

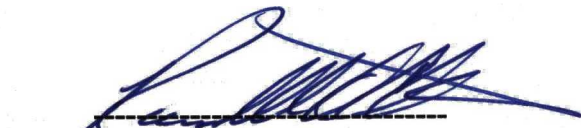
**FIFTH FIVE-YEAR REVIEW REPORT FOR
DISTLER BRICKYARD SUPERFUND SITE
HARDIN COUNTY, KENTUCKY**




SEPTEMBER 2018

Prepared by

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Date



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LIST OF ABBREVIATIONS AND ACRONYMS

1,1,1-TCA	1,1,1-Trichloroethane
ARAR	Applicable or Relevant and Appropriate Requirement
ASC	Allowable Soil Concentration
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CGA	Coarse-Grained Alluvium
CIC	Community Involvement Coordinator
COC	Contaminant of Concern
DCE	Dichloroethylene
EPA	United States Environmental Protection Agency
ESD	Explanation of Significant Differences
FGA	Fine-Grained Alluvium
FS	Feasibility Study
FYR	Five-Year Review
HQ	Hazard Quotient
IC	Institutional Control
KDEP	Kentucky Department for Environmental Protection
KNREPC	Kentucky Natural Resources Environmental Protection Cabinet
LTRA	Long Term Response Action
MCL	Maximum Contaminant Level
µg/kg	Micrograms per Kilogram
µg/L	Micrograms per Liter
mg/kg	Milligrams per Kilogram
NA	Not Applicable
NCP	National Contingency Plan
ND	Not Detected
NE	Not Established
NPL	National Priorities List
NT	Not Tested
O&M	Operation and Maintenance
OU	Operable Unit
PRP	Potentially Responsible Party
RAO	Remedial Action Objective
RI	Remedial Investigation
ROD	Record of Decision
RPM	Remedial Project Manager
RSL	Regional Screening Level
SDWA	Safe Drinking Water Act
TCE	Trichloroethylene
USGS	United States Geological Survey
UU/UE	Unlimited Use and Unrestricted Exposure
VOC	Volatile Organic Compound

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 fifth FYR for the Distler Brickyard Superfund site (the Site). The triggering action for this policy 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). OU1 addresses the soil and groundwater remedy. This FYR addresses OU1.

