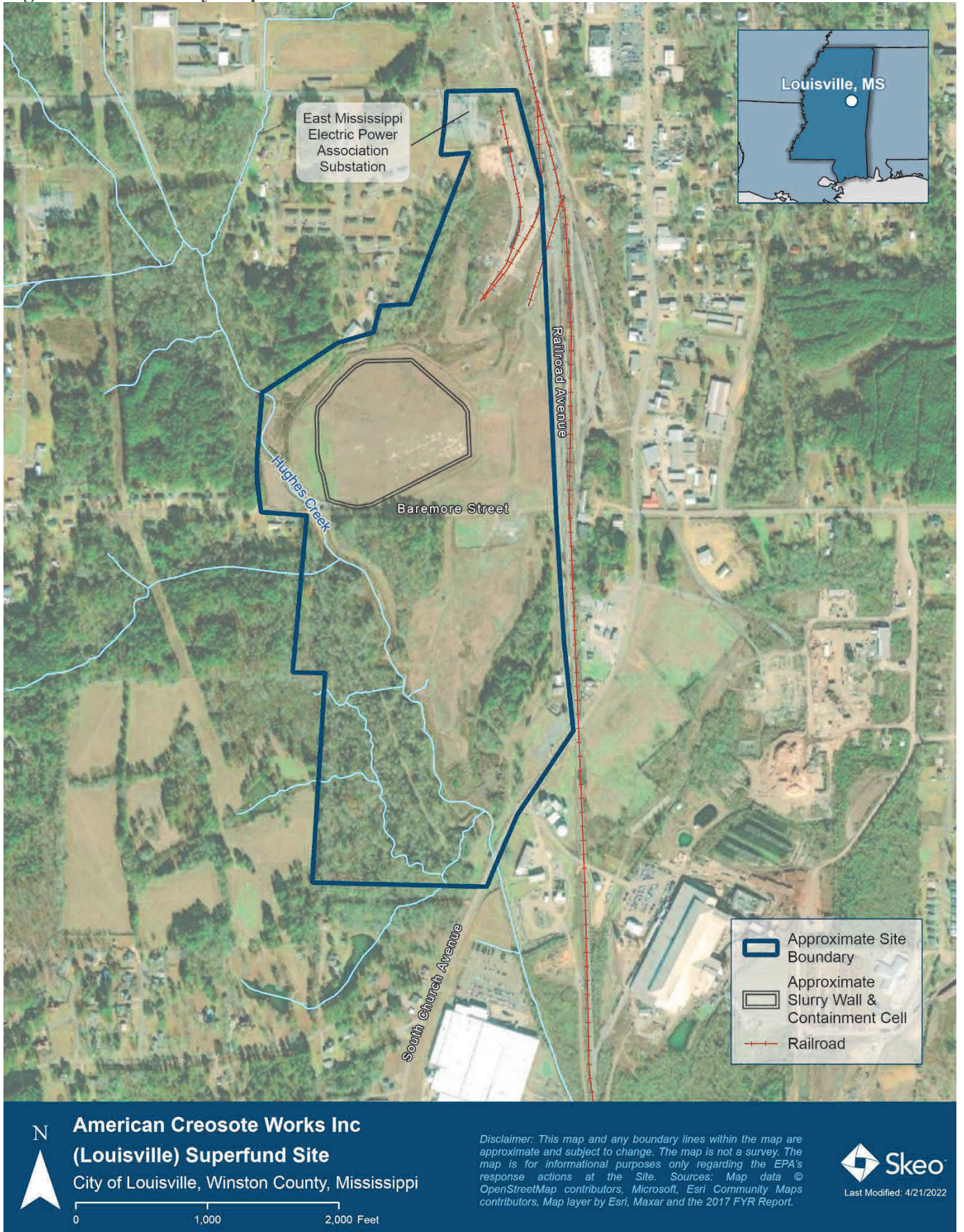
Hughes Creek; in that area groundwater flows east, toward the creek. The Site's 2007 Record of Decision (ROD) states that these aquifers are not used as potable water sources because of low productivity, but that it is possible they could be used for irrigation. Nearby residents are connected to the City's water supply, which comes from the Lower Wilcox Aquifer that is separated from the Site's groundwater contamination by nearly 300 feet of low-permeability clay/silt layers.¹ Appendix A includes a list of documents reviewed during this FYR. Appendix B includes site status information. Appendix C includes a list of site events.

FIVE-YEAR REVIEW SUMMARY FORM

SITE IDENTIFICATION		
Site Name: American Creosote Works Inc (Louisville)		
EPA ID: MSD004006995		
Region: 4	State: MS	City/County: Louisville/Winston County
SITE STATUS		
NPL Status: Final		
Multiple OUs? No	Has the Site achieved construction completion? Yes	
REVIEW STATUS		
Lead agency: EPA		
Author name: Shelby Johnston		
Author affiliation: EPA with support provided by Skeo		
Review period: 12/2/2021 – 7/21/2022		
Date of site inspection: 1/27/2022		
Type of review: Statutory		
Review number: 2		
Triggering action date: 9/21/2017		
Due date (five years after triggering action date): 9/21/2022		

¹ A representative from the Louisville Water Department confirmed via telephone on 3/16/2022 that residents on Baremore Street are connected to the city water supply.

Figure 1: Site Vicinity Map



II. RESPONSE ACTION SUMMARY

Basis for Taking Action

In 2006, the EPA conducted a baseline human health risk assessment to assess the potential risk to human health posed by the Site. Risks were outside of the EPA’s acceptable risk range for future residents and construction workers. The primary pathways that led to unacceptable risks included ingestion of and dermal contact with soil and ingestion of and inhalation/dermal contact with shallow groundwater. The human health risk assessment also concluded that there were no unacceptable human health risks associated with surface water.

The EPA also conducted a baseline ecological risk assessment in 2006 to assess potential ecological risks at the Site. The assessment found slight risks to insectivorous mammals and birds from toxicity equivalent (TEQ) dioxins in soil. The riparian area posed a slight risk to insectivorous birds from exposure to total polycyclic aromatic hydrocarbons (tPAHs), mainly in the former woodchip pile area adjacent to Hughes Creek. It also found that the contamination in Hughes Creek – tPAHs in sediments in particular – could cause adverse effects to aquatic invertebrates.

The key contaminants of concern (COCs) are polycyclic aromatic hydrocarbons (PAHs). COCs by media are included below in Table 1.

Table 1: COCs, by Media

COC	Media
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD) TEQ	Soil
Benzo(a)pyrene	
Chromium	
Pyrene	
Bis(2-ethylhexyl)phthalate	Groundwater
Manganese	
Xylenes (total)	
2,4-Dimethylphenol	Soil and groundwater
2-Methylnaphthalene	
Acenaphthene	
Benzene	
Benzo(a)pyrene TEQ (carcinogenic PAHs)	
Carbazole	
Dibenzofuran	
Fluoranthene	
Fluorene	
Iron	
Naphthalene	
tPAHs	Soil and sediment
<i>Notes:</i>	
<i>Source:</i> Table 1 from the 2007 ROD	

Response Actions

From 1984 to 2007, the EPA conducted several pre-ROD actions to address immediate threats at the Site. The Mississippi Bureau of Pollution Control (MBPC) inspected the Site and discovered two uncontrolled sludge lagoons west of a Resource Conservation and Recovery Act (RCRA)-regulated surface impoundment in October 1984. The MBPC found that the earthen dike around the southwest end of the larger surface impoundment was seeping and spilling into Hughes Creek, with creosote present on the creek banks and water surface. The MBPC contacted the EPA Region 4's Emergency Response and Removal Branch, which conducted an emergency removal at the Site from October 1984 to February 1985. The EPA pumped the surface water from the lagoons and excavated and solidified about 70,000 cubic yards of creosote sludge and highly contaminated soil with cement kiln dust. The EPA placed the solidified material in an on-site unlined storage cell, covered it with 2 to 3 feet of clay, and covered the cell with topsoil and grass seed. The EPA graded the cap so surface water would flow around the cell.

In January 1999, the EPA investigated the Site and determined that an emergency action was necessary to stop the overflow of creosote waste from abandoned containment areas and process tanks. The EPA pumped 55,000 gallons of liquid from the tanks and containment cells into three frac tanks. Additional removal action activities included decommissioning tanks, treating wastewater, recycling metal, disposing of wastes off site and stockpiling 4,000 cubic yards of solidified waste for on-site disposal. Finally, the EPA constructed a temporary storage cell for the waste next to the 1984-1985 cell. The EPA lined the excavation with a 40-mil low-density polyethylene liner and about one (1) foot of clay, placed the waste inside, and lined the top with a 40-mil low-density polyethylene liner that was welded to the bottom liner to encapsulate the waste. The EPA placed about one (1) foot of clean clay over the top of the liner, graded the cell and installed a fence around the cell area. The EPA completed this removal action in April 2000. The EPA proposed the Site for listing on the Superfund program's National Priorities List (NPL) in June 2001 and finalized the listing in September 2001.

In 2003, the City encountered contaminated sediment during replacement of the Baremore Street Bridge culvert in Hughes Creek. The EPA excavated 700 to 900 cubic yards of contaminated soil and sediment in the work area and stockpiled it on top of the 1984-1985 cell. The EPA covered this area with a geomembrane cap.

To address an ongoing release of creosote to Hughes Creek just north of Baremore Street, the EPA conducted a removal action from December 2006 to May 2007. The EPA installed a wall of sheet piling adjacent to Hughes Creek to limit surface water runoff and seepage of creosote-contaminated soil and water into the creek.

The EPA selected the Site's final remedy in the Site's 2007 ROD. The remedial action objectives (RAOs) listed in the ROD include:

- Prevent ingestion, inhalation or direct contact with groundwater, sediment and surface soil that contains contaminant concentrations in excess of the cleanup goals.
- Control migration and leaching of contaminants in surface and subsurface soil to groundwater that could result in groundwater contamination in excess of maximum contaminant levels (MCLs) or health-based levels.
- Prevent or control releases of hazardous substances from contaminated soil, sediment and surface water that would result in unacceptable risks to ecological receptors.

- Prevent ingestion or inhalation of sediment particulates in air that contain contaminant concentrations in soil in excess of cleanup goals.
- Control future releases of contaminants to ensure protection of human health and the environment.

The selected remedy included the following components:

- Excavation of contaminated soil outside of the proposed disposal area (48,000 cubic yards).²
- Excavation of contaminated sediment (40,000 cubic yards).
- Confirmation sampling/analysis of excavated areas to ensure cleanup goals are met.
- Preparation of on-site disposal area (27 acres).
- Backfilling and compacting excavated soil/sediment into disposal area.
- Backfilling clean soil into areas where the contaminated soil/sediment was removed (88,000 cubic yards).
- Installation of a 2-foot-thick soil-cement sub-cap over a maximum of 16 acres of the disposal area. (This took place in the Former Process Area. The ROD-defined disposal area included the Former Process Area.)
- Construction of a subsurface barrier wall around the disposal area to isolate the contaminated groundwater above cleanup goals.
- Installation of a low-profile composite cap over the remainder of the disposal area and subsurface barrier wall.
- Land use/deed restrictions to limit use of contaminated groundwater above cleanup goals on site and in nearby downgradient areas of the Site, put restrictions on construction over the disposal area, and prohibit residential development of the property.
- Long-term monitoring of environmental media to ensure the protectiveness of the remedy. The monitoring program may include (but not be limited to) groundwater sampling/analysis within and outside of the disposal area and surface water, sediment, and biota sampling/analysis within Hughes Creek.

Table 2 lists the ROD cleanup goals.

² The disposal area includes both the containment cell and the former process area.

Table 2: ROD Cleanup Goals

Contaminant of Concern (COC)	ROD Cleanup Goal			
	Soil (mg/kg)	Sediment (mg/kg)	Groundwater (mg/L)	Cleanup Goal Basis ^a
2,3,7,8-TCDD TEQ	0.001	-	-	EPA Dioxin Policy for residential land use as of 2007 ROD
2,4-Dimethylphenol	9	-	2	Soil: groundwater protection Groundwater: HQ=1
2-Methylnaphthalene	1,231	-	0.4	Soil: direct contact Groundwater: HQ=1
Acenaphthene	570	-	6	Soil: groundwater protection Groundwater: HQ=1
Benzene	0.03	-	0.005	Soil: groundwater protection Groundwater: MCL
Benzo(a)pyrene	8	-	-	Soil: groundwater protection
Bis(2-ethylhexyl)phthalate	-	-	0.006	MCL
Carbazole	0.6	-	0.00335	Soil: groundwater protection Groundwater: MDEQ Tier 1 TRG
Chromium	38	-	-	Groundwater protection
Benzo(a)pyrene TEQ (cPAHs)	28.8	-	0.0002	Soil: direct contact Groundwater: MCL
Dibenzofuran	315,696	-	0.2	Soil: direct contact Groundwater: HQ=1
Fluoranthene	4,300	-	1.46	Soil: groundwater protection Groundwater: MDEQ Tier 1 TRG
Fluorene	560	-	0.243	Soil: groundwater protection Groundwater: MDEQ Tier 1 TRG
Iron	93,087	-	30	Soil: direct contact Groundwater: HQ=1
Manganese	-	-	0.73	MDEQ Tier 1 TRG
Naphthalene	84	-	2	Soil: groundwater protection Groundwater: HQ=1
Pyrene	4,200	-	-	Groundwater protection
tPAHs	2,700	100	-	Soil and sediment: ecological
Xylenes (total)	-	-	10	MCL
<p><i>Notes:</i> <i>Source:</i> 2007 ROD, Table 1 HQ = hazard quotient mg/kg = milligrams per kilogram mg/L = milligrams per liter TRG = target remedial goal</p> <p>a. Soil cleanup goals established for groundwater protection assumed a dilution attenuation factor of 20. Soil cleanup goals established for direct contact are risk-based goals based on oral and dermal contact using commercial/industrial land use exposure assumptions.</p>				

Status of Implementation

The EPA conducted the remedial action on site from August 2012 to May 2015. Site remedial features are shown on Figure 3. Remedy implementation included:

- Excavation and removal of contaminated materials (both soil and sediment) from various areas throughout the former facility, including materials placed on site during removal actions, with confirmation soil samples collected from the bottom and side walls of each excavation area.

- Moving and grading of the contaminated materials to an on-site containment cell. Demolition and removal of contaminated materials in the former process area and placement of the materials into the on-site containment cell.
- Drainage of Railroad Lake (Figure 3), removal of contaminated materials and placement of the materials into the on-site containment cell.
- Excavation and grading along Hughes Creek south and the stream alignment from Railroad Lake to Baremore Street culvert.
- Excavation, removal and transport of contaminated materials from an off-site area (soil and sediment from southeast of Site and South Church Street bridge).
- Construction of the slurry wall around the containment cell (slurry wall extends to 60 feet below ground surface). Per the 2009 remedial design, the barrier was continuously keyed into the low permeability portion of the Middle Wilcox formation.
- Installation of a multi-layered high-density polyethylene liner cap and placement of layers of backfill and topsoil over the containment cell.
- Former process area stabilization and solidification by mixing soil-bentonite-cement slurry with remaining soil, installation of a three-layer liner sub-cap at the 4-acre former process area, and backfilling, topsoil placement and restoration of the former process area.³
- Installation of a containment cell perimeter fence.
- Installation of a second chain-link fence along the Wesley Chapel Church boundary for safety purposes.

During the remedial design, the EPA discovered contaminated soil below and to the west of Hughes Creek. The EPA decided to construct a subsurface barrier in the area west of the containment cell to contain the contamination. The remedial design indicated that contamination in this area was driven by gravity. The construction of the deep soil mixed (DSM) containment wall on the western property boundary occurred during remedy implementation. The DSM wall was mixed from a depth interval of 20 feet to 40 feet.

Shortly after the 2015 remedy implementation, a creosote seep was observed entering Hughes Creek at the Baremore Street Bridge. The EPA initiated a removal action to address this additional creosote seepage in April 2015. The suspected source of the creosote was a former creek bed located outside of the containment cell. The EPA placed absorbent booms at the seep location to collect and contain the creosote. The EPA collected more soil borings to further characterize the extent of contamination. The Superfund Technical Assessment and Response Team estimated that there were 7,037 cubic yards of remaining creosote free product and 31,885 cubic yards of material containing creosote in the form of staining or odors in the area along the creek north of Baremore Street. The EPA installed sheet piling in the area and excavated contaminated sediment. The EPA placed some of the sediment under a cap extension west of the containment cell and disposed of some of the sediment off site. This removal action was completed in October 2016.

³ All contaminated materials, soil and underground piping from the former process area were removed to a depth of 5 feet below existing ground surface. This material was excavated and moved to the containment cell. When the excavation was complete, the entire area was stabilized and solidified using a shallow mixing process, which utilized soil bentonite cement slurry mixed into the top 3 feet of the remaining soil at the bottom of the excavated area. The intent was to stabilize the bottom of the excavation that may contain any remaining soil contamination in the depth zone 5 feet to 8 feet from surrounding ground, as well as provide a strong subsurface foundation for any future development activities.

Institutional Control (IC) Review

The 2007 ROD required implementation of institutional controls to limit use of contaminated groundwater above cleanup goals on site and in nearby downgradient areas of the Site, restrict construction over the disposal area, and prohibit residential development of the property.

The City filed an Environmental Covenant with Winston County, Mississippi in July 2021. The 2021 Environmental Covenant includes the following activity and use limitations that run with the land:

- No person shall damage or interfere with any monitoring wells on the Properties.
- No person shall engage in excavation of any kind before meeting the notification requirements of Mississippi's One-Call law, Miss. Code Ann. § 77-13.1 et seq. (Rev. 2011), by calling the Mississippi One-Call System, Inc., at 811.
- The Properties shall not be used for residential purposes, including, but not limited to, apartments, mixed use developments, condominiums, townhomes, single living homes, senior care homes, daycare centers or hotels.
- Activity and Use Limitations for the Containment Cell and Areas Subject to Additional Restrictions. All Properties or portions of properties, noted on Exhibit H of the 2021 Environmental Covenant (hatched area on Figure 2 of this FYR) as Areas Subject to Additional Restrictions are subject to the following activity and use limitations that run with the land:
 - There shall be no subsurface demolition, excavation, drilling, maintenance, construction, utility work, soil removal, soil remediation, or other subsurface activities at, over or near the hatched areas on Exhibit H of the 2021 Environmental Covenant (hatched area on Figure 2), without the prior written approval of the EPA and the MDEQ.
 - The containment cell is capped by an engineered cover, which will be maintained by the MDEQ. There shall be no interference with or disturbance of the engineered cover, which includes liners, drainage and soil layers, and vegetation.
 - The Areas Subject to Additional Restrictions noted on Exhibit H of the 2021 Environmental Covenant (hatched area on Figure 2) including the containment cell shall not be used for any of the following without prior written approval by the EPA and the MDEQ:
 - Agricultural use, including, but not limited to, farming, forestry, fishing and mining.
 - Residential use, including, but not limited to, apartments, mixed use developments, condominiums, townhomes, single living homes, senior care homes, daycare centers or hotels.
 - Recreational use, including, but not limited to, hiking, hunting, camping or sports.

Figures 5 and 8 from the 2007 ROD indicate that site-related soil and sediment contamination were not present in areas of the Site not covered by the 2021 Environmental Covenant.

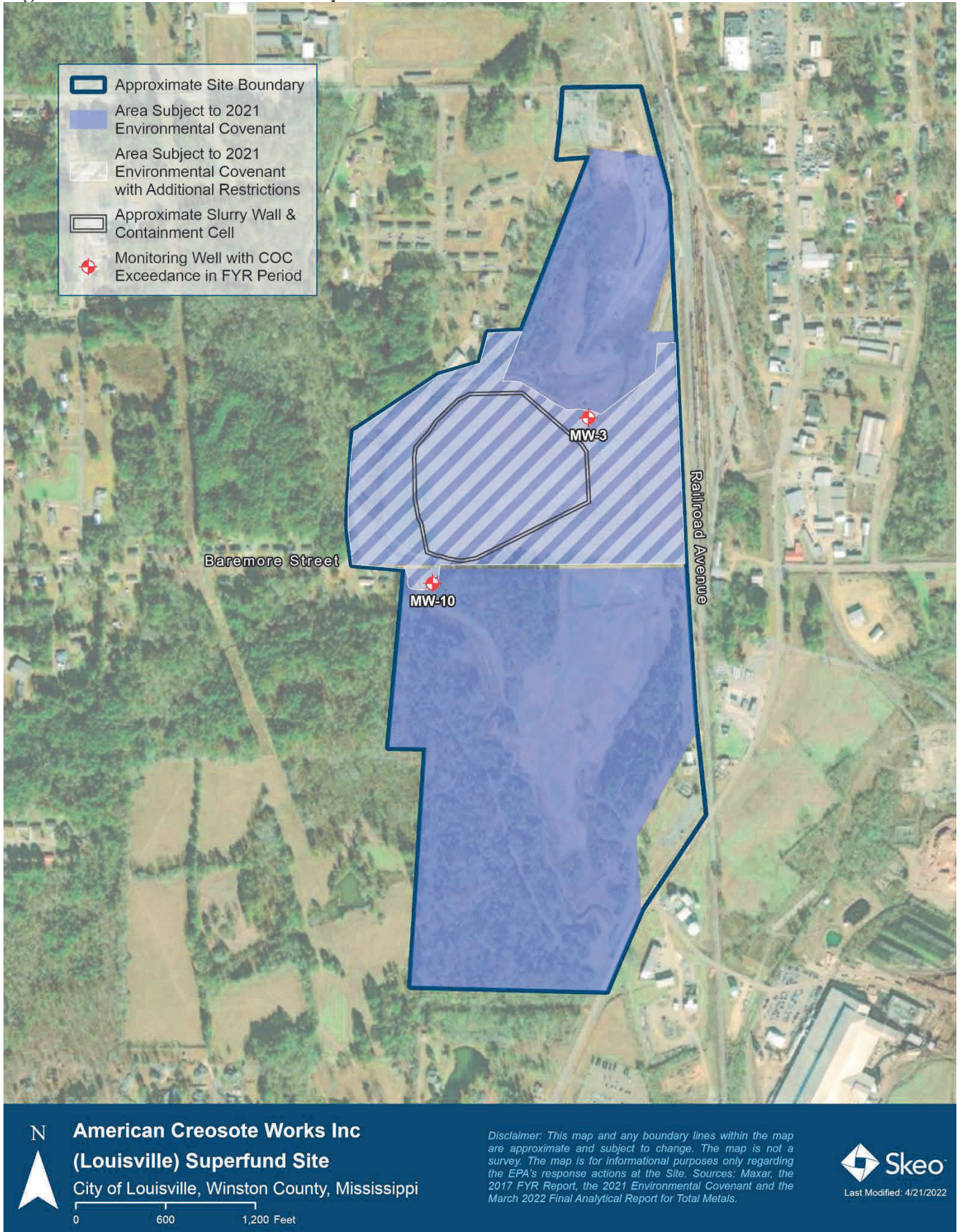
The 2007 ROD required implementation of institutional controls to limit use of contaminated groundwater above cleanup goals on site and in nearby downgradient areas of the Site. The Environmental Covenant prohibits drilling, which effectively prevents access to potentially contaminated groundwater in and immediately surrounding the containment cell area (the Area Subject to 2021 Environmental Covenant with Additional Restrictions – see Figure 2). The Environmental Covenant does not prohibit drilling or groundwater use outside of the area subject to additional restrictions. Data collected during recent groundwater sampling events indicate that only two wells exceeded the cleanup criteria for manganese and both of these wells are inside the area of restrictions.

Table 3 summarizes the institutional controls. Figure 2 shows the areas covered by institutional controls. The full institutional control is included in Appendix J.

Table 3: Summary of Institutional Controls (ICs)

Media, Engineered Controls, and Areas That Do Not Support UU/UE Based on Current Conditions	ICs Needed	ICs Called for in the Decision Documents	Impacted Area(s)	IC Objective	Title of IC Instrument Implemented and Date
Soil and remedy components	Yes	Yes	See Figure 2: Area Subject to 2021 Environmental Covenant	<ul style="list-style-type: none"> • Restrict construction over the disposal area. • Prohibit residential development of the property. 	July 2021 Environmental Covenant
Soil, groundwater and remedy components	Yes	Yes	See Figure 2: Area Subject to 2021 Environmental Covenant with Additional Restrictions	<ul style="list-style-type: none"> • Restrict construction over the disposal area. • Prohibit residential development of the property. • Limit use of contaminated groundwater above cleanup goals on site and in nearby downgradient areas of the Site. 	July 2021 Environmental Covenant

Figure 2: Institutional Control Map



Systems Operations/Operation and Maintenance (O&M)

The MDEQ assumed responsibility for site O&M activities in January 2017. The Site’s September 2019 O&M Plan specifies that routine maintenance on the final cover system will include mowing, watering, removal of undesirable vegetation and vegetative repair. The plan also requires visual inspections in conjunction with mowing and tree and shrub maintenance, quarterly cap inspections to evaluate the need for additional maintenances activities and to identify erosion, and semiannual groundwater elevation measurements for 12 wells. Two new monitoring wells (MW-9D and MW-10D) were installed in September 2018, and the original 2016 O&M Plan was revised in September 2019 to include these wells.

The MDEQ and the City entered into a Memorandum of Agreement in 2017 to cooperatively satisfy the O&M Plan requirements. The MDEQ agreed to conduct semiannual water level measurements and comply with reporting requirements. The City agreed to maintain the site fence, periodically mow the Site to control and maintain vegetation (at least three times per year), remove undesired vegetation, repair stressed vegetation, and provide written notice to the MDEQ if the City detects significant damage to the cap soil or erosion at the Site.

Since the previous FYR, the MDEQ has typically visited the Site semiannually to take water level readings and inspect the Site. The MDEQ documents these visits and submits reports to the EPA. The MDEQ indicated that no significant O&M issues have been observed since the previous FYR. The City currently mows the cap twice a year. The cap appears to be well maintained.

It appears that the cap is inspected semiannually (the O&M Plan calls for quarterly inspections), and mowing is performed twice per year (the O&M Plan calls for mowing a minimum of three times per year). Since the previous FYR, groundwater sampling has been conducted twice by the EPA during the FYR review cycles. The O&M Plan may warrant updating to outline the groundwater analytical monitoring frequency, site COCs and wells to be sampled, and sampling procedures.

III. PROGRESS SINCE THE PREVIOUS REVIEW

This section includes the protectiveness determination and statement from the 2017 FYR Report as well as the recommendations from the 2017 FYR Report and the status of those recommendations.

Table 4: Protectiveness Determination/Statement from the 2017 FYR Report

OU #	Protectiveness Determination	Protectiveness Statement
Sitewide	Short-term Protective	<p>The remedy at the Site currently protects human health and the environment in the short term because contaminated source material was excavated and consolidated within the cell and there are no current exposures to contaminated media. Routine monitoring of the performance wells is ongoing. O&M activities ensure the integrity of the cell is maintained. However, in order for the remedy to be protective in the long term, the following actions needed to be taken to ensure long-term protectiveness:</p> <ol style="list-style-type: none"> 1. Collect additional data to determine if enhancements to groundwater monitoring are required. If revisions to groundwater monitoring are not necessary, then evaluate the need to modify the decision document. 2. Reassess groundwater and soil cleanup goals and determine if additional response actions are warranted. Document any cleanup goal changes in a decision document. 3. Formally document the DSM wall as a remedial component, as well as any requirements for wall-related performance monitoring and O&M. 4. Implement institutional controls.

Table 5: Status of Recommendations from the 2017 FYR Report

OU #	Issue	Recommendations	Current Status	Current Implementation Status Description	Completion Date (if applicable)
OU1 (Sitewide)	Routine water level measurements have been collected from inside and outside of the barrier wall since January 2015 to monitor the integrity of the containment cell. Although the 2007 ROD states that long-term monitoring of environmental media is required to ensure remedy protectiveness, it indicated that monitoring may include (but not be limited to) groundwater sampling/analysis. The groundwater is not monitored for site-related COCs.	Collect additional data to determine if enhancements to groundwater monitoring are required. If revisions to groundwater monitoring are not necessary, then evaluate the need to modify the decision document.	Completed	Two more wells were installed after the 2017 FYR to supplement on-site wells. Sampling was conducted for those two wells in 2018, and no COCs were detected above cleanup goals. The only site-related COC detected was naphthalene, below its cleanup goal. Sampling occurred in 2022 and COC exceedances occurred only for manganese. The Data Review section of this FYR Report provides more information.	9/26/2018
OU1 (Sitewide)	A screening level assessment determined that cleanup goals may no longer be valid for several groundwater and soil COCs.	Reassess groundwater and soil cleanup goals and determine if additional response actions are warranted. Document any cleanup goal changes in a decision document.	Completed	<p>In response to several issues and recommendations from the 2017 FYR Report, the EPA prepared a 2019 Technical Memorandum. Per the 2019 Technical Memorandum, it was determined that there was a mistake made for dibenzofuran in the human health risk assessment, which was used to determine the cleanup goal. It was determined that units of micrograms per kilogram were intended rather than mg/kg, which would have led to a cleanup goal of 312 mg/kg rather than 315,696 mg/kg. The memorandum also noted that the corrected cleanup value for dibenzofuran would not impact the soil excavations completed. A total of 392 soil samples were collected across the Site during the remedial investigation. Of these samples, only 13 soil samples exceeded the recalculated dibenzofuran cleanup goal of 312 mg/kg. All these samples were co-located with detections of benzo(a)pyrene that exceed the benzo(a)pyrene ROD cleanup goal. This addresses part of the issue and recommendation from the 2017 FYR Report.</p> <p>Regarding the other contaminants that exceeded groundwater and soil cleanup goals in the ROD, the 2019 Technical Memorandum</p>	5/30/2019

OU #	Issue	Recommendations	Current Status	Current Implementation Status Description	Completion Date (if applicable)
				noted that institutional controls are necessary to prohibit residential land use on the Site and thus avoid exposure to contaminants in soil and groundwater above the stated residential cleanup goals. The 2019 Technical Memorandum reassessed the site's cleanup goals; therefore, this previous FYR recommendation is considered completed.	
OU1 (Sitewide)	The EPA installed the DSM wall; however, the selected remedy did not include requirements for wall installation, monitoring or maintenance.	Formally document the DSM wall as a remedial component, as well as any requirements for wall-related performance monitoring and O&M.	Completed	<p>The 2019 Technical Memorandum noted that the 2007 ROD called for constructing vertical barrier walls to contain the source zone contamination and contaminated groundwater. The remedial investigation did not include any investigation west of the containment cell. During the remedial design investigation, subsurface contamination was found on the parcel located north of Baremore Street and west of Hughes Creek. The EPA decided to construct a subsurface barrier wall on the property to reduce the upgradient hydraulic head on the layer and to isolate and contain the contaminated layer. The subsurface barrier wall was designed as a jet-grouted barrier, but the remedial action contractor requested that the barrier wall be constructed using DSM construction techniques instead. A barrier wall was constructed as planned, but with a different piece of equipment. The EPA provided approval and the barrier wall was constructed using DSM. The 2019 Technical Memorandum documents this information.</p> <p>The 2019 Technical Memorandum indicated that the performance of the subsurface DSM barrier wall should be monitored using wells MW-9D and MW-10D. Maintenance of the DSM barrier wall is minimal, consisting of annual monitoring of ground subsidence along the alignment of the DSM barrier wall.</p>	5/30/2019
OU1 (Sitewide)	Institutional controls were recently submitted for recordation but have not yet been implemented.	Implement institutional controls.	Completed	The City filed an Environmental Covenant with Winston County, Mississippi, in July 2021.	7/29/2021

IV. FIVE-YEAR REVIEW PROCESS

Community Notification, Community Involvement and Site Interviews

A public notice was made available by newspaper posting in the *Winston County Journal* on 2/23/2022 (Appendix D). It stated that the FYR was underway and invited the public to submit any comments to the EPA. The results of the review and the report will be made available at the Site's information repository, Winston County Library, located at 100 West Park Street in Louisville.

During the FYR process, interviews were conducted to document any perceived problems or successes with the remedy that has been implemented to date. The interviews are summarized below. Completed interview forms are included in Appendix E.

Armed Raspberry of the MDEQ shared a positive impression of the remedy and its performance. The MDEQ collects water level readings and inspects the Site twice a year. He was not aware of any complaints regarding the Site during the FYR period, nor any changes to state laws that could affect remedy protectiveness.

Will Hill, Mayor of Louisville, was aware of the Site's environmental issues. He did not indicate any unusual activities have been occurring on site and was unaware of any changes to local regulations that might affect the Site. He felt well informed and suggested continuing communication via email, calls or visits.

Glen Haab, Winston Partnership Executive Director, was also aware of the Site's environmental issues and felt informed about remedial progress.⁴ He noted that there has been occasional trespassing due to the Site's size. He suggested the use of social media and local radio would help to increase the word of mouth about the Site. He also indicated appreciation for the EPA's and the MDEQ's support of site redevelopment.

Data Review

The 2007 ROD required long-term monitoring of environmental media to ensure the protectiveness of the remedy. The monitoring program may include (but not be limited to) groundwater sampling/analysis in and outside of the disposal area, and surface water, sediment and biota sampling/analysis in Hughes Creek. Sampling prior to and since the ROD have not found any COCs in the surface water or sediment above risk screening levels; therefore, surface water, sediment and biota sampling was not a monitoring component that was retained. Since the remedy was implemented, groundwater quality has been monitored in two sampling events (one in 2018 and one in 2022), and depth-to-water measurements have been collected at varied frequencies since January 2015.

Groundwater

Analytical Data

The 2017 FYR Report noted that groundwater-level measurements were the only monitoring data collected at the Site and that groundwater quality monitoring for COCs was not performed, preventing

⁴ The Winston Partnership is a partnership between the Chamber of Commerce and the Economic Development District. More information is available at <https://www.winstoncountymys.com>.

an evaluation of the effectiveness of the slurry wall containment system. The 2017 FYR Report recommended collecting more data to determine whether enhancements to groundwater monitoring were required. EPA contractor Versar installed monitoring wells MW-9D and MW-10D in September 2018 to evaluate the performance of the slurry wall and DSM wall (Figure 3).

Sampling results from the September 2018 sampling event of wells MW-9D and MW-10D are included below, in Table 6. Most COCs were not detected, with detection limits at or below the respective cleanup goals. The only detected contaminant was naphthalene in MW-9D, with estimated concentrations of 1.6 micrograms per liter ($\mu\text{g/L}$) and 1.8 $\mu\text{g/L}$, well below the cleanup goal of 2,000 $\mu\text{g/L}$. Groundwater COCs iron and manganese were not sampled during this event.

The EPA conducted groundwater sampling in February 2022, during which wells MW-1, MW-2, MW-3, MW-7, MW-9D, MW-10 and MW-10D were sampled for site COCs (semi-volatile organic compounds [SVOCs] and metals). Results are included in Table 6. During the 2022 sampling event, the detection limits for benzo(a)pyrene and bis(2-ethylhexyl) phthalate for some wells slightly exceeded their cleanup goals. However, in earlier sampling events even when the detection limits were requested to be lower, there were no detections of these COCs.

Manganese was the only COC with exceedances in the February 2022 sampling event, with concentrations exceeding the cleanup goal of 730 $\mu\text{g/L}$ at two wells (1,000 $\mu\text{g/L}$ at MW-3 and 1,300 $\mu\text{g/L}$ at MW-10). MW-3 is upgradient of the containment cell. MW-10 is downgradient of the containment cell and is one of the farthest downgradient wells on site. For comparison, manganese concentrations in MW-3 were 310 $\mu\text{g/L}$ in 2001 (no wells were present in the area of present-day MW-10 during the remedial investigation). The 2001 maximum detected concentration of manganese was 1,200 $\mu\text{g/L}$ at well MW-04S. Both MW-3 and MW-10 have the lowest pH of all the wells (<6.0) and both have very low dissolved oxygen, which could indicate an acidic reducing aqueous environment that would put inorganics into the groundwater.

The 2019 Technical Memorandum recommends that groundwater monitoring for the site-related COCs be conducted at monitoring wells MW-9D and MW-10D on a periodic basis to verify the continued performance of the subsurface barrier walls as designed, and that the data collected should be evaluated to determine if the sampling frequency should be modified. The lack of COC cleanup goal exceedances in these two deep wells indicates that contamination is not migrating vertically beneath the wall. However, continued sampling is needed to further verify the performance of the containment cell.

The 2019 Technical Memorandum also indicated that the performance of the DSM wall should be monitored using wells MW-9D and MW-10D. MW-10D is located slightly east of the wall, and MW-9D is within the wall and is at a depth of 75 feet below ground surface while the DSM wall is 20 to 40 feet below ground surface. The DSM wall was designed to reduce the upgradient hydraulic head pressure and to isolate and contain the subsurface contamination. Since the wall straddles the creek and the flow from the west of the creek is to the east toward the creek, the most appropriate place to monitor to determine if the wall is effectively reducing the upgradient hydraulic pressure is inside the DSM wall or just slightly southeast of the wall. MW-9D and MW-10D did not have any exceedances of groundwater cleanup goals during this FYR period indicating that the DSM wall is functioning as intended. In addition, MW-9D and MW-10D have groundwater elevations that indicate there is an upward gradient in these areas which is further confirmation that contamination is not migrating downward.