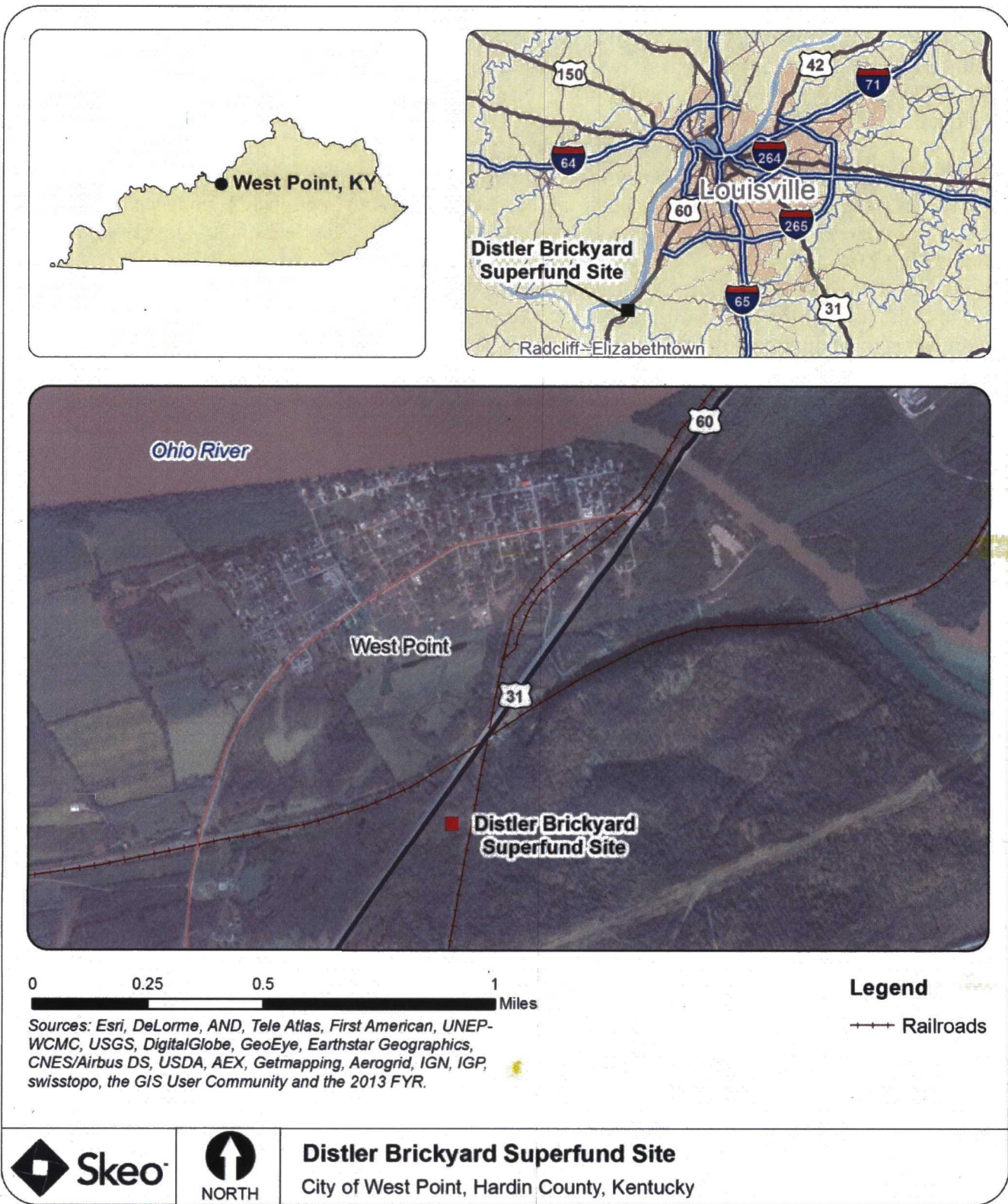
EPA remedial project manager (RPM) Michael Townsend led the FYR. Participants included EPA community involvement coordinator (CIC) Angela Miller, Shital Jiwane and Cheryl Harris from the Kentucky Department for Environmental Protection (KDEP), and Johnny Zimmerman-Ward and Kirby Webster from EPA FYR support contractor Skeo. The review began on 11/13/2017. Appendix A includes documents reviewed as part of this FYR. Appendix B includes the EPA's site status information. Appendix C provides the Site's chronology of events.

Site Background

The 3-acre Site is located in West Point, Kentucky, just north of mile marker 36 on the Dixie Highway (Figure 1). Starting in the late 1800s, a brick manufacturing plant operated on site. In the 1970s, a private citizen leased the site property and began operating a waste recycling and storage facility. He stored and disposed of various types of wastes in drums on site. The facility operated concurrently with a similar operation at the nearby Distler Farm Superfund site. The drums leaked or spilled, resulting in contamination of groundwater, soil and underground air passages in kilns associated with the brick plant. Contaminants of concern (COCs) include volatile organic compounds (VOCs) and heavy metals. The Site is in a rural area of low lying grassland with forestation. The Site is in the Ohio River Valley; the river bank is about 0.2 miles northwest of the Site.

The Site is currently not in use. Current site features include the remains of five former brick kilns, pump stations and wells. The Site also includes an open field covered with grass and shrubs as well as forested areas around the field. An Illinois Central Railroad track runs across the Site, parallel to the location of the former brick kilns. A chain-link fence with a gate at the dirt road entrance parallels the Dixie Highway. The Site is not currently used. The confluence of the Ohio River and the Salt River is about a mile northwest of the Site. The Site lies on alluvium and glacial outwash deposits in the Ohio River Valley. The unconsolidated deposits can be characterized as fine-grained alluvium (FGA). The FGA varies in composition from a silty clay to a clayey fine sand and ranges in thickness. The coarse-grained alluvium (CGA) directly underlying the FGA consists of sandy gravel and gravelly sand.