Prior to the 2022 groundwater sampling event, no sampling occurred downgradient of the former process area to verify the effectiveness of the former process area subsurface soil stabilization area. MW-1 is downgradient of the former process area. Groundwater monitoring results at MW-1 indicate no exceedances of cleanup goals.

Table 6: Groundwater Analytical Data, 2018 and 2022

COC	Sample Date	ROD Cleanup Level (µg/L)	Groundwater Analytical Result (µg/L)						
			MW-1	MW-2	MW-3	MW-7	MW-9D	MW-10 ^a	MW-10D
2,4-Dimethylphenol	September 2018	2,000	-	-	-	-	9.7 U (9.8 U)	-	9.9 U
	February 2022		9.8 U	10 U	9.9 U	9.9 U	10 U	10 U (10 U)	10 U
2-Methylnaphthalene	September 2018	400	-	-	-	-	1.9 U (2 U)	-	2 U
	February 2022		2.0 U	2.0 U	2.0 U	2.0 U	2.1 U	2.0 U (2.0 U)	2.0 U
Acenaphthene	September 2018	6,000	-	-	-	-	1.9 U (2 U)	-	2 U, J
	February 2022		2.0 U	2.0 U	2.0 U	23	2.1 U	2.3 (2.1)	2.0 U
Benzene	September 2018	5	-	-	-	-	0.5 U (0.5 U)	-	0.5 U
	February 2022		0.50 U	0.50 U	0.50 U, J, QM-3	0.50 U	0.50 U	0.50 U	0.50 U
Benzo(a)pyrene	September 2018	0.2	-	-	-	-	0.19 U (0.2 U)	-	0.2 U
	February 2022		0.20 U	0.20 U	0.20 U	0.20 U	0.21 U	0.20 U (0.2 U)	0.20 U
Bis(2-ethylhexyl)phthalate	September 2018	6	-	-	-	-	5.8 U (5.9 U)	-	5.9 U
	February 2022		5.9 U	6.0 U	5.9 U	5.9 U	6.2 U	6.0 U (6.1 U)	6.0 U
Carbazole	September 2018	3.35	-	-	-	-	1.9 U (2 U)	-	2 U
	February 2022		2.0 U	2.0 U	2.0 U	1.2 J, Q-2	2.1 U	2.0 U (2.0 U)	2.0 U
Dibenzofuran	September 2018	200	-	-	-	-	1.9 U (2 U)	-	2 U, J
	February 2022		2.0 U	2.0 U	2.0 U	16	2.1 U	6.8 (5.8)	2.0 U
Fluoranthene	September 2018	1,460	-	-	-	-	1.9 U (2 U)	-	2 U
	February 2022		2.0 U	2.0 U	2.0 U	25	2.1 U	2.0 U (2.0 U)	2.0 U
Fluorene	September 2018	243	-	-	-	-	1.9 U (2 U)	-	2 U, J
	February 2022		2.0 U	2.0 U	2.0 U	19	2.1 U	6.5 (5.6)	2.0 U
Naphthalene	September 2018	2,000	-	-	-	-	1.6 J (1.8 J)	-	2 U, J
	February 2022		2.0 U	2.0 U	2.0 U	2.0 U	2.1 U	2.0 U (2.0 U)	2.0 U
Xylenes (total)	September 2018	10,000	-	-	-	-	0.5 U (0.5 U)	-	0.5 U
	February 2022		ND	ND	ND	ND	ND	ND	ND
Pyrene	February 2022	None	2.0 U	2.0 U	2.0 U	15	2.1 U	2.0 U (2.0 U)	2.0 U
Tentatively Identified Compounds ^b	February 2022	None	40 J	50 J	10 U	10 U	30 J	30 J (10 U)	30 J
Iron	September 2018	30,000	-	-	-	-	-	-	-
	February 2022		5,200	1,200	5,800	2,300	180	3,800 (3,900)	810
Manganese	September 2018	730	-	-	-	-	-	-	-
	February 2022		700	160	1,000	320	150	1,300 (1,300)	260

Notes:

- Samples MW10-0222 and MW10-0222S from MW-10 were duplicates. This FYR assumes sample MW10-0222 was the parent and sample MW10-0222S was the duplicate.
- A tentatively identified compound is an analyte identified based on a match with the instrument software's mass spectral library. A calibration standard has not been analyzed to confirm the compound's identification or the estimated concentration reported.

Sources: Table 3-1 of the May 2019 Technical Memorandum and the April 2022 EPA Region 4 Final Report

U = analyte not detected at or above the reporting limit

J = estimated value

Q-2 = result greater than method detection limit but less than the minimum reporting limit

QM-3 = Matrix Spike Precision outside method control limits

ND = not detected. Note that xylenes were analyzed separately as o-xylene and m- and/or p- xylene. The reporting limit for o-xylene was 0.50 µg/L, and the reporting limit for m- and/or p- xylene was 1.0 µg/L.

() = duplicate sample

- = sample not collected or COC not analyzed

Bold = exceedance of ROD cleanup goal

Depth-to-Water Data

The 2019 O&M Plan requires semiannual depth-to-water measurements for 12 wells to evaluate the performance of the slurry wall. The 12 wells include MW-9D and MW-10D, as well as monitoring wells MW-1 through MW-10 (Figure 3). MW-1 through MW-10 have a total well depth ranging from 16 feet to 59 feet below ground surface. Three of the monitoring wells are located within the containment cell (MW-4, MW-5, MW-6). The remaining nine wells are located outside of the slurry wall.

In this FYR period, the MDEQ collected depth-to-water measurements from wells MW-1 through MW-10. The MDEQ has not collected depth-to-water measurements for MW-9D or MW-10D. Measurements were taken semiannually, with the exception of 2018 and 2020, during which only annual measurements were taken. Groundwater elevations were not reported.

Table 7 below summarizes the depth-to-water measurements. The data were evaluated qualitatively, and results indicate that the depth-to-water measurements for wells MW-4 and MW-6 within the containment cell were relatively stable (generally fluctuating less than 0.5 feet between measurements) compared to wells outside of the containment cell (often fluctuating 2 feet or more between measurements). Interior well MW-5 had greater fluctuations in groundwater levels than MW-4 and MW-6, but the response differed from the wells outside the containment cell. This finding suggests that there is little hydraulic connection with groundwater outside the barrier wall.

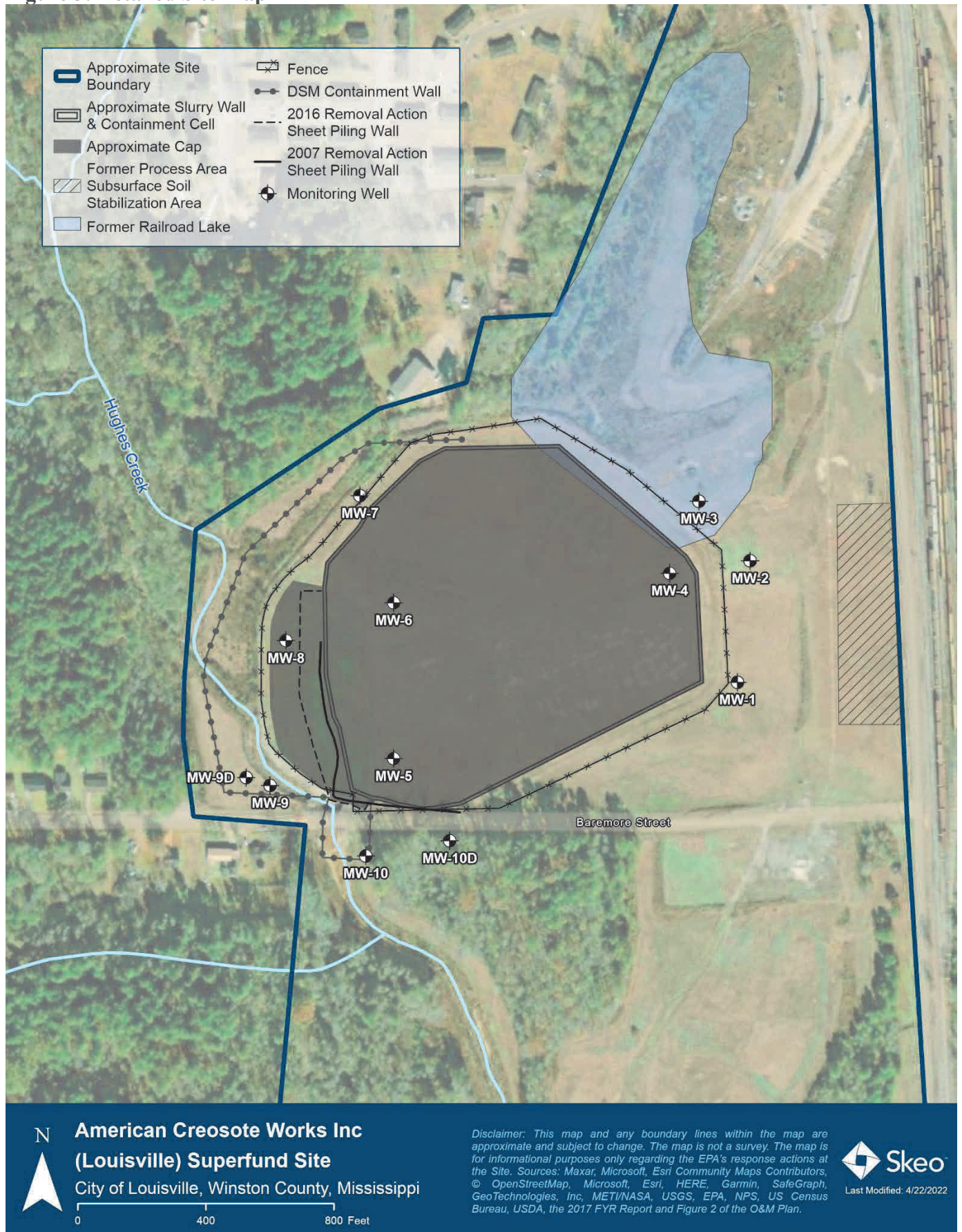
In addition, water level data evaluated as part of this FYR indicate that groundwater flow generally remains the same as noted during the RI; groundwater flow in both aquifers is generally south-southwest. Near the MW-9 well pair, west of Hughes Creek, water level data indicate that groundwater flows east, toward the creek.

Table 7: Depth-to-Water Measurements

Sample Date	Depth-to-Water Measurements (Feet)									
	MW-1	MW-2	MW-3	MW-4*	MW-5*	MW-6*	MW-7	MW-8	MW-9	MW-10
May 2017	6.59	27.85	11.16	14.71	11.11	13.8	8.55	11.45	8.86	8.13
Nov 2017	8.65	28.6	12.25	14.65	9.32	13.45	10.22	12.44	10.12	9.08
April 2018	3.95	26.45	10.05	13.95	11.16	13.7	7.05	10.35	7.13	5.2
April 2019	4.07	26.4	10.55	13.9	11.4	13.05	7.3	10.62	7.9	8.85
October 2019	6.5	27.72	12.38	13.81	8.96	13	9.5	11.95	8.96	8.86
October 2020	5.58	26.98	11.42	13.3	8.61	12.51	9.34	11.14	8.58	7.9
May 2021	3.5	25.6	10.25	13.23	10.43	12.6	9.8	10.2	7.13	5.9
November 2021	5.5	26.15	10.7	13.1	8.75	12.15	7.8	10.75	8.3	7.2

Notes:
Source: MDEQ Groundwater Performance Well Measurement Logs
 Depth-to-water measurements are from the top of the well casing.
 * = well within containment cell

Figure 3: Detailed Site Map



Site Inspection

The site inspection took place on 1/27/2022. Participants included Shelby Johnston (EPA RPM), Armed Rasberry (MDEQ), Melissa Oakley (Skeo), Will Hill (Mayor of Louisville), Glen Haab (Winston Partnership Executive Director), Robert Eaves (Louisville Public Works Director) and Taylor Tucker (City Attorney). The purpose of the inspection was to assess the protectiveness of the remedy. Appendix F provides the site inspection checklist. Appendix G provides site inspection photographs.

Prior to the site inspection, participants met at the Winston Partnership Office for introductions and to discuss the status of site development plans. Mr. Haab indicated that the first phase of site development is expected to begin in 2022. The City plans to construct an industrial park with rail access on site. The EPA and the City are in communication to ensure the project is compatible with the remedy.

Participants drove to the Site and began the inspection with a tour of the capped containment area. The entrance to the capped area is restricted by a locking gate posted with informational signage. The original cap and the cap extension appeared to be in good condition. Vegetation on both caps is well established and appears to be healthy. No holes, erosion or evidence of animal burrows were observed on the cap surface. A single pine tree is growing in the center of the cap near a gas vent. Roots from the tree could potentially impact the cap. All monitoring wells observed inside and outside of the cap fence appeared to be in good condition and were secured with locks. Site inspection participants observed two large holes in the fence. There was evidence of trespassers having cut the fence to drive four-wheelers across the Site. While four-wheeler tire marks were observed at the holes in the fence, participants observed no evidence of tire ruts or damage on the cap surface associated with the four-wheelers.

Outside of the capped area, site inspection participants observed the removal action areas along Hughes Creek. The sheet piling wall at the Baremore Street culvert and the erosion control measures implemented to stabilize the creek banks appeared to be in good condition and effective at preventing erosion. Some small trees are growing through the concrete-stabilized creek banks; the tree roots serve to further prevent erosion in the area. Participants also observed the area north of the capped area near a church. This is north of the Site where the EPA previously installed a fence and concrete to prevent erosion of the hill into the creek. No erosion was observed north of the creek; however, small areas of erosion were noted between the cap fence and the creek. These areas are located outside of the northern edge of the cap but may warrant follow-up to ensure continued erosion in the area does not potentially affect the edge of the cap or the creek.

Baremore Street remains closed to vehicles but can be accessed by trespassers on foot and four-wheelers. However, those activities do not appear to affect the protectiveness of the remedy. Warning signage is posted on the main site gate at the intersection of Railroad Avenue and Baremore Street. Site inspection participants also observed the former Railroad Lake area, the approximate location of the former process area, the electrical substation at the northern end of the Site and vacant site areas that may support future redevelopment.

On 1/26/2022, Skeo staff visited the Site's information repository, Winston County Library, located at 100 West Park Street in Louisville. Hard copies of the Site's Administrative Record, dating through 2007, are available for public viewing at the library. No recent documents are on file. The EPA will follow up with the librarian regarding how to best provide copies of recent site-related documents.

V. TECHNICAL ASSESSMENT

QUESTION A: Is the remedy functioning as intended by the decision documents?

Question A Summary:

The remedy is generally functioning as intended by the site decision document. Contaminated soil and sediment from various areas of the Site have been excavated, consolidated and capped in the containment cell and surrounded by the slurry wall. The containment cell and cap area are fenced. The EPA stabilized and solidified the former process area and covered the 4-acre area with a subsurface cap. The EPA also installed the DSM wall west of the containment cell to isolate and contain subsurface contamination found during the remedial design. In addition, from 1984 to 2016, the EPA conducted four removal actions to abate immediate site threats, including installation of sheet piling walls. Institutional controls were implemented via a July 2021 Environmental Covenant, which prevents residential use, interference with the remedy, and drilling or excavation in the capped area. These actions have reduced potential exposure to and migration of site-related contaminated soil, sediment and groundwater. However, this FYR identified items that may affect future protectiveness related to O&M and site security.

The 2007 ROD required long-term monitoring of environmental media to ensure remedy protectiveness. It stated that monitoring may include (but not be limited to) groundwater sampling/analysis in and outside of the disposal area, and surface water, sediment, and biota sampling/analysis in Hughes Creek. Sampling prior to and since the ROD have not found any COCs in the surface water or sediment above risk screening levels; therefore, surface water, sediment and biota sampling was not a monitoring component that was retained. Since the last FYR, depth-to-water measurements and groundwater analytical data were collected. Depth-to-water measurements were evaluated qualitatively and indicate that the depth-to-water measurements for wells within the containment cell were relatively stable compared to wells outside of the containment cell, suggesting little hydraulic connection with groundwater outside the barrier wall.

Groundwater analytical data were collected from two wells in 2018 and from seven wells in 2022. The only COC exceedance from both sampling events was manganese in MW-3 and MW-10 in 2022. However, iron and manganese were not monitored in 2018. In addition, the 2018 event was limited spatially to only two wells. Lastly, during the 2022 sampling event, analysis indicated the presence of tentatively identified compounds (30 µg/L J to 50 µg/L J – see Table 6 in the Data Review section). Further analysis may be warranted to identify the tentatively identified compounds.

The manganese exceedances do not appear to be an issue for current protectiveness, as site groundwater is not in use and nearby residences are connected to the public water supply. Future sampling should include analysis for all site COCs and additional lab work to analyze tentatively identified compounds should be considered. Water level data evaluated as part of this FYR indicate that groundwater flow generally remains the same as noted during the RI; groundwater flow in both aquifers is generally south-southwest. Near the MW-9 well pair, west of Hughes Creek, water level data indicate that groundwater flows east, toward the creek. However, moving forward, it would be helpful for groundwater monitoring reports to include potentiometric surface maps with groundwater flow direction to aid in analysis of groundwater monitoring data and remedy performance.

Prior to the 2022 groundwater sampling event, no sampling occurred downgradient of the former process area to verify the effectiveness of the former process area subsurface soil stabilization area. Groundwater monitoring results at MW-1 indicate no cleanup goal exceedances. However, only one sampling event has occurred at this location downgradient of the former process area. These conditions may warrant continued groundwater monitoring during the FYR process to verify the effectiveness of this remedy component.

The 2019 Technical Memorandum indicated that the performance of subsurface walls at the Site should be monitored using wells MW-9D and MW-10D. The DSM wall was designed to reduce the upgradient hydraulic head pressure and to isolate and contain the subsurface contamination. MW-9D and MW-10D did not have any exceedances of groundwater cleanup goals during this FYR period indicating that the DSM wall and the containment cell are functioning as intended.

Overall, the results from the 2018 and 2022 sampling events indicate that the containment cell, DSM wall, and former process area subsurface soil stabilization area are generally functioning as intended. However, continued sampling is needed to continue to evaluate the performance of these remedy components and confirm these conclusions, as limited data has been collected to date.

The July 2021 Environmental Covenant does not include explicit groundwater restrictions. In the area subject to additional restrictions, the covenant prohibits drilling, which effectively prevents access to potentially contaminated groundwater in and immediately surrounding the containment cell area (the Area Subject to 2021 Environmental Covenant with Additional Restrictions – see Figure 2). The Environmental Covenant does not include groundwater restrictions outside of the area subject to additional restrictions. However, data collected during recent groundwater sampling events indicate that only two wells exceeded the cleanup criteria for manganese and both of these wells are inside the area of restrictions.

The Site is well maintained, and access is restricted by fencing. Vegetative cover has been established on the containment cell. One pine tree has grown on the cell's cover and warrants evaluation for removal. This pine tree is directly adjacent to a landfill vent and it may be difficult to impossible to remove the tree without damage to the vent. In addition, the fence around the containment cell was cut in two areas where trespassers entered the Site to ride four-wheelers. Fence restoration is needed, and more measures such as signage should be considered. Erosion was present near Hughes Creek, north of the containment cell between the cap fence and the creek by a church north of the Site. Erosion should be addressed to ensure the integrity of the creek bank, the adjacent containment cell and adjacent fencing.

Lastly, it appears that the cap is inspected semiannually (the O&M Plan calls for quarterly inspections), and mowing is performed twice per year (the O&M Plan calls for mowing a minimum of three times per year). These items may warrant clarification in the O&M Plan. In addition, the O&M Plan may warrant updating to outline the groundwater analytical monitoring frequency, COCs and wells to be sampled, and procedures.

QUESTION B: Are the exposure assumptions, toxicity data, cleanup levels and RAOs used at the time of the remedy selection still valid?

Question B Summary:

Exposure assumptions remain valid, as the anticipated future land use was commercial/industrial, which is consistent with the planned reuse. Toxicity data and cleanup levels were reviewed; cleanup levels for

soil remain valid, while cleanup levels for groundwater now correspond to risk outside of the EPA’s acceptable risk range. RAOs remain valid.

This FYR did not reassess the Site’s ecological risk-based soil and sediment cleanup goals. The ecological risk-based cleanup goals were based on observed toxicity effects. There have been no updates to ecological risk assessment methodology that would call into question the validity of these cleanup goals.

Cleanup goals for groundwater were based on the National Primary Drinking Water Regulations’ MCLs, the MDEQ’s tier 1 target remedial goals (TRGs) or health-based cleanup goals. This FYR compared the cleanup goals in the 2007 ROD that were based on federal or state standards against the current relevant standards, and no standards have changed since the issuance of the 2007 ROD (Appendix H).

A screening-level risk evaluation conducted as part of this FYR evaluated the health-based groundwater cleanup goals from the 2007 ROD against the EPA’s current residential tap water regional screening levels (RSLs). As shown in Appendix I, Table I-1, all the health-based groundwater cleanup goals currently exceed the EPA’s acceptable risk levels. An additional screening-level risk evaluation was conducted as part of this FYR that compared the most recent groundwater sampling data for COCs that have health based cleanup goals to current RSLs (Table I-2). Except for dibenzofuran, concentrations of groundwater COCs that have health-based cleanup goals are generally below current RSLs and do not correspond to unacceptable risk levels. The dibenzofuran concentration exceeds the RSL in one monitoring well location; however, as site groundwater is not used for any purpose and institutional controls prohibit future groundwater use near the exceedance, this finding does not affect the protectiveness of the remedy. Continued monitoring of dibenzofuran during the routine sampling events will provide additional information.

As part of this FYR, a screening-level soil risk evaluation evaluated whether soil cleanup goals remain valid for an industrial use scenario. As seen in Appendix I, Table I-3, soil cleanup goals correspond to acceptable risk levels for industrial use; therefore, they remain protective.

The City plans to develop an industrial park on the Site. This use is consistent with the remedy, as the institutional controls permit industrial use. The EPA is working with the City to ensure that reuse plans will be compatible with the remedy.

QUESTION C: Has any other information come to light that could call into question the protectiveness of the remedy?

No information has come to light that could call into question the protectiveness of the remedy.

VI. ISSUES/RECOMMENDATIONS

Issues/Recommendations
OU(s) without Issues/Recommendations Identified in the FYR:
<i>None.</i>

Issues and Recommendations Identified in the FYR:
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OU(s): OU1 (Sitewide)	Issue Category: Site Access/Security			
	Issue: The fence around the containment cell was cut in two areas where trespassers entered the Site to ride four-wheelers.			
	Recommendation: Ensure the Site is secure and trespassing is deterred.			
Affect Current Protectiveness	Affect Future Protectiveness	Party Responsible	Oversight Party	Milestone Date
No	Yes	Other - City	EPA/State	9/21/2023

OU(s): OU1 (Sitewide)	Issue Category: Operations and Maintenance			
	Issue: One pine tree has grown on the containment cell's cover and could potentially damage the cap.			
	Recommendation: Evaluate removing the pine tree growing on the containment cell's cover.			
Affect Current Protectiveness	Affect Future Protectiveness	Party Responsible	Oversight Party	Milestone Date
No	Yes	Other - City	EPA/State	9/21/2023

OTHER FINDINGS

Several additional recommendations were identified during the FYR. These recommendations do not affect current and/or future protectiveness.

- Continue to conduct groundwater sampling to include analysis for all site COCs and consider additional lab work to analyze tentatively identified compounds.
- Follow up with the librarian at the Site's information repository regarding how to best provide copies of recent site-related documents.
- There are areas of erosion between the northern edge of the capped containment cell and the creek (near Warren Chapel) that warrant addressing.
- The O&M Plan warrants several updates and clarifications:
 - The O&M Plan was updated in 2019 to reflect that groundwater elevations should be monitored on a semiannual frequency. However, other statements in the plan still indicate a quarterly groundwater elevation monitoring frequency.
 - The cap is inspected semiannually, but the O&M Plan calls for quarterly inspections.
 - Mowing is performed twice per year, but the O&M Plan calls for a minimum of three times per year.
 - The O&M Plan may warrant updating to outline the groundwater analytical monitoring frequency, COCs and wells to be sampled, and procedures.
- Depth-to-water measurements were not taken for MW-9D or MW-10D, as required by the O&M Plan. Measurements were taken only annually (instead of semiannually) in 2018 and 2020. Report groundwater elevations for all wells, as required by the O&M Plan, on a semiannual basis.

VII. PROTECTIVENESS STATEMENT

Sitewide Protectiveness Statement
<p><i>Protectiveness Determination:</i> Short-term Protective</p>
<p><i>Protectiveness Statement:</i> The remedy at the Site currently protects human health and the environment because contaminated source material was excavated and consolidated within the containment cell, and there are no current exposures to contaminated media. The former process area was stabilized, solidified and covered with a subsurface cap. Available groundwater monitoring data indicate the effectiveness of the slurry wall, DSM wall, and former process area subsurface soil stabilization area. O&M activities ensure the integrity of the cell is maintained. Institutional controls are in place. However, in order for the remedy to be protective in the long-term, the following actions need to be taken:</p> <ul style="list-style-type: none">• Ensure the Site is secure and trespassing is deterred.• Evaluate removing the pine tree growing on the containment cell's cover.

VIII. NEXT REVIEW

The next FYR Report for the American Creosote Works Inc (Louisville) Superfund site is required five years from the completion date of this review.

APPENDIX A – REFERENCE LIST

Environmental Covenant, American Creosote Works Inc (Louisville) Superfund Site, Louisville, Mississippi. EPA Region 4. July 2021.

Final Operation and Maintenance Plan, American Creosote Works Inc (Louisville) Superfund Site, Louisville, Mississippi. CORE Engineering & Construction, Inc. January 2016, revised 2019.

Final Remedial Investigation Report. American Creosote Works Inc (Louisville) Superfund Site, Louisville, Mississippi. EPA Region 4. June 2007.

Final Removal Action Report. American Creosote Works Inc (Louisville) Superfund Site, Louisville, Mississippi. EPA Region 4 START. July 2007.

First Five-Year Review Report, American Creosote Works Inc (Louisville) Superfund Site, Louisville, Mississippi. EPA Region 4. September 2017.

Human Health Risk Assessment. American Creosote Works Inc (Louisville) Superfund Site, Louisville, Mississippi. Black and Veatch. July 2006.

Memorandum of Agreement between MDEQ and the City of Louisville. American Creosote Works Inc (Louisville) Superfund Site, Louisville, Mississippi. September 2017.

Memorandum: Final Analytical Report for SVOCs, American Creosote Works Inc (Louisville) Superfund Site, Louisville, Mississippi. EPA Region 4, Laboratory Services and Applied Science Division. March 2022.

Memorandum: Final Analytical Report for Total Metals, American Creosote Works Inc (Louisville) Superfund Site, Louisville, Mississippi. EPA Region 4, Laboratory Services and Applied Science Division. March 2022.

Record of Decision, American Creosote Works Inc (Louisville) Superfund Site, Louisville, Mississippi. EPA Region 4. September 2007.

Remedial Action Report, American Creosote Works Inc (Louisville) Superfund Site, Louisville, Mississippi. CORE Engineering & Construction, Inc. January 2016.

Screening-Level Ecological Risk Assessment Revision 2. American Creosote Works Inc (Louisville) Superfund Site, Louisville, Mississippi. EPA Region 4. January 2005.

Technical Memorandum, September 2018 Groundwater Sampling Event, American Creosote Works Inc (Louisville) Superfund Site, Louisville, Mississippi. Prepared by Versar. May 2019.

APPENDIX B – CURRENT SITE STATUS

Environmental Indicators

- *Current human exposures at the Site are under control.*
- *Current groundwater migration is under control.*

Are Necessary Institutional Controls in Place?

All Some None

Has the EPA Designated the Site as Sitewide Ready for Anticipated Use?

Yes No

Has the Site Been Put into Reuse?

Yes No

APPENDIX C – SITE CHRONOLOGY

Table C-1: Site Chronology

Event	Date
ACW began wood-treating operations on Site	1912
The EPA discovered initial contamination	August 1, 1980
ACW submitted RCRA Part A permit application for wastewater treatment	April 1981
ACW facility closed down	1981
ACW filed for bankruptcy	May or June 1982
ACW facility reopened as American Creosote Works Mississippi, Inc.	November 1982
The Shannon Group of Dallas, Texas, took over facility operations and changed the business name to Superior Wood Treating, Inc.	February 1984
State performed preliminary assessment	June 1, 1984
The MBPC conducted a site investigation, discovering contamination that poses an immediate threat, and notified the EPA	October 1984
The EPA initiated the Site's first removal action by pumping the lagoons and capping sludge and contaminated soil on Site	October 24, 1984
The EPA completed the Site's first removal action	February 22, 1985
Treat-All Wood Products, Inc. acquired the facility	1988
The EPA performed site inspection	October 25, 1991
The MDEQ inspected the Treat-All Wood Products, Inc. facility and notified company that continued contaminant discharges could result in enforcement actions	February 19, 1992
Worldwide Wood Treaters acquires the facility. It ceases operations and closes the facility.	1998
The EPA conducted site investigation of facility and determined that an emergency response was necessary to stop the overflow of creosote waste from the containment areas and process tanks abandoned on Site	January 1999
The EPA initiated the Site's second removal action, including pumping and treating contaminated liquids and capping additional solid wastes	January 28, 1999
The EPA finished the Site's second removal action	April 20, 2000
The EPA conducted expanded site inspection	May 8, 2000
The EPA initiated remedial investigation and feasibility study (RI/FS)	February 7, 2001
The EPA proposed the Site for listing on the National Priorities List (NPL)	June 14, 2001
The EPA listed the Site on the NPL	September 13, 2001
The EPA initiated the Site's third removal action with installation of a sheet pile wall near Hughes Creek	December 4, 2006
The EPA finished the Site's third removal action	May 25, 2007
The EPA finished the RI/FS and signed the Site's ROD	September 27, 2007
Remedial design started	April 1, 2008
Remedial design finished	September 29, 2009
The EPA initiated the Site's remedial action of excavation and capping of contaminated materials in on-site containment cell with slurry wall	August 2012
The EPA initiated the Site's fourth removal action, installing additional sheet piling and excavating and capping contaminated sediment	April 27, 2015
The EPA finished the Site's remedial action	May 2015
The EPA finished the Site's fourth removal action	October 1, 2016
The EPA signed the Site's first FYR Report	September 2017
The City filed an Environmental Covenant	July 2021
The Site achieved Sitewide Ready for Anticipated Use status with the City, the EPA and the MDEQ signing the institutional controls	August 2021

APPENDIX D – PRESS NOTICE



The U.S. Environmental Protection Agency, Region 4 Announces the Second Five-Year Review for the American Creosote Works, Inc. (Louisville) Superfund Site, Louisville, Winston County, Mississippi

Purpose/Objective: The EPA is conducting a Five-Year Review of the remedy for the American Creosote Works, Inc. (Louisville) Superfund site (the Site) in Louisville, Mississippi. The purpose of the Five-Year Review is to make sure the selected cleanup actions protect human health and the environment effectively.

Site Background: The 120-acre area is located off Highway 15 at the intersection of South Railroad Avenue and Barmore Street in the city of Louisville, in Winston County, Mississippi. From 1912 to 1998, site owners ran a wood-treating facility at the Site. Facility activities included the use of creosote oil, coal tar solutions and pentachlorophenol to pressure treat wood products. Creosote wastes were stored in unlined lagoons. In 1984, a state inspection found creosote leaking over and through an earthen dike and into Hughes Creek. Investigations found that operations contaminated soil, sediment and groundwater with polycyclic aromatic hydrocarbons (PAHs), dioxin and semi-volatile organic compounds (SVOCs). The EPA listed the Site on the Superfund program's National Priorities List (NPL) in September 2001.

Cleanup Actions: To address short-term threats to human health and the environment, the EPA led four removal actions at the Site. The first removal action addressed two waste pond areas. It involved the removal, solidification and on-site storage of waste and contaminated soil, and placement of a clay cap over the area. The second removal action addressed more waste, containment areas and abandoned tanks. It included tank decommissioning, wastewater treatment, disposal of nonhazardous debris, encapsulation of waste in an on-site storage cell and capping of the area. The third removal action put in a retaining wall to protect Hughes Creek from creosote releases. The fourth removal action addressed remaining subsurface creosote below the former creek bed.

The EPA selected the long-term remedy for the Site in the Site's 2007 Record of Decision (ROD). It included soil and sediment excavation, disposal of excavated materials and capping of the materials in an on-site disposal area, backfilling of excavated areas, construction of a subsurface barrier wall around the disposal area to contain contaminated groundwater, land use restrictions, and long-term monitoring. Remedy implementation began in 2012. It finished in 2017. In August 2021, the Site achieved the EPA's Stewards Ready for Anticipated Use (SWRAU) performance measure when the city of Louisville, the EPA and the Mississippi Department of Environmental Quality (MDEQ) put institutional controls in place for the Site. Site maintenance and monitoring are ongoing.

Five-Year Review Schedule: The National Contingency Plan requires review of remedial actions that result in any hazardous substances, pollutants or contaminants remaining at the Site above levels that allow for unlimited use and unrestricted exposure every five years to ensure the protection of human health and the environment. The second of the Five-Year Reviews for the Site will be completed by September 2022. When the Five-Year Review is completed, it will be available online at: <https://www.epa.gov/superfund/search-superfund-five-year-reviews>.

The EPA Invites Community Participation in the Five-Year Review Process: The EPA is conducting this Five-Year Review to evaluate the effectiveness of the Site's remedy and to ensure that the remedy remains protective of human health and the environment. As part of the Five-Year Review process, EPA staff is available to answer any questions about the Site. Community members who have questions about the Site or the Five-Year Review process, or who would like to participate in a community interview, are asked to contact:

Shelby Johnston,
EPA Remedial Project Manager
Phone: (404) 562-8287
Email: johnston.shelby@epa.gov

Ron Tolliver,
EPA Community Involvement Coordinator
Phone: (404) 562-9591
Email: tolliver.ronald@epa.gov

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

More information is available at the Site's local document repository, Winston County Library, located at 301 West Park Street, Louisville, Mississippi 39339 (consider contacting the library to confirm it is open), and online at <https://www.epa.gov/superfund/american-creosote-works-inc>.

Published 02/23/2022

APPENDIX E – INTERVIEW FORMS

AMERICAN CREOSOTE WORKS, INC. (LOUISVILLE) SUPERFUND SITE FIVE-YEAR REVIEW INTERVIEW FORM	
Site Name: American Creosote Works, Inc. (Louisville)	
EPA ID: MSD004006995	
Interviewer name: Melissa Oakley	Interviewer affiliation: Skeco
Subject name: Armed Raspberry	Subject affiliation: MDEQ
Subject contact information: araspberry@mdeq.ms.gov	
Interview date: 1-27-2022	Interview time: 9:40 am
Interview location: Winston Partnership Office	
Interview format (circle one): <u>In Person</u> Phone Mail Email Other:	
Interview category: State Agency	

1. What is your overall impression of the project, including cleanup, maintenance and reuse activities (as appropriate)? *Positive impression.*
2. What is your assessment of the current performance of the remedy in place at the Site? *Positive.*
3. Are you aware of any complaints or inquiries regarding site-related environmental issues or remedial activities from residents in the past five years? *No.*
4. Has your office conducted any site-related activities or communications in the past five years? If so, please describe the purpose and results of these activities. *MDEQ collects water level readings and inspects the site twice a year.*
5. Are you aware of any changes to state laws that might affect the protectiveness of the Site's remedy? *No.*
6. Are you comfortable with the status of the institutional controls at the Site? If not, what are the associated outstanding issues? *Yes.*
7. Are you aware of any changes in projected land use(s) at the Site? *Yes. The City continues to work on site redevelopment plans.*
8. Do you have any comments, suggestions or recommendations regarding the management or operation of the Site's remedy? *Not at this time.*
9. Do you consent to have your name included along with your responses to this questionnaire in the FYR report? *Yes.*

AMERICAN CREOSOTE WORKS, INC. (LOUISVILLE) SUPERFUND SITE FIVE-YEAR REVIEW INTERVIEW FORM	
Site Name: American Creosote Works, Inc. (Louisville)	
EPA ID: MSD004006995	
Interviewer name:	Interviewer affiliation:
Subject name: Glen Haab	Subject affiliation: WCEDDP
Subject contact information: 662-773-8719 glen@winstoncounty.com	
Interview date: 1-27-22	Interview time: 9:30 am
Interview location: WCEDDP Office	
Interview format (circle one): <u>In Person</u> Phone Mail Email Other:	
Interview category: Local Government	

1. Are you aware of the former environmental issues at the Site and the cleanup activities that have taken place to date? *Yes*
2. Do you feel well-informed regarding the Site's activities and remedial progress? If not, how might EPA convey site-related information in the future? *Yes*
3. Have there been any problems with unusual or unexpected activities at the Site, such as emergency response, vandalism or trespassing? *Occasional Trespassing issues due to the size of the site.*
4. Are you aware of any changes to state laws or local regulations that might affect the protectiveness of the Site's remedy? *No*
5. Are you aware of any changes in projected land use(s) at the Site? *No*
6. Has EPA kept involved parties and surrounding neighbors informed of activities at the Site? *Yes*
How can EPA best provide site-related information in the future?
Social Media/Local Radio → Increase Word of Mouth
7. Do you have any comments, suggestions or recommendations regarding the project?
I appreciate the EPA/MDEQ's support in redeveloping the site.
8. Do you consent to have your name included along with your responses to this questionnaire in the FYR report? *Yes*