Figure 1: Site Vicinity Map



Disclaimer: This map and any boundary lines within the map are approximate and subject to change. The map is not a survey. The map is for informational purposes only regarding the EPA's response actions at the Site.

FIVE-YEAR REVIEW SUMMARY FORM

SITE IDENTIFICATION		
Site Name: Distler Brickyard		
EPA ID: KYD980602155		
Region: 4	State: Kentucky	City/County: West Point/Hardin
SITE STATUS		
NPL Status: Final		
Multiple OUs? No	Has the Site achieved construction completion? Yes	
REVIEW STATUS		
Lead agency: EPA		
Author name: Michael Townsend (EPA) and Johnny Zimmerman-Ward and Kirby Webster (Skeo)		
Author affiliation: EPA and Skeo		
Review period: 11/13/2017 – 7/1/2018		
Date of site inspection: 1/18/2018		
Type of review: Policy		
Review number: 5		
Triggering action date: 9/20/2013		
Due date (five years after triggering action date): 9/20/2018		

II. RESPONSE ACTION SUMMARY

Basis for Taking Action

The Kentucky Natural Resources and Environmental Protection Cabinet (KNREPC) initiated enforcement action against the business operator in early 1977. The Federal Bureau of Investigation, the EPA and KNREPC inspected the Site and found a significant number of drums containing waste stored on the site property; 30 of the drums were subsequently sampled. A restraining order served to the business operator prohibited further use of the site property for storage or disposal of industrial waste. A follow-up visit found that he had not immediately heeded the order.

Initial field sampling by the EPA in August 1978 indicated that sampled materials were toxic. In January 1979, KNREPC served an Order to Abate and Alleviate Operations to the business operator. This action prompted a partial removal of drummed wastes from the site property and prevented further storage activities. Between January 1979 and December 1981, the agencies issued several additional orders for further removal of waste from the facility. The business operator ignored the orders. In December 1981, KNREPC requested that the EPA initiate an emergency removal at the site property. The Site's 1986

Remedial Investigation (RI) Report confirmed the soil and groundwater contamination. Table 1 shows the COCs found in groundwater and soil at the Site.

Table 1: COCs, by Media

COC	Soil	Groundwater
Arsenic	X	X
Chromium	X	X
Lead	X	X
Benzene		X
Bis(2-ethylhexyl)phthalate	X	X
2-Butanone	X	X
1,1-Dichloroethylene (DCE)		X
Napthalene	X	X
Toluene	X	X
Trans-1,2-DCE		X
Trichloroethylene (TCE)	X	X
1,1,1-Trichloroethane (1,1,1-TCA)		X
<i>Notes:</i> Blank = contaminant not a COC in the media		

Based on the RI results, the EPA concluded that while COCs were confined to the Site, local hydrogeologic conditions suggested that the contaminants were likely to migrate off site over time. The EPA conducted a feasibility study (FS) between 1985 and 1986 to identify necessary remedial measures.

Response Actions

In March 1982, the EPA removed approximately 2,300 drums of hazardous waste from the Site. The drums contained various liquids, sludge and solids, which were sampled and found to be toxic, corrosive, volatile and flammable. The EPA sampled and removed patches of soil contaminated by leaking drums. The EPA conducted air quality monitoring and geophysical surveys to explore for buried drums. These activities found no air quality problems, two possible areas of buried drums, and potential groundwater contamination from spills and leaking drums. Additional investigations in 1982 confirmed the soil contamination and delineated the extent of groundwater contamination. The EPA placed the Site on the Superfund program's National Priorities List (NPL) on September 8, 1983.

The EPA selected the Site's long-term remedy in the Site's August 1986 Record of Decision (ROD). It identified the following remedial action objectives (RAOs) for the Site:

Surface contamination

- Control source.
- Reduce concentrations of contaminants.
- Control potential migration of surface and subsurface contaminants resulting from contaminated soils.