AMERICAN CREOSOTE WORKS, INC. (LOUISVILLE) SUPERFUND SITE FIVE-YEAR REVIEW INTERVIEW FORM	
Site Name: American Creosote Works, Inc. (Louisville)	
EPA ID: MSD004006995	
Interviewer name:	Interviewer affiliation:
Subject name: WILL HILL, MAYOR	Subject affiliation: CITY OF LOUISVILLE
Subject contact information: (662) 773-9201 hillwill@gmail.com	
Interview date: 1/27/2022	Interview time: 9:45 a.m.
Interview location: CITY OF LOUISVILLE	
Interview format (circle one): <input checked="" type="radio"/> In Person <input type="radio"/> Phone <input type="radio"/> Mail <input type="radio"/> Email <input type="radio"/> Other:	
Interview category: Local Government	

1. Are you aware of the former environmental issues at the Site and the cleanup activities that have taken place to date? YES
2. Do you feel well-informed regarding the Site's activities and remedial progress? If not, how might EPA convey site-related information in the future? YES
3. Have there been any problems with unusual or unexpected activities at the Site, such as emergency response, vandalism or trespassing? NO
4. Are you aware of any changes to state laws or local regulations that might affect the protectiveness of the Site's remedy? NO
5. Are you aware of any changes in projected land use(s) at the Site? NO
6. Has EPA kept involved parties and surrounding neighbors informed of activities at the Site? YES
How can EPA best provide site-related information in the future? CONTINUE COMMUNICATION VIA EMAIL, CALLS, OR VISIT
7. Do you have any comments, suggestions or recommendations regarding the project? NONE
8. Do you consent to have your name included along with your responses to this questionnaire in the FYR report? YES

Agency _____				
Contact _____	Name _____	Title _____	Date _____	Phone _____
Problems/suggestions <input type="checkbox"/> Report attached: _____				
4. Other Interviews (optional) <input type="checkbox"/> Report attached: _____				
III. ON-SITE DOCUMENTS AND RECORDS VERIFIED (check all that apply)				
1. O&M Documents				
<input checked="" type="checkbox"/> O&M manual	<input checked="" type="checkbox"/> Readily available	<input checked="" type="checkbox"/> Up to date	<input type="checkbox"/> N/A	
<input type="checkbox"/> As-built drawings	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A	
<input checked="" type="checkbox"/> Maintenance logs	<input checked="" type="checkbox"/> Readily available	<input checked="" type="checkbox"/> Up to date	<input type="checkbox"/> N/A	
Remarks: _____				
2. Site-Specific Health and Safety Plan				
		<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
<input type="checkbox"/> Contingency plan/emergency response plan		<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
Remarks: _____				
3. O&M and OSHA Training Records				
		<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
Remarks: _____				
4. Permits and Service Agreements				
<input type="checkbox"/> Air discharge permit		<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
<input type="checkbox"/> Effluent discharge		<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
<input type="checkbox"/> Waste disposal, POTW		<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
<input type="checkbox"/> Other permits: _____		<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
Remarks: _____				
5. Gas Generation Records				
		<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
Remarks: _____				
6. Settlement Monument Records				
		<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
Remarks: _____				
7. Groundwater Monitoring Records				
		<input checked="" type="checkbox"/> Readily available	<input checked="" type="checkbox"/> Up to date	<input type="checkbox"/> N/A
Remarks: _____				
8. Leachate Extraction Records				
		<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
Remarks: _____				
9. Discharge Compliance Records				
<input type="checkbox"/> Air	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A	
<input type="checkbox"/> Water (effluent)	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A	
Remarks: _____				
10. Daily Access/Security Logs				
		<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
Remarks: _____				
IV. O&M COSTS				

C. Institutional Controls (ICs)			
1. Implementation and Enforcement			
Site conditions imply ICs not properly implemented	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> N/A
Site conditions imply ICs not being fully enforced	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> N/A
Type of monitoring (e.g., self-reporting, drive by): _____			
Frequency: _____			
Responsible party/agency: _____			
Contact _____	_____	_____	_____
Name	Title	Date	Phone
Reporting is up to date	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
Reports are verified by the lead agency	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
Specific requirements in deed or decision documents have been met	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Violations have been reported	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> N/A
Other problems or suggestions: <input type="checkbox"/> Report attached			
2. Adequacy	<input checked="" type="checkbox"/> ICs are adequate	<input type="checkbox"/> ICs are inadequate	<input type="checkbox"/> N/A
Remarks: _____			
D. General			
1. Vandalism/Trespassing <input type="checkbox"/> Location shown on site map <input type="checkbox"/> No vandalism evident			
Remarks: <u>There is some trespassing occurring on site. Trespassers have cut through the fence around the containment cell to ride four-wheelers through the Site. Tire tracks were present, and it was clear that trespassers do not ride on the containment cell surface but around it.</u>			
2. Land Use Changes On Site <input type="checkbox"/> N/A			
Remarks: <u>The City plans to develop an industrial park on the Site.</u>			
3. Land Use Changes Off Site <input checked="" type="checkbox"/> N/A			
Remarks: _____			
VI. GENERAL SITE CONDITIONS			
A. Roads <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A			
1. Roads Damaged <input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> Roads adequate <input type="checkbox"/> N/A			
Remarks: _____			
B. Other Site Conditions			
Remarks: _____			
VII. LANDFILL COVERS <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A			
A. Landfill Surface			
1. Settlement (low spots) <input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> Settlement not evident			
Area extent: _____		Depth: _____	
Remarks: _____			

2.	Cracks	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Cracking not evident
	Lengths: _____	Widths: _____	Depths: _____
	Remarks: _____		
3.	Erosion	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Erosion not evident
	Area extent: _____		Depth: _____
	Remarks: _____		
4.	Holes	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Holes not evident
	Area extent: _____		Depth: _____
	Remarks: _____		
5.	Vegetative Cover	<input checked="" type="checkbox"/> Grass	<input checked="" type="checkbox"/> Cover properly established
	<input type="checkbox"/> No signs of stress	<input checked="" type="checkbox"/> Trees/shrubs (indicate size and locations on a diagram)	
	Remarks: <u>One large pine tree on the cap surface requires removal.</u>		
6.	Alternative Cover (e.g., armored rock, concrete)		<input checked="" type="checkbox"/> N/A
	Remarks: _____		
7.	Bulges	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Bulges not evident
	Area extent: _____		Height: _____
	Remarks: _____		
8.	Wet Areas/Water Damage	<input checked="" type="checkbox"/> Wet areas/water damage not evident	
	<input type="checkbox"/> Wet areas	<input type="checkbox"/> Location shown on site map	Area extent: _____
	<input type="checkbox"/> Ponding	<input type="checkbox"/> Location shown on site map	Area extent: _____
	<input type="checkbox"/> Seeps	<input type="checkbox"/> Location shown on site map	Area extent: _____
	<input type="checkbox"/> Soft subgrade	<input type="checkbox"/> Location shown on site map	Area extent: _____
	Remarks: _____		
9.	Slope Instability	<input type="checkbox"/> Slides	<input type="checkbox"/> Location shown on site map
	<input checked="" type="checkbox"/> No evidence of slope instability		
	Area extent: _____		
	Remarks: _____		
B. Benches		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
(Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)			
1.	Flows Bypass Bench	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> N/A or okay
	Remarks: _____		
2.	Bench Breached	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> N/A or okay
	Remarks: _____		
3.	Bench Overtopped	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> N/A or okay
	Remarks: _____		

C. Letdown Channels <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A (Channel lined with erosion control mats, riprap, grout bags or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)			
1.	Settlement (Low spots)	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> No evidence of settlement
Area extent: _____		Depth: _____	
Remarks: _____			
2.	Material Degradation	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> No evidence of degradation
Material type: _____		Area extent: _____	
Remarks: _____			
3.	Erosion	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> No evidence of erosion
Area extent: _____		Depth: _____	
Remarks: _____			
4.	Undercutting	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> No evidence of undercutting
Area extent: _____		Depth: _____	
Remarks: _____			
5.	Obstructions	Type: _____	<input type="checkbox"/> No obstructions
<input type="checkbox"/> Location shown on site map		Area extent: _____	
Size: _____			
Remarks: _____			
6.	Excessive Vegetative Growth	Type: _____	
<input type="checkbox"/> No evidence of excessive growth			
<input type="checkbox"/> Vegetation in channels does not obstruct flow			
<input type="checkbox"/> Location shown on site map		Area extent: _____	
Remarks: _____			
D. Cover Penetrations <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A			
1.	Gas Vents	<input type="checkbox"/> Active	<input checked="" type="checkbox"/> Passive
<input type="checkbox"/> Properly secured/locked		<input type="checkbox"/> Functioning	<input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition
<input type="checkbox"/> Evidence of leakage at penetration		<input type="checkbox"/> Needs maintenance	<input type="checkbox"/> N/A
Remarks: <u>Passive gas vents were not observed during the site inspection.</u>			
2.	Gas Monitoring Probes		
<input type="checkbox"/> Properly secured/locked		<input type="checkbox"/> Functioning	<input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition
<input type="checkbox"/> Evidence of leakage at penetration		<input type="checkbox"/> Needs maintenance	<input checked="" type="checkbox"/> N/A
Remarks: _____			

3. Monitoring Wells (within surface area of landfill)			
<input checked="" type="checkbox"/> Properly secured/locked	<input checked="" type="checkbox"/> Functioning	<input type="checkbox"/> Routinely sampled	<input checked="" type="checkbox"/> Good condition
<input type="checkbox"/> Evidence of leakage at penetration		<input type="checkbox"/> Needs maintenance	<input type="checkbox"/> N/A
Remarks: _____			
4. Extraction Wells Leachate			
<input type="checkbox"/> Properly secured/locked	<input type="checkbox"/> Functioning	<input type="checkbox"/> Routinely sampled	<input type="checkbox"/> Good condition
<input type="checkbox"/> Evidence of leakage at penetration		<input type="checkbox"/> Needs maintenance	<input checked="" type="checkbox"/> N/A
Remarks: _____			
5. Settlement Monuments			
<input type="checkbox"/> Located	<input type="checkbox"/> Routinely surveyed	<input checked="" type="checkbox"/> N/A	
Remarks: _____			
E. Gas Collection and Treatment			
		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
1. Gas Treatment Facilities			
<input type="checkbox"/> Flaring	<input type="checkbox"/> Thermal destruction	<input type="checkbox"/> Collection for reuse	
<input type="checkbox"/> Good condition	<input type="checkbox"/> Needs maintenance		
Remarks: _____			
2. Gas Collection Wells, Manifolds and Piping			
<input type="checkbox"/> Good condition	<input type="checkbox"/> Needs maintenance		
Remarks: _____			
3. Gas Monitoring Facilities (e.g., gas monitoring of adjacent homes or buildings)			
<input type="checkbox"/> Good condition	<input type="checkbox"/> Needs maintenance	<input type="checkbox"/> N/A	
Remarks: _____			
F. Cover Drainage Layer			
		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
1. Outlet Pipes Inspected			
<input type="checkbox"/> Functioning	<input type="checkbox"/> N/A		
Remarks: _____			
2. Outlet Rock Inspected			
<input type="checkbox"/> Functioning	<input type="checkbox"/> N/A		
Remarks: _____			
G. Detention/Sedimentation Ponds			
		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
1. Siltation			
Area extent: _____	Depth: _____	<input type="checkbox"/> N/A	
<input type="checkbox"/> Siltation not evident			
Remarks: _____			
2. Erosion			
Area extent: _____	Depth: _____		
<input type="checkbox"/> Erosion not evident			
Remarks: _____			
3. Outlet Works			
<input type="checkbox"/> Functioning	<input type="checkbox"/> N/A		
Remarks: _____			
4. Dam			
<input type="checkbox"/> Functioning	<input type="checkbox"/> N/A		
Remarks: _____			

H. Retaining Walls		<input checked="" type="checkbox"/> Applicable	<input type="checkbox"/> N/A
1. Deformations	<input checked="" type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Deformation not evident	
Horizontal displacement: _____	Vertical displacement: _____		
Rotational displacement: _____	Remarks: _____		
2. Degradation	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Degradation not evident	
Remarks: _____			
I. Perimeter Ditches/Off-Site Discharge		<input checked="" type="checkbox"/> Applicable	<input type="checkbox"/> N/A
1. Siltation	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Siltation not evident	
Area extent: _____	Depth: _____		
Remarks: _____			
2. Vegetative Growth	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> N/A	
<input checked="" type="checkbox"/> Vegetation does not impede flow			
Area extent: _____	Type: _____		
Remarks: _____			
3. Erosion	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Erosion not evident	
Area extent: _____	Depth: _____		
Remarks: <u>Some erosion was observed near the creek near the church on the landfill side.</u>			
4. Discharge Structure	<input type="checkbox"/> Functioning	<input checked="" type="checkbox"/> N/A	
Remarks: _____			
VIII. VERTICAL BARRIER WALLS		<input checked="" type="checkbox"/> Applicable	<input type="checkbox"/> N/A
1. Settlement	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> Settlement not evident	
Area extent: _____	Depth: _____		
Remarks: _____			
2. Performance Monitoring	Type of monitoring: <u>Groundwater level measurements.</u>		
<input type="checkbox"/> Performance not monitored			
Frequency: <u>Semiannual</u>	<input type="checkbox"/> Evidence of breaching		
Head differential: _____			
Remarks: <u>Depth-to-water measurements are collected and evaluated qualitatively. However, groundwater elevations are not reported, which would allow analysis of hydraulic head at the Site and is recommended for future data collection and analysis.</u>			
IX. GROUNDWATER/SURFACE WATER REMEDIES		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
A. Groundwater Extraction Wells, Pumps and Pipelines		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
1. Pumps, Wellhead Plumbing and Electrical			
<input type="checkbox"/> Good condition	<input type="checkbox"/> All required wells properly operating	<input type="checkbox"/> Needs maintenance	<input type="checkbox"/> N/A
Remarks: _____			

<p>2. Extraction System Pipelines, Valves, Valve Boxes and Other Appurtenances</p> <p><input type="checkbox"/> Good condition <input type="checkbox"/> Needs maintenance</p> <p>Remarks: _____</p>
<p>3. Spare Parts and Equipment</p> <p><input type="checkbox"/> Readily available <input type="checkbox"/> Good condition <input type="checkbox"/> Requires upgrade <input type="checkbox"/> Needs to be provided</p> <p>Remarks: _____</p>
<p>B. Surface Water Collection Structures, Pumps and Pipelines <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A</p>
<p>1. Collection Structures, Pumps and Electrical</p> <p><input type="checkbox"/> Good condition <input type="checkbox"/> Needs maintenance</p> <p>Remarks: _____</p>
<p>2. Surface Water Collection System Pipelines, Valves, Valve Boxes and Other Appurtenances</p> <p><input type="checkbox"/> Good condition <input type="checkbox"/> Needs maintenance</p> <p>Remarks: _____</p>
<p>3. Spare Parts and Equipment</p> <p><input type="checkbox"/> Readily available <input type="checkbox"/> Good condition <input type="checkbox"/> Requires upgrade <input type="checkbox"/> Needs to be provided</p> <p>Remarks: _____</p>
<p>C. Treatment System <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A</p>
<p>1. Treatment Train (check components that apply)</p> <p><input type="checkbox"/> Metals removal <input type="checkbox"/> Oil/water separation <input type="checkbox"/> Bioremediation</p> <p><input type="checkbox"/> Air stripping <input type="checkbox"/> Carbon adsorbers</p> <p><input type="checkbox"/> Filters: _____</p> <p><input type="checkbox"/> Additive (e.g., chelation agent, flocculent): _____</p> <p><input type="checkbox"/> Others: _____</p> <p><input type="checkbox"/> Good condition <input type="checkbox"/> Needs maintenance</p> <p><input type="checkbox"/> Sampling ports properly marked and functional</p> <p><input type="checkbox"/> Sampling/maintenance log displayed and up to date</p> <p><input type="checkbox"/> Equipment properly identified</p> <p><input type="checkbox"/> Quantity of groundwater treated annually: _____</p> <p><input type="checkbox"/> Quantity of surface water treated annually: _____</p> <p>Remarks: _____</p>
<p>2. Electrical Enclosures and Panels (properly rated and functional)</p> <p><input type="checkbox"/> N/A <input type="checkbox"/> Good condition <input type="checkbox"/> Needs maintenance</p> <p>Remarks: _____</p>
<p>3. Tanks, Vaults, Storage Vessels</p> <p><input type="checkbox"/> N/A <input type="checkbox"/> Good condition <input type="checkbox"/> Proper secondary containment <input type="checkbox"/> Needs maintenance</p> <p>Remarks: _____</p>

<p>4. Discharge Structure and Appurtenances</p> <p><input type="checkbox"/> N/A <input type="checkbox"/> Good condition <input type="checkbox"/> Needs maintenance</p> <p>Remarks: _____</p>
<p>5. Treatment Building(s)</p> <p><input type="checkbox"/> N/A <input type="checkbox"/> Good condition (esp. roof and doorways) <input type="checkbox"/> Needs repair</p> <p><input type="checkbox"/> Chemicals and equipment properly stored</p> <p>Remarks: _____</p>
<p>6. Monitoring Wells (pump and treatment remedy)</p> <p><input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition</p> <p><input type="checkbox"/> All required wells located <input type="checkbox"/> Needs maintenance <input type="checkbox"/> N/A</p> <p>Remarks: _____</p>
<p>D. Monitoring Data</p>
<p>1. Monitoring Data</p> <p><input type="checkbox"/> Is routinely submitted on time <input type="checkbox"/> Is of acceptable quality</p>
<p>2. Monitoring Data Suggests:</p> <p><input type="checkbox"/> Groundwater plume is effectively contained <input type="checkbox"/> Contaminant concentrations are declining</p>
<p>E. Monitored Natural Attenuation</p>
<p>1. Monitoring Wells (natural attenuation remedy)</p> <p><input checked="" type="checkbox"/> Properly secured/locked <input checked="" type="checkbox"/> Functioning <input type="checkbox"/> Routinely sampled <input checked="" type="checkbox"/> Good condition</p> <p><input type="checkbox"/> All required wells located <input type="checkbox"/> Needs maintenance <input type="checkbox"/> N/A</p> <p>Remarks: <u>There is no active groundwater remedy. However, monitoring wells are used to monitor groundwater quality and depth-to-water measurements.</u></p>
<p align="center">X. OTHER REMEDIES</p>
<p>If there are remedies applied at the site and not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.</p>
<p align="center">XI. OVERALL OBSERVATIONS</p>
<p>A. Implementation of the Remedy</p> <p>Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is designed to accomplish (e.g., to contain contaminant plume, minimize infiltration and gas emissions).</p> <p><u>The remedy is generally functioning as intended. See the Technical Assessment section of the FYR Report for more details.</u></p>
<p>B. Adequacy of O&M</p> <p>Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.</p> <p><u>Overall, O&M overall appears adequate. Several items noted during the inspection that warrant addressing include an area of erosion in the creek north of the containment cell, holes in the fence, and a tree on the cap surface. In addition, there are some discrepancies between the O&M Plan and O&M activities that should be reconciled in an updated O&M Plan. Groundwater monitoring occurred in 2018 and 2022. Overall, the results from the 2018 and 2022 sampling events indicate that the containment cell, DSM wall, and former process area subsurface soil stabilization area are generally functioning as intended. However, continued sampling is needed to continue to evaluate the performance of these remedy components and confirm these conclusions, as limited data has been collected to date.</u></p>
<p>C. Early Indicators of Potential Remedy Problems</p>

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs that suggest that the protectiveness of the remedy may be compromised in the future.
No early indicators of potential remedy problems were identified.

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.
No opportunities for optimization were identified.

Site Inspection Roster:

Shelby Johnston (EPA RPM)

Armed Rasberry (MDEQ)

Melissa Oakley (Skeo)

Will Hill (Mayor of Louisville)

Glen Haab (Winston Partnership Executive Director)

Robert Eaves (Louisville Public Works Director)

Taylor Tucker (City Attorney)

APPENDIX G – SITE INSPECTION PHOTOS



Site entrance gate at the intersection of Railroad Avenue and Baremore Street



Front gate signage



Baremore Street, looking west



Locked gate at entrance to capped areas



Signage on gate to capped areas



Cap extension, looking north



Capped containment cell, looking northeast



MW-5



Capped containment cell, looking east



Pine tree growing in the center of the cap



Hole in the cap perimeter fence near nearby church



Hole in cap perimeter fence near MW-3



Fence and stabilized creek bank (Warren Chapel in background)



Eroded areas between the northern edge of the capped containment cell and the creek
(near Warren Chapel)



MW-10D



Sheet piling wall at Baremore Street culvert



Stabilized creek banks along Hughes Creek, looking toward the culvert and sheet piling wall



Baremore Street culvert



Previously excavated area south of Baremore Street, looking south



Baremore Street, near culvert, looking west



Approximate location of former process area, west of Railroad Avenue



Rail spur on northern part of the Site



Planned location for future rail line extension (north end of the Site)



Site area south of Baremore Street (location of possible future development)



Electrical substation on north end of the Site

APPENDIX H – DETAILED ARARS REVIEW

Groundwater ARARs

Cleanup goals for groundwater were based on the National Primary Drinking Water Regulations' MCLs, the MDEQ's tier 1 TRGs or health-based cleanup goals. This FYR compared the cleanup goals in the 2007 ROD that were based on federal or state standards against the current relevant standards. As seen below in Table H-1, no standards have changed since the issuance of the 2007 ROD.

Table H-1: Groundwater ARARs Review

COC	Groundwater Cleanup Goal (mg/L)	Cleanup Goal Basis	Current Standard (2022) (mg/L)	Standard Change
Carbazole	0.00335	MDEQ Tier 1 TRG	0.00335	No change
Fluoranthene	1.46		1.46	No change
Fluorene	0.243		0.243	No change
Manganese	0.73		0.73	No change
Xylenes (total)	10	MCL	10	No change
Benzo(a)pyrene TEQ (cPAHs)	0.0002		0.0002	No change
Benzene	0.005		0.005	No change
Bis(2-ethylhexyl)phthalate	0.006		0.006	No change
<p><i>Notes:</i> Cleanup goal source: 2007 ROD, Table 1 Current standards accessed on 1/31/2022 at: https://www.epa.gov/ground-water-and-drinking-water/national-primary-drinking-water-regulations and https://www.mdeq.ms.gov/wp-content/uploads/2003/09/Proced.pdf. mg/L = milligrams per liter</p>				

APPENDIX I – SCREENING-LEVEL RISK REVIEW

Groundwater

Cleanup goals for groundwater were based on the National Primary Drinking Water Regulations’ MCLs, the MDEQ’s tier 1 TRGs or health-based cleanup goals. As part of this FYR, a screening-level risk evaluation evaluated the health-based groundwater cleanup goals from the 2007 ROD against the EPA’s current residential tap water RSLs. RSLs incorporate current toxicity values and standard default exposure factors. As seen below in Table I-1, all the health-based groundwater cleanup goals exceed the EPA’s target hazard quotient (HQ) of 1 and/or the carcinogenic risk range of 1×10^{-4} to 1×10^{-6} . This is not an issue for current protectiveness, as groundwater is not currently in use on the Site and nearby residents are on the public water supply.

Table I-1: Groundwater Cleanup Goal Screening-Level Risk Evaluation

COC	Groundwater Cleanup Goal (µg/L)	Residential Tap Water RSL (µg/L)		Residential Tap Water Screening-Level Risk Evaluation	
		Cancer	Noncancer	Carcinogenic Risk	Noncancer HQ
2,4-Dimethylphenol	2,000	-	360	-	6
2-Methylnaphthalene	400	-	36	-	11
Acenaphthene	6,000	-	530	-	11
Dibenzofuran	200	-	7.9	-	25
Iron	30,000	-	14,000	-	2
Naphthalene	2,000	0.12	6.1	2×10^{-2}	328

Notes:
 Cleanup goal source: 2007 ROD, Table 1
 Current RSLs accessed on 6/20/2022 at: <https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables>.
 Screening-level risk evaluation calculated as follows:
 Risk = (cleanup goal/RSL)*(1×10^{-6})
 HQ = (cleanup goal/RSL)
Bold = exceedance of the EPA’s acceptable risk levels
 µg/L = micrograms per liter

Because the health-based groundwater cleanup goals correspond to risk outside of EPA’s acceptable risk levels, the most recent groundwater sampling data were compared to EPA’s RSLs which incorporate current toxicity values and standard default exposure factors. Except for dibenzofuran, as seen in Table I-2 below, concentrations of groundwater COCs that have health-based cleanup goals are generally below current RSLs and do not correspond to unacceptable risk levels. During this FYR period, the only dibenzofuran concentration above RSL was observed at MW-7 in 2022 at a concentration of 16 µg/L. That result exceeds the residential tap water RSL of 7.9 µg/L and is associated with a noncancer HQ that exceeds the EPA’s target HQ of 1. However, as site groundwater is not used for any purpose and institutional controls prohibit future groundwater use in the area of MW-7, this finding does not affect the protectiveness of the remedy. In addition, MW-7 has only been sampled once for dibenzofuran; therefore, the 2022 concentration observed may not be representative of typical conditions. Continued monitoring of dibenzofuran at MW-7 during the routine sampling events will provide additional information.

Table I-2: Groundwater Concentrations Screening-Level Risk Evaluation

COC	Maximum Concentration during FYR Period (µg/L)	Residential Tap Water RSL (µg/L)		Residential Tap Water Screening-Level Risk Evaluation	
		Cancer	Noncancer	Carcinogenic Risk	Noncancer HQ
2,4-Dimethylphenol	10 U	-	360	-	0.03
2-Methylnaphthalene	2.1 U	-	36	-	0.06
Acenaphthene	23	-	530	-	0.04
Dibenzofuran	16	-	7.9	-	2
Iron	5,800	-	14,000	-	0.4
Naphthalene	2.1 U	0.12	6.1	2 x 10 ⁻⁵	0.3

Notes:
 Maximum concentration during FYR period source: April 2022 EPA Region 4 Final Report
 Current RSLs accessed on 6/20/2022 at: <https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables>.
 Screening-level risk evaluation calculated as follows:
 Risk = (concentration/RSL)*(1 x 10⁻⁶)
 HQ = (concentration/RSL)
Bold = exceedance of the EPA's acceptable risk levels
 µg/L = micrograms per liter
 U = analyte not detected at or above the reporting limit. Note that when concentrations of a COC were not detected, the reporting limit was conservatively evaluated as the maximum concentration for this screening level risk evaluation.

Soil

As part of this FYR, a screening-level soil risk evaluation evaluated whether soil cleanup goals remain valid. RSLs incorporate current toxicity values and standard default exposure factors. Composite worker RSLs were selected for this evaluation because residential use is prohibited across the Site by the 2021 Environmental Covenant. As seen below in Table I-3, soil cleanup goals correspond to risk equal to or below the EPA’s target HQ of 1 and within or below the carcinogenic risk range of 1×10^{-4} to 1×10^{-6} . Thus, the soil cleanup goals remain protective for industrial use.

Table I-3: Soil Cleanup Goal Screening-Level Risk Evaluation

COC	Soil Cleanup Goal (mg/kg)	Cleanup Goal Basis	Composite Worker RSL (mg/kg)		Composite Worker Screening-Level Risk Evaluation	
			Cancer	Noncancer	Carcinogenic Risk	Noncancer HQ
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD) TEQ	0.001	EPA Dioxin Policy as of 2007 ROD	0.00002	0.00072	5×10^{-5}	1
2,4-Dimethylphenol	9	Groundwater protection	-	16,000	-	0.001
Acenaphthene	570		-	45,000	-	0.01
Benzene	0.03		5.1	420	6×10^{-9}	0.0001
Benzo(a)pyrene	8		2.1	220	4×10^{-6}	0.04
Carbazole	0.6		-	-	-	-
Chromium ^a	38		6.3	3,500	6×10^{-6}	0.01
Fluoranthene	4,300		-	30,000	-	0.1
Fluorene	560		-	30,000	-	0.02
Naphthalene	84		8.6	590	1×10^{-5}	0.1
Pyrene	4,200		-	23,000	-	0.2
2-Methylnaphthalene	1,231		-	3,000	-	0.4
Benzo(a)pyrene TEQ (cPAHs)	28.8	Direct contact	2.1	220	1×10^{-5}	0.1
Dibenzofuran ^b	312		-	1,200	-	0.3
Iron	93,087		-	820,000	-	0.1

Notes:

Cleanup goal source: 2007 ROD, Table 1

Current RSLs accessed on 2/2/2022 at: <https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables>.

Screening-level risk evaluation calculated as follows:

Risk = (cleanup goal/RSL)*(1×10^{-6})

HQ = (cleanup goal/RSL)

mg/kg = milligrams per kilogram

a. Hexavalent chromium RSL used

b. Instead of the ROD cleanup goal for dibenzofuran of 315,696 mg/kg, the value of 312 mg/kg was used for this analysis. Per the 2019 Memorandum to File, the original cleanup goal was the result of a unit error in a historical document and the intended cleanup goal was 312 mg/kg.

APPENDIX J – INSTITUTIONAL CONTROLS

FILED
 TIME 3:28 pm
 JUL 29 2021

Book 393 Page 3
 Deed
 07/29/2021 03:34:15 PM
 Winston County, MS
 Rusty Foster, Chancery Clerk

RUSTY FOSTER, CHANCERY CLERK
 BY: J. Alexander, c.

**STATE OF MISSISSIPPI
 COUNTY OF WINSTON**

PREPARED BY AND RETURN TO:	GRANTOR/OWNER:	GRANTEE/HOLDER:
Taylor Tucker Attorney at Law 440 N. Court Avenue P.O. Box 7 Louisville, Mississippi 39339 Phone: (662) 773-9254	City of Louisville 200 South Church Avenue Louisville, Mississippi 39339	City of Louisville 200 South Church Avenue Louisville, Mississippi 39339

INDEX:

- Exhibit A: Parcel 141220401 0100100 – PT SE4 NE4 PT NW4 NE4 [70 acres]
- Exhibit B: Parcel 141220302 0200300 – PT NE4 NW4 W/RD AM CREOSOTE [approximately 2.78 acres]
- Exhibit C: Parcel 151283304 0104206 – PT E2 SE4, Section 33, Township 15 North, Range 12 East, Winston County, Mississippi [9.9 acres]
- Exhibit D: Parcel 151283304 0105200 – SE4 SE4 & SW4 SE4, Section 33, Township 15, Range 12 East, Winston County, Mississippi [approximately 26.4 acres]
- Exhibit E: Parcel 151283304 0105201 – PT E2 SE4 SE4, Section 33, Township 15, Range 12, Winston County, Mississippi [approximately 2.67 acres]
- Exhibit F: Parcel 151283304 0105300 – E1/2 SE1/4, Section 33, Township 15 North, Range 12 East, Winston County, Mississippi [approximately 18.1 acres]
- Exhibit G: Parcel 151283304 0105400 – IN NE4 SE4, Section 33, Township 15, Range 12, Winston County, Mississippi [4.4 acres]
- Exhibit H: Environmental Covenant Parcel Map

ENVIRONMENTAL COVENANT

Owner/Grantor
City of Louisville
200 South Church Avenue
Louisville, Mississippi 39339

and

Holder/Grantee
City of Louisville
200 South Church Avenue
Louisville, MS 39339

and

Commission
The Mississippi Commission on Environmental Quality
Post Office Box 2261
Jackson, Mississippi 39225

and

Agency
U.S. Environmental Protection Agency, Region 4
61 Forsyth Street, SW
Atlanta, Georgia 30303

ENVIRONMENTAL COVENANT

**AMERICAN CREOSOTE WORKS SUPERFUND SITE
EPA I.D. No. MSD004006995**

This Environmental Covenant is entered into by the City of Louisville (as "Owner"/"Grantor" and as "Holder"/"Grantee"), the Mississippi Commission on Environmental Quality ("Commission"), and the U.S. Environmental Protection Agency, Region 4 ("EPA"), pursuant to the Uniform Environmental Covenants Act ("UECA"), Miss. Code Ann. §§ 89-23-1 *et seq.*, for the purpose of subjecting a portion of the American Creosote Works Superfund Site to the activity and use limitations set forth herein.

RECITALS

WHEREAS, the City of Louisville is the owner of certain real property located in the vicinity of Railroad Avenue and Baremore Street in Louisville, Winston County, Mississippi, more particularly described in Exhibits A through G, attached hereto and incorporated herein ("Properties");

WHEREAS, a release of hazardous substances, including, but not limited to, constituents of creosote, dioxin, pentachlorophenol, arsenic, and iron, occurred in the past on the Properties;

WHEREAS, the Properties are the subject of a remedial action pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. §§ 9601 *et seq.* ("CERCLA"), more particularly described in the EPA's Record of Decision ("ROD") issued on September 24, 2009;

WHEREAS, EPA selected a remedial action for the Properties in the ROD, providing, in part, of the implementation and monitoring of institutional controls, including this Environmental Covenant;

WHEREAS, hazardous wastes, hazardous constituents, hazardous substances, pollutants, or contaminants remain on the Properties;

WHEREAS, the purposes of this Environmental Covenant is to ensure protection of human health and the environment by placing restrictions on the Properties to reduce the likelihood of exposure to those hazardous wastes, hazardous constituents, hazardous substances, pollutants, or contaminants that remain on the Properties; and

WHEREAS, further information concerning the release/disposal and the activities to correct the effects of the release/disposal at the Properties may be obtained by reviewing the American Creosote Works Superfund Site Administrative Record, which is located at:

Winston County Public Library
301 West Park Street
Louisville, Mississippi 39339
662-773-3212

and

Superfund Records Center
U.S. Environmental Protection Agency, Region 4
61 Forsyth Street, SW
Atlanta, Georgia 30303

and

Mississippi Department of Environmental Quality ("MDEQ")
Attn: Public Records Administrator
515 East Amite Street
Jackson, Mississippi 39201; and

WHEREAS, to implement the remedial action selected in the ROD, Owner/Grantor has agreed to enter into this Environmental Covenant.

NOW, THEREFORE, Owner/Grantor, Holder/Grantee, the Commission, and the Agency agree to the following:

1. Environmental Covenant. This instrument is an environmental covenant developed and executed pursuant to Miss. Code Ann. §§ 89-23-1 *et seq.*
2. Properties. This Environmental Covenant concerns approximately 134.25 acres of property located in the vicinity of Railroad Avenue and Baremore Street in Louisville, Winston County, Mississippi, which is more particularly described in Exhibits A through G and depicted on the map attached as Exhibit H.
3. Owner/Grantor. The City of Louisville, with its office located at 200 South Church Avenue, Louisville, Mississippi 39339, is the fee simple title Owner of this Properties and the Grantor of this Environmental Covenant.
4. Holder/Grantee. The City of Louisville, whose address is listed above, is also the "Holder" of this Environmental Covenant as set forth in Miss. Code Ann. § 89-23-5(a).
5. Transferee. A Transferee is any future owner of any interest in the Properties or any portion thereof, including, but not limited to, an owner of an interest in fee simple, mortgagees, easement holders, and/or lessees.

6. Agency. The EPA is the "Agency" as defined in Miss. Code Ann. § 89-23-3(2) that determined or approved the environmental response project pursuant to which this Environmental Covenant is created.
7. Commission. The Mississippi Commission on Environmental Quality is the "Commission" as defined in Miss. Code Ann. § 89-23-3(2A).
8. MDEQ. "MDEQ" is the Mississippi Department of Environmental Quality, which serves as staff and acts on behalf of the Commission pursuant to Miss. Code Ann. §§ 49-17-5(3)(a) and 49-17-7(1).
9. Activity and Use Limitations for the Entire Property. All of the Properties listed in the index above and the attached Exhibits are subject to the following activity and use limitations that run with the land:
 - a. No person shall damage or interfere with any monitoring wells on the Properties;
 - b. No person shall engage in excavation of any kind before meeting the notification requirements of Mississippi's One-Call law, Miss. Code Ann. § 77-13.1 *et seq.* (Rev. 2011), by calling the Mississippi One-Call System, Inc., at 811; and
 - c. The Properties shall not be used for residential purposes, including, but not limited to, apartments, mixed use developments, condominiums, townhomes, single living homes, senior care homes, daycare centers, or hotels.
 - d. Activity and Use Limitations for the Containment Cell and Areas Subject to Additional Restrictions. All Properties or portions of properties, noted on Exhibit H as Areas Subject to Additional Restrictions are subject to the following activity and use limitations that run with the land:
 - i. There shall be no subsurface demolition, excavation, drilling, maintenance, construction, utility work, soil removal, soil remediation, or other subsurface activities at, over, or near the hatched areas on Exhibit H, without the prior written approval of EPA and MDEQ;
 - ii. The containment cell is capped by an engineered cover, which will be maintained by MDEQ. There shall be no interference with or disturbance of the engineered cover, which includes liners, drainage and soil layers, and vegetation; and
 - iii. The Areas Subject to Additional Restrictions noted on Exhibit H including the containment cell shall not be used for any of the following without prior written approval by EPA and MDEQ:
 1. Agricultural use, including, but not limited to, farming, forestry, fishing, and mining;

2. Residential use, including, but not limited to, apartments, mixed use developments, condominiums, townhomes, single living homes, senior care homes, daycare centers or hotels; or
3. Recreational use, including, but not limited to, hiking, hunting, camping, or sports.

10. Notice of Any Breach. If any event or action constitutes a breach of the activity and use limitations set forth in this Environmental Covenant, Owner/Grantor, Holder/Grantee, or Transferee shall notify MDEQ and EPA within fifteen (15) days of becoming aware of the event or action, and shall remedy the breach of the activity and use limitations within thirty (30) days of becoming aware of the event or action, or such other time frame as may be agreed to in writing by the Owner/Grantor, Holder/Grantee, or Transferee and MDEQ and EPA.

11. Running with the Land. This Environmental Covenant is perpetual and conveys to the Holder/Grantee real property rights that run with the land pursuant to Miss. Code Ann. §§ 89-23-1 *et seq.*, subject to amendment or termination as set forth herein. The terms, conditions, obligations, and limitations in this Environmental Covenant are binding on the Owner/Grantor and its tenants, agents, employees, and other persons under its control, all assigns and successors in interest, including any Transferee, and the Holder/Grantee.

12. Compliance Enforcement. Compliance with this Environmental Covenant may be enforced by MDEQ, the Commission, EPA, and any other entity identified pursuant to Miss. Code Ann. §§ 89-23-1 *et seq.* Failure to timely enforce compliance with this Environmental Covenant or the activity and use limitations contained herein by any party shall not bar subsequent enforcement by such party and shall not be deemed a waiver of the party's right to take action to enforce against any noncompliance. Nothing in this Environmental Covenant shall restrict MDEQ, the Commission, or EPA from exercising any authority under applicable law.

13. Compliance Reporting. Unless otherwise approved by MDEQ and EPA, Owner/Grantor or Transferee (if applicable) shall submit an annual report to MDEQ and EPA on each one-year anniversary of the effective date of this Environmental Covenant that all the activity and use limitations set forth in Paragraphs 9 and 10 of this Environmental Covenant remain in place and are being complied with.

14. Rights of Access. Owner/Grantor hereby grants to Holder/Grantee, MDEQ and EPA, and their agents, contractors, and employees, the right of access to the Properties for enforcement and/or implementation of this Environmental Covenant; installation of monitoring wells; sampling, testing, operation, and maintenance of monitoring wells; and performance of tasks in support of five year reviews for the American Creosote Works Superfund Site.

15. Notice Prior to Conveyance. Owner/Grantor or Transferee (if applicable) shall provide written notice to MDEQ, EPA, and Holder/Grantee prior to any conveyance of an interest in any portion of the Properties.

16. Notice Upon Conveyance. Each instrument hereafter conveying any interest in the Properties or any portion of the Properties shall contain a notice of the activity and use limitations set forth in this Environmental Covenant and provide the recorded location of this Environmental Covenant. The notice shall be substantially in the following form:

THE INTEREST CONVEYED HEREBY IS SUBJECT TO AN ENVIRONMENTAL COVENANT, DATED _____, 2021, RECORDED IN THE DEED OR OFFICIAL RECORDS OF THE WINSTON COUNTY CHANCERY CLERK, ON _____, 2021, IN [DOCUMENT _____, or BOOK _____, PAGE ____]. THE ENVIRONMENTAL COVENANT CONTAINS THE FOLLOWING ACTIVITY AND USE LIMITATIONS: [Insert the language that describes the activity and use limitations found in Paragraphs 9 and 10 exactly as they appear in this Environmental Covenant.]

Owner/Grantor or Transferee (if applicable) shall provide written notice to MDEQ, EPA, and Holder/Grantee within fifteen (15) days after each conveyance of an interest in any portion of the Properties. Owner/Grantor or Transferee's notice shall include the name, address, and telephone number of the Transferee, a copy of the deed or other documentation evidencing the conveyance, and a survey map that shows the boundaries.

17. Representations and Warranties. Owner/Grantor hereby represents and warrants to the other signatories hereto:

- a. That Owner/Grantor is the sole owner of the Properties;
- b. That Owner/Grantor holds fee simple title to the Properties;
- c. That Owner/Grantor has the power and authority to enter into this Environmental Covenant, to grant the rights and interests herein provided, and to carry out all obligations hereunder;
- d. That Owner/Grantor has identified all other persons that own an interest in or hold an encumbrance on the Property and notified such persons of Owner/Grantor's intention to enter into this Environmental Covenant;
- e. That this Environmental Covenant will not materially violate or contravene or constitute a material default under any other agreement, document, or instrument to which Owner/Grantor is a party or by which Owner/Grantor may be bound or affected; and
- f. To the extent that there are other interests in or encumbrances on the Properties that are deemed by MDEQ and EPA to conflict with the activity and use limitations set forth in this Environmental Covenant, the persons who own such interests or hold such encumbrances have agreed to subordinate such interests or encumbrances to the Environmental Covenant, pursuant to Miss. Code Ann.

§§ 89-23-1 *et seq.*, and to enter into a subordination agreement acceptable to MDEQ and EPA, unless waived by MDEQ and EPA.

18. Amendment and Termination. This Environmental Covenant may be amended or terminated pursuant to Miss. Code Ann. §§ 89-23-17 and 19 and other applicable law. The term "Amendment", as used in this Environmental Covenant, shall mean any changes to the Environmental Covenant, including the activity and use limitations set forth herein, or the elimination of one or more activity and use limitations when there is at least one limitation remaining, or the assignment of the Environmental Covenant to a new holder.

The term "Termination", as used in this Environmental Covenant, shall mean the elimination of all activity and use limitations set forth herein and all other obligations under this Environmental Covenant. This Environmental Covenant may be amended or terminated only by a written instrument duly executed pursuant to Miss. Code Ann. §§ 89-23-17 and 19. Within thirty (30) days of signature by all requisite parties on any amendment or termination of this Environmental Covenant, Owner/Grantor or Transferee (if applicable) shall file such instrument for recording with the Winston County Chancery Clerk and shall provide a file- and date-stamped copy of the recorded instrument to MDEQ, EPA, and Holder/Grantee.

19. Severability. If any provision of this Environmental Covenant is found to be unenforceable in any respect, the validity, legality, and enforceability of the remaining provisions shall not in any way be affected or impaired.

20. EPA Reservations. Notwithstanding any other provision of this Environmental Covenant, EPA retains all of its access authorities and rights, as well as all of its rights to require additional land/water use restrictions, including enforcement authorities related thereto, under RCRA or any other applicable statute or regulation.

21. No Property Interest Created. This Environmental Covenant does not in any way create any interest by the Commission, MDEQ, or EPA in the Properties that are subject to this Environmental Covenant.

22. Governing Law. This Environmental Covenant shall be governed by and interpreted in accordance with the laws of the State of Mississippi.

23. Recordation. Within fifteen (15) days after the date of the final required signature upon this Environmental Covenant, Owner/Grantor shall file this Environmental Covenant for recording, in the same manner as deeds to the Properties, with the Winston County Chancery Clerk.

24. Effective Date. The effective date of this Environmental Covenant shall be the date upon which the fully executed Environmental Covenant has been recorded as a deed record for the Properties with the Winston County Chancery Clerk.

25. Distribution of Environmental Covenant.

- a. In accordance with Miss. Code Ann. § 89-23-13, Owner/Grantor shall distribute a file- and date-stamped copy of the recorded Environmental Covenant to the following:
 - i. MDEQ;
 - ii. EPA;
 - iii. Each signatory to the Environmental Covenant;
 - iv. Each person holding a recorded interest in any of the Properties;
 - v. Each person in possession of any of the Properties;
 - vi. Each municipality or other unit of local government in which any of the Properties is located; and
 - vii. Any other person MDEQ or the Commission requires.
- b. The validity of this Environmental Covenant is not affected by Owner/Grantor's failure to provide a copy of this Environmental Covenant as required under this Paragraph.
- c. Failure by any person to provide a copy of this Environmental Covenant in the manner required by the Commission shall be punishable by a civil penalty to be determined by the Commission consistent with the terms and provisions of Miss. Code Ann. §§ 49-17-43 (Rev. 2011).

26. Notice. Unless notified in writing by or on behalf of MDEQ or EPA, any document or communication required to be sent pursuant to the terms of this Environmental Covenant shall be submitted to:

MDEQ
Groundwater Assessment and Remediation Division
Mississippi Department of Environmental Quality
Post Office Box 2261
Jackson, Mississippi 39255

and

EPA
Director, Superfund and Emergency Management Division
U.S. Environmental Protection Agency, Region 4
61 Forsyth Street, SW
Atlanta, Georgia 30303

and

City of Louisville
P.O. Box 510
2373 South Church Avenue
Louisville, Mississippi 39339

[SIGNATURES APPEAR ON THE FOLLOWING THREE PAGES]

MISSISSIPPI COMMISSION ON ENVIRONMENTAL QUALITY

By: Chris Wells
Date: 5/11/21
Name: Chris Wells
Title: Executive Director

State of Mississippi)
County of Hinds) ss:

Personally appeared before me, the undersigned authority in and for the said county and state, on this 11th day of May, 2021, within my jurisdiction, the within named Chris Wells, who acknowledged that he/she is Executive Director of the Mississippi Commission on Environmental Quality, and that in said representative capacity, he/she executed the above and foregoing instrument on behalf of the **Mississippi Commission on Environmental Quality**, after first having been duly authorized to do so.

Jill S. Bailey

(NOTARY PUBLIC)

My commission expires:



Exhibit A: Parcel 141220401-0100100 Legal Description

According to the Winston County Chancery Court Clerk's Office, Deed Book 198, Page 592 (WCCC 16), Site Parcel 141220401-0100100 is described as follows:

Beginning at the northeast corner of the NW 1/4 of the NE 1/4 Section 4, Township 14, Range 12 East and run west 200 feet, thence south 1056 feet, thence east 200 feet, thence north 1056 feet to point of beginning, all being in the NW 1/4 of the NE 1/4 Section 4, Township 14, Range 12 East and East 1/2 of NE 1/4 lying west of the old Philadelphia and Louisville Road less the south 1/8 Section 4, Township 14, Range 12 East.



Winston County, MS

Winston County online map access is provided as a public service, as is, as available and without warranties, expressed or implied. Content published on this website is for informational purposes only, and is not intended to constitute a legal record nor should it be substituted for the advice or services of a licensed professional. Parcel map information is prepared for the inventory of real property found within County jurisdiction and is compiled from recorded deeds, plats, and other public documents in accordance with Land Records Technical Specifications for Base, Cadastral and Digital Mapping Systems. Users are hereby notified that the aforementioned public record sources should be consulted for verification of information. With limited exception, data available on this website originates from Winston County Land Records GIS and is maintained for the internal use of the County. The County of Winston and the Website Provider disclaim all responsibility and legal liability for the content published on this website. The user agrees that Winston County and its Assigns shall be held harmless from all actions, claims, damages or judgments arising out of the use of County data.



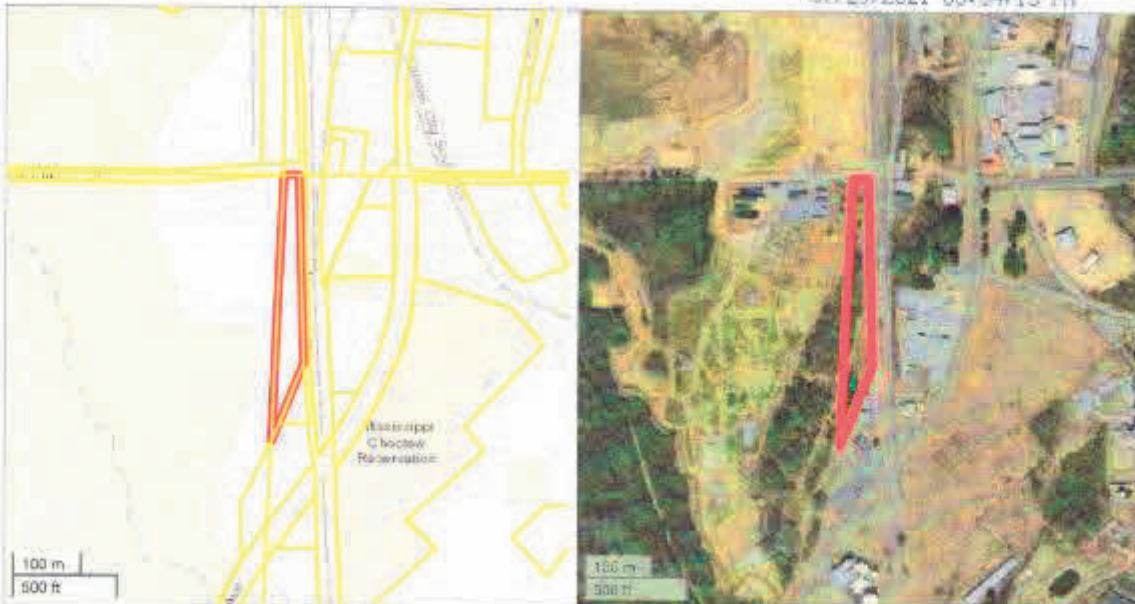
Winston County Tax Assessor/Collector
 16540 W Main St
 Louisville, MS 39339
 (662) 773-3694

PARCEL_ID	1412204010100100
OWNER	LOUISVILLE MS CITY OF
ADDRESS1	
ADDRESS2	P O BOX 510
CITY	LOUISVILLE
STATE	MS
ZIP	39339
ZIP4	02
FOUNDED_YEAR	14
ACRES	12
LEGAL1	PT SE4 NE4; PT NW4 NE4
LEGAL2	
LEGAL3	
LEGAL4	1110
LEGAL5	23.39
LEGAL6	0
LEGAL7	46.61
LEGAL8	0
LEGAL9	70
LEGAL10	4440
LEGAL11	0
LEGAL12	9903
LEGAL13	0
LEGAL14	14343
LEGAL15	0
LEGAL16	0
LEGAL17	14343
LEGAL18	1
LEGAL19	
LEGAL20	364
LEGAL21	105
LEGAL22	1465993600000
LEGAL23	0

Exhibit B: Parcel 141220302-0200300 Legal Description

According to the Winston County Chancery Court Clerk's Office, Deed Book 198, Page 592 (WCCC 16), Site Parcel 141220302-0200300 is described as follows:

A strip of land on the west side of NW 1/4 of Section 3, Township 14, Range 12 East, described as beginning at the northwest corner of the NW 1/4 of Section 3, Township 14, Range 12 East and run south on the section line 23 chains and 32 links, thence east 3 chains and 68 links to right-of-way of the Gulf, Mobile and Northern Railroad (now Gulf, Mobile and Ohio Railroad), thence north along said right-of-way 23 chains and 32 links more or less to the north section line, thence west of section line to point of beginning.



Winston County, MS

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Winston County Tax Assessor/Collector
 16540 W Main St
 Louisville, MS 39339
 (662) 773-3694

PARCEL_ID	1412203020200300
ADDRESS1	LOUISVILLE MS CITY OF
ADDRESS2	P O BOX 510
CITY	LOUISVILLE
STATE	MS
ZIP	39339
ZIP_PLUS4	03
TOWNSHIP	14
RANGE	12
SECTION	PT NE4 NW4 W/RD AM CREOSOTE
LOCAL1	
LOCAL2	1110
LOCAL3	0
LOCAL4	0
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Exhibit C: Parcel 151283304-0104206 Legal Description

All that tract or parcel of land lying and being in the SE1/4 of Section 33, Township 15 North, Range 12 East, Choctaw Meridian, Winston County, Mississippi, more particularly described as follows:

Commencing at an 8" x 8" wood post which is at the northwest corner of the SE1/4 of the SE1/4 of said Section 33 which is at plane coordinate position North 1,314,476.23 feet and East 914,285.07 feet, based on Transverse Mercator Projection Mississippi East Zone, NAD '83;

Thence East along the north line of the SE1/4 of the SE1/4 of said section a distance of 249.98 feet to a 5/8" iron rod which is at a corner of a tract of land, now or formerly, owned by the Trustees of Warren Chappel and at a corner of a tract of land, now or formerly, owned by the State of Mississippi;

Thence S 00° 19' 58" E along the boundary of said Chappel tract and along the boundary of said State of Mississippi tract a distance of 104.99 feet to a 5/8" iron rod which is at a corner of said Chappel tract and the **POINT OF BEGINNING**;

Thence along the boundary of said State of Mississippi tract the following bearings and distances:

S 00° 19' 58" E a distance of 144.99 feet to a 5/8" iron rod;
S 39° 04' 58" W a distance of 388.28 feet to a 5/8" iron rod;
S 00° 41' 32" E a distance of 172.78 feet to a 5/8" iron rod;
N 89° 35' 04" W a distance of 89.99 feet to a 5/8" iron rod;
S 00° 41' 32" E a distance of 554.65 feet to a 5/8" iron rod which is the northern right-of-way line of Baremore Street; thence N 89° 38' 31" W along the northern right-of-way line of said street a distance of 397.51 feet to a 5/8" iron rod; thence N 12° 24' 59" W a distance of 244.15 feet to a 5/8" iron rod; thence N 05° 07' 11" E a distance of 460.16 feet to a 5/8" iron rod; thence N 56° 57' 36" E a distance of 573.56 feet to a 5/8" iron rod which is at a corner of said Chappel tract; thence along the boundary of said Chappell tract the following bearings and distances;

N 70° 59' 03" E a distance of 142.64 feet;
S 46° 56' 20" E a distance of 15.27 feet;
N 69° 20' 22" E a distance of 63.42 feet;
N 25° 00' 44" E a distance of 113.34 feet, more or less, to the point of beginning

Containing 9.90 acres, more or less, and being a part of the same land described in a deed to Boydston Lumber Co., Inc. from Thomas R. Boydston and wife, Leah H. Boydston, dated 17 September 2010 and recorded in Deed Book 321, pages 209 through 213, of the records in the Office of the Clerk of Chancery Court of Winston County, Mississippi, and designated as Tract 101 of the American Creosote Works Superfund Site, Louisville, Mississippi.

Exhibit D: Parcel 151283304-0105200 and Legal Description

Site Parcel 151283304-0105200 is comprised of two tracts of property. Historically, the larger tract has been conveyed with Site Parcel 151283304-0105201. No concise legal description for the tract has ever been recorded. According to the Winston County Chancery Court Clerk's Office, Deed Book 197, Page 601, the larger tract and Site Parcel 151283304-0105201 are described as follows:

SE 1/4 of SE 1/4, Section 33, Township 15, Range 12 East less the land described as: Beginning at a point on the north line of said quarter section 573 feet west of the main line of N.O.M. and C.R.R. (now Gulf, Mobile and Ohio) thence due West 425 feet to a point, thence south 22 degrees west 390 feet to a point, thence south 67 degrees 45 minutes east 545 feet to a point, thence north 50 degrees east 540 feet to a point, thence due north 170 feet to a point, thence due west 354 feet to a point, thence north 22 degrees east 60 feet to a point of beginning, containing 8 acres more or less, and also less the land described as: beginning at the northwest corner of SE 1/4 of SE 1/4 run east 250 feet, thence south 250 feet, thence in a southwesterly direction to a point 550 feet south of beginning point, thence 550 feet north to point of beginning. And, Free and undisputed water rights in and to such an amount of water necessary to operate creosote plant in pond located on and also possibility of reverter conditioned upon failure of grantee to maintain pond or to allow creosote plant to use water from pond located on property described as, beginning at a point on the north line of said quarter section 573 feet west of the main line of N.O.M. and C.R.R. (now Gulf, Mobile and Ohio Railroad) thence due West 425 feet to a point, thence south 22 degrees west 390 feet to a point, thence south 67 degrees 45 minutes east 545 feet to a point, thence north 50 degrees east 540 feet to a point, thence due north 170 feet to a point, thence due west 354 feet to a point, thence north 22 degrees east 60 feet to a point of beginning, containing 8 acres more or less. In a subsequent instrument, meant to convey only Site Parcel 151283304-0105201 and recorded in the Winston County Chancery Court Clerk's Office, Deed Book 256, Page 613, the following language was added to the above legal description: LESS AND EXCEPT: That portion of land in Section 33, Township 15 North, Range 12 East, which lies North of Baremore Street and West of the right-of-way of the railroad spur which enters the said Southeast Quarter of the Southeast Quarter in the Northeast corner thereof and runs South Southwesterly through the said Southeast Quarter of the Southeast Quarter intersecting Baremore Street.

According to the Winston County Chancery Court Clerk's Office, Deed Book 197, Page 602, the smaller tract of Site Parcel 151283304-0105200 is described as follows: Beginning at the southeast corner of the SW 1/4 of SE 1/4 Section 33, Township 15, Range 12 East, and run west 90 feet; thence north 590 feet, thence east 90 feet, thence south to a point of beginning 590 feet, being in the SW 1/4 of SE 1/4, Section 33, Township 15, Range 12 East.



Winston County, MS

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Winston County Tax Assessor/Collector
 16540 W Main St
 Louisville, MS 39339
 (662) 773-3694

PARCEL_ID	1512833040105200
ADDRESS1	CITY OF LOUISVILLE MS
ADDRESS2	P O BOX 510
CITY	LOUISVILLE
STATE	MS
ZIP	39339
COUNTY	33
TOWNSHIP	15
RANGE	12
LEASHT	IN SE4 SE4 & IN SW4 SE4
LEASHT2	
LEGAL3	
LEGAL4	
LEGAL5	
LEGAL6	
LEGAL7	
LEGAL8	
LEGAL9	
LEGAL10	
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Exhibit E: Parcel 151283304-0105201 Legal Description

SE1/4 of SE1/4 Section 33, Township 15, Range 12 East less the land described as:

Beginning at a point on the North line of said quarter section 573 feet West of the main line of N.O.M. and C.R.R. (now Gulf, Mobile and Ohio),

Thence due West 425 feet to a point, Thence south 22 degrees West 390 feet to a point, Thence South 67 degrees 45 minutes East 545 feet to a point, Thence North 50 degrees East 540 feet to a point, Thence due North 170 feet to a point, Thence due West 354 feet to a point, Thence North 22 degrees East 60 feet to a point of beginning, containing 8 acres more or less,

And also less the land described as:

Beginning at the Northwest corner of SE1/4 of SE1/4 run East 250 feet, Thence South 250 feet, Thence in a Southwestwardly direction to a point 550 feet South of beginning point, Thence 550 feet North to a point of beginning;

And less and except:

That portion of land in Section 33, Township 15 North, Range 12 East, which lies North of Baremore Street and West of the right-of-way of the railroad spur which enters the said Southeast Quarter of the Southeast Quarter in the Northeast corner thereof and runs South Southwesterly through the said Southeast Quarter of the Southeast Quarter intersecting Baremore Street.

Free and undisputed water rights in and to such an amount of water necessary to operate creosote plant in pond located on and also possibility of reverter conditioned upon failure of grantee to maintain pond or to allow creosote plant to use water from pond located on property described as, beginning at a point on the North line of SE1/4 of SE1/4 Section 33, Township 15, Range 12 East 573 feet West of the main line of N.O.M. and C.R.R. (now Gulf, Mobile and Ohio Railroad), thence due west 425 feet to a point, thence South 22 degrees west 390 feet to a point, thence South 67 degrees 45 minutes East 545 feet to a point, thence North 50 degrees East 540 feet to a point, thence due North 170 feet to a point, thence due West 354 feet to a point, thence North 22 degrees east 60 feet to a point of beginning, containing 8 acres, more or less; and

The South 1320 feet of Block 7 of the Louisville Improvement Company Addition to the City of Louisville, Mississippi, according to the map of said addition on file in the Chancery Clerk's Office, Winston County, Mississippi, said tract being on the West side of SW1/4 of SW1/4 Section 34, Township 15, Range 12 East; and

Beginning at the Southeast corner of the SW1/4 of SE1/4 Section 33, Township 15, Range 12 East and run West 90 feet, Thence North 590 feet, Thence East 90 feet, Thence South to a point of beginning 590 feet, being in the SW1/4 of SE1/4 Section 33, Township 15, Range 12 East; and

Beginning at the Northeast corner of the NW1/4 of the NE1/4 Section 4, Township 14, Range 12 East and run West 200 feet, Thence South 1056 feet, Thence East 200 feet, Thence North 1056 feet to point of beginning, all being in the NW1/4 of the NE1/4 Section 4, Township 14, Range 12 East and East 1/2 of NE1/4 lying West of the old Philadelphia and Louisville Road less the South 1/8 Section 4, Township 14, Range 12 East; and

A strip of land on the West side of NW1/4 of Section 3, Township 14, Range 12 East, described as beginning at the Northwest corner of the NW1/4 of Section 3, Township 14, Range 12 East and run South on the section line 23 chains and 32 links, thence East 3 chains and 68 links to right-of-way of the Gulf, Mobile and Northern Railroad (now Gulf, Mobile and Ohio Railroad), thence North along said right-of-way 23 chains and 32 links more or less to the North section line, thence West of section line to point of beginning.

The above described property subject to the following:

Railroad right-of-way granted to New Orleans, Mobile and Chicago Railroad two strips of land totaling 8646 feet in length and 20 feet wide, except where tracks pass building, being 10 feet on each side of center line of tracks of the Treat-All Wood Products, Inc. plant in the SE1/4 of SE1/4 of Section 33 and SW1/4 of SW1/4 Section 34, Township 15, Range 12 East. Tracks are set aside for the sole use of the Treat-All Wood Products, Inc. in the operation of their creosoting plant, tracks not to be removed unless plant is removed, in event of removal land reverts to owner. Land Deed Book 41, Page 569.

Right-of-way granted to Mississippi Power Company a strip of land 100 feet in width for the purpose of erecting and maintaining electric, telephone, transmission lines over NW1/4 of NE1/4 less 8 acres on South side thereof, Section 4, Township 14, Range 12 East; and 8 acres in Northeast corner of the NE1/4 of NW1/4, Section 4, Township 14, Range 12; described as, 50 feet on each side of a line and the continuation thereof commencing at a point on the North boundary of said Section 4, this point being West 2637.2 feet from the Northeast corner of said Section 4, this is the beginning point; thence South 20 degrees and 10 minutes East 1190 feet more or less to the South boundary line of said NW1/4 of NE1/4, less 8 acres off the South side of Section 4, Township 14, Range 12 East, Land Deed Book 41, Page 569.



Winston County, MS

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Winston County Tax Assessor/Collector
 16540 W Main St
 Louisville, MS 39339
 (662) 773-3694

PARCEL_ID	1512833040105201
ADDRESS1	LOUISVILLE MS CITY OF
ADDRESS2	
ADDRESS3	P O BOX 510
CITY	LOUISVILLE
STATE	MS
ZIP	39339
ZIP4	33
TOWNSHIP	15
RANGE	12
LEASHT	PT E2 SE4 SE4
ACRES	
TOTAL_ACR	4110
CURR_ACR	0
PROPOSED	0
UNDEVELOP	0
WATERWAY	0
TOTAL_ASP	0
LAND_AREA	0
CRD_VALC	0
SPRING_VALC	0
UNCL_VALC	0
IMP_VALC	0
MS_VALC1	0
MS_VALC2	0
TOTNVALUE	0
CRD_TAX	1
HOMESTEAD	
CRD_ACR	364
CRD_PAGE	104
BTHISADDR	0

Exhibit F: Parcel 151283304-0105300 Legal Description

Certain property situated in the East Half of the Southeast Quarter of Section 33, Township 15 North, Range 12 East of the Choctaw Meridian at Louisville, Winston County, Mississippi, said property being all of the Illinois Central Gulf Railroad Company's Newton District "Louisville Reservoir" property is described as follows:

Begin at a point on the South line of the Northeast Quarter of the Southeast Quarter of said Section 33, 390 feet West from the Southeast corner thereof, and run North 19 degrees 01 minutes East, 1004.1 feet; thence North 14 degrees 01 minutes West, 70 feet; thence West parallel with said South "Quarter/Quarter" line, 344.2 feet; thence South 22 degrees West, 1117.1 feet; thence West parallel with said South "Quarter/Quarter" line 50.8 feet; thence South 22 degrees West 370 feet; thence South 67 degrees 45 minutes East, 545 feet; thence North 50 degrees East, 540 feet; thence North parallel with the East line of said East Half of the Southeast Quarter, 170 feet; thence West parallel with said South "Quarter/Quarter" line, 354 feet; thence North 22 degrees east, 60 feet, more or less, to a point in the aforesaid South "Quarter/Quarter" line; thence East along said South line 80 feet more or less, to return to the point of beginning.



Winston County, MS

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Winston County Tax Assessor/Collector
 16540 W Main St
 Louisville, MS 39339
 (662) 773-3694

PARCEL ID	1512833040105300
CITY	CITY OF LOUISVILLE
ADDRESS	PO DRAWER 510
CITY	LOUISVILLE
STATE	MS
ZIP	39339
COUNTY	33
TOWNSHIP	15
SECTION	12
LEGAL	IN E1/2 SE1/4
LEGAL	
FEEDBACK	4110
COULT_ADR	0
COULT	0
IRREGUL_XCEL	0
IRREGUL	0
TOTALTAC	0
VAL_TAX	0
VAL_TAX2	0
VAL_TAX3	0
UNREGUL_AREA	0
UNREGUL	0
VAL_VACU	0
VAL_VACU2	0
TOTALVALUE	0
CAPITAL_EXP	1
MARKETSALE	319
MARKETSALE2	148
MARKETSALE3	127100000000
REPRESENTOR	0

Exhibit G: Parcel 151283304-0105400 Legal Description

According to the Winston County Chancery Court Clerk's Office, Deed Book 334, Page 439, Site Parcel 151283304-0105400 is described as follows:

Tract 1: Lot 1 and 44 feet off entire east side of Lot 2 of Block 1 of the A.S. Kirk Addition to the city of Louisville, according to plat of said addition on file in the office of the Chancery Clerk of Winston County, Mississippi.

Tract 2: Lot 1, Block 2 of the said A.S. Kirk Addition to the City of Louisville, Mississippi.

Tract 3: All that part of a street formerly known as Cox street lying South of that property described in Tract 1 above and North of that property described in Tract 2 above, being that certain property vacated as a street by the city of Louisville, Mississippi between Park Street and Kirk Street in the city of Louisville, Mississippi as outlined under a resolution of the Mayor and Board of Aldermen in Minute Book 9, at page 46 of the minutes of the City of Louisville, Mississippi.

All of the above property being in NE $\frac{1}{4}$ of SE $\frac{1}{4}$ of Section 33, Township 15 North, Range 12 East Winston County, Mississippi.

AND ALSO

From the Southeast corner of the NE $\frac{1}{4}$ of SE $\frac{1}{4}$ Section 33, Township 15 North, Range 12 East, run West 136 feet to the point of beginning, from the point of beginning run West 254 feet; thence North 19 degrees 59 minutes East 1010 feet to West right-of-way line of Railroad Avenue; thence South along West right-of-way line of the GM&O Railroad Spur 519 feet to the point of beginning, containing 3.8 acres and being part of NE $\frac{1}{4}$ of SE $\frac{1}{4}$ of; Section 33, Township 15 North, Range 12 East



Winston County, MS

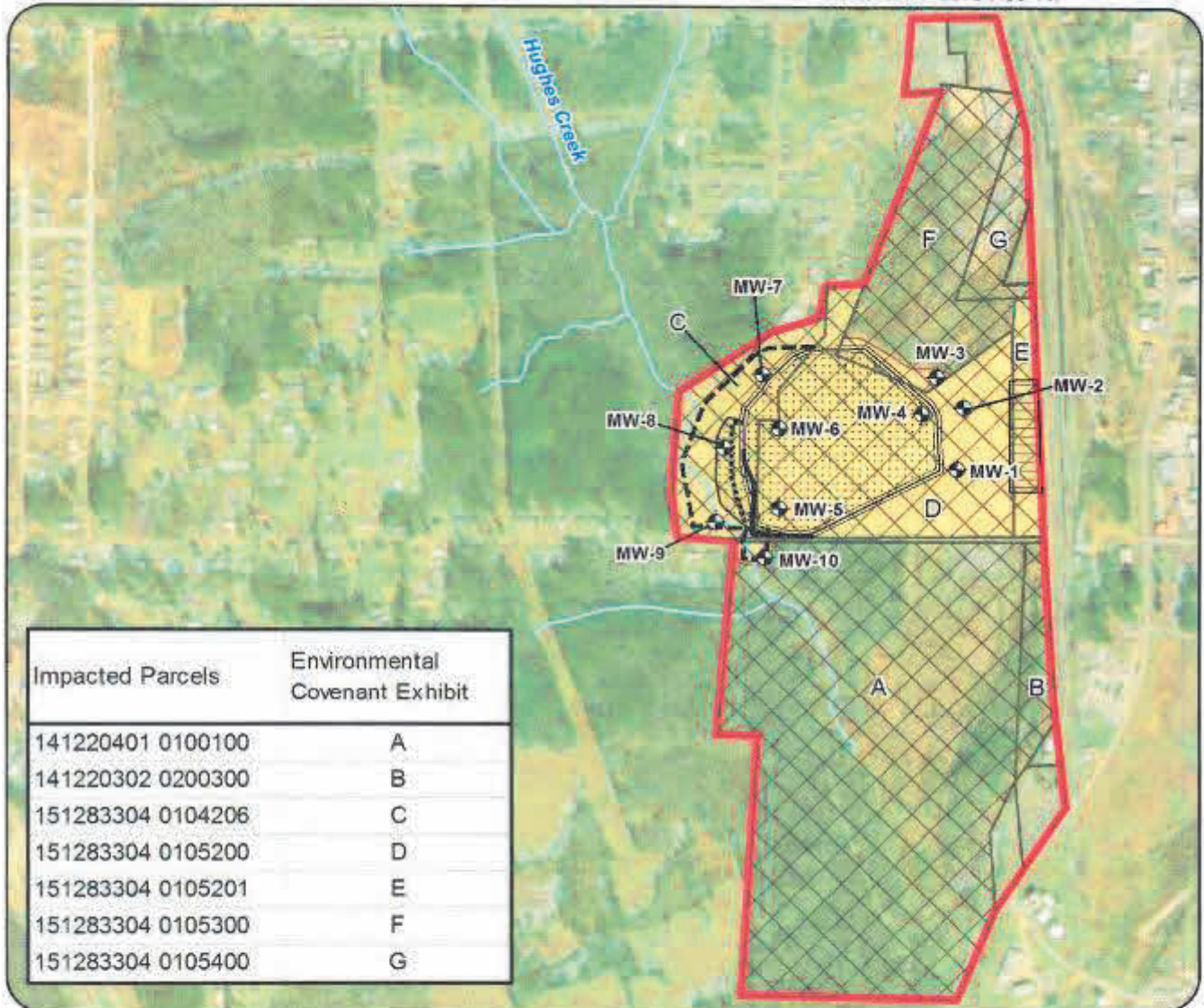
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Winston County Tax Assessor/Collector
 16540 W Main St
 Louisville, MS 39339
 (662) 773-2694

PARCEL_ID	1512833040105400
OWNER	CITY OF LOUISVILLE
ADDRESS1	
ADDRESS2	314 NORTH COURT AVE
CITY	LOUISVILLE
STATE	MS
ZIP	39339
SECTION	33
TOWNSHIP	15
RANGE	12
LOCALITY	IN NE4 SE4
ACRES	
FEET	
PAR_FOOT	4110
DEPT_ACR	2.9
INDUST_ACR	0
INDUST_ACR	1.5
INDUST_ACR	0
TOTAL_ACR	4.4
AGRI_WALE	856
GRV_WALE	0
RESID_WALE	303
UNCL_WALE	0
	1159
REF_WALE	0
REF_WALE	0
TOTAL_WALE	1159
DEED_PAGE	1
MARKET_ID	
MARKET_ID	334
DEED_PAGE	439
	134496800000
MARKET_ID	0

Exhibit H: Environmental Covenant Parcel Map



0 250 500 1,000 Feet

Sources: Esri, U.S. Census Bureau 2019 TIGER/Line Geodatabases, Bureau of Transportation Statistics, DigitalGlobe, GeoEye, Earthstar Geographics, DeLorme, Tele Atlas, AND, First American, UNEP, WCMC, USGS, CNES/Airbus DS, USDA, AeroGRID, IGN, the GIS User Community and the 2016 FYR.

Legend

- Approximate Site Boundary
- Former Process Area Subsurface Soil Stabilization Area
- Parcels Subject to Restrictions
- Areas Subject to Additional Restrictions
- Approx. Cap (Including 2016 Cap Extension)
- Parcel Boundary
- Approximate Slurry Wall
- Monitoring Well
- Approx. 2007 Removal Action Sheet Piling Wall
- Approx. 2016 Removal Action Sheet Piling Wall
- DSM Containment Wall



American Creosote Works, Inc. Superfund Site

City of Louisville, Winston County, Mississippi

I certify this instrument was filed on 07/29/2021 03:34:15 PM and recorded in the

Book 393 Page 3 - 32
 Rust Foster, Chancery Clerk
J. Alexander, DC