- Prevent or minimize surface erosion and consequent contaminant runoff, including environmental hazards associated with potential flooding of the Salt River, the Ohio River or both.
- Prevent, minimize or eliminate the on-site potential for exposure by direct contact, the on-site potential for airborne releases and the potential for contaminant migration by surface water pathways.

Groundwater contamination

- Manage contaminant migration.
- Prevent increase of contaminant concentrations.
- Reduce concentrations of contaminants.
- Prevent or minimize further migration of contaminants (plume control).

The Site's 1986 ROD and 1988 Explanation of Significant Differences (ESD) identified the following remedy components for the Site:

- Excavation of contaminated soils to ensure that no water leaching into the aquifer underlying the site will exceed health-based values, removal and off-site disposal of contaminated soil, backfilling with clean soil, regrading and revegetation.
- Extraction and on-site treatment of groundwater to drinking water standards and health-based maximum contaminant levels (MCLs).
- After completion of the remedy, operation and maintenance (O&M) activities to maintain the Site, including mowing and repair of erosion gullies, which might occur in restored areas.

The ROD required remediation of soil and groundwater levels to background levels. After determining the difficulty of attaining the required background levels, the EPA established alternate cleanup levels in the 1988 ESD that would attain the same degree of health protection.

Table 2: Groundwater and Soil COC Cleanup Goals

COC	1988 ESD Groundwater Cleanup Goal (µg/L) ^a	1988 ESD Soil Allowable Soil Concentrations (ASCs) (mg/kg) ^b
Arsenic	50	208
Chromium	50	25,000
Lead	50	21,000
Benzene	5	0.485
2-Butanone	170	1.178
1,1-DCE	7	1.471
Trans-1,2-DCE	70	11.966
Toluene	2,000	803.880
1,1,1-TCA	200	13.398
TCE	5	0.716

Notes: Groundwater cleanup goals from page 6 and 7 of the Site's 1988 ESD

a. ASCs for arsenic, chromium and lead are listed in Attachment A, Appendix C of the 1988 ESD (page 57). Organics are listed in Attachment B, Table 7 of the 1988 ESD (page 85).

µg/L = micrograms per liter

Status of Implementation

The EPA conducted the Site's remedial design between April 1987 and October 1988. Remedial action began on September 18, 1988. Part of the final cleanup included excavation and transport of 42 tractor-trailer loads of contaminated soil out of state for incineration. After each round of excavation, samples from the excavation pits and trenches were analyzed to determine levels of residual contamination. This process continued until about six inches of native soil had been removed and the final laboratory analysis indicated that all contaminants were either at or below the soil ASCs. The Site was backfilled with clean soil and then graded and seeded with grass.

Installation of a pilot groundwater treatment facility finished in 1989, followed by a series of field sampling and hydrogeologic studies that lasted until mid-1993. The Site's permanent water treatment system started operating in September 1994. The groundwater pump-and-treat system used wells to extract contaminated water. On-site carbon filters cleaned contaminated groundwater, then pumped it back into the ground through a set of on-site disposal wells.

The United States Geologic Survey (USGS) conducted groundwater sampling and analysis at the Site from 1995 to 1997 as part of an EPA-commissioned study to determine the effectiveness of the Long-Term Response Action (LTRA) Plan. The Idaho National Engineering and Environmental Laboratory and North Wind Environmental also conducted further site characterization activities. In 2005, North Wind Environmental completed a pilot study that confirmed enhanced bioremediation could remediate chloroethanes. No additional chitin work was conducted after the initial study. The groundwater extraction system has not been operational since 2005 and could not be restarted without extensive overhaul.

KDEP sampled eight wells at the Site in 2007 and determined that contamination above ROD/ESD allowable levels was still present. Based on a recommendation in the 2013 FYR Report and in agreement with the EPA, KDEP abandoned 40 groundwater wells. The wells were no longer able to provide samples representative of aquifers at the Site due to their old age and poor condition. To determine the final status of groundwater contamination (per the 2013 FYR Report recommendation), KDEP installed three pairs of groundwater wells and took soil samples at depth in 2014. Groundwater sampling occurred in April 2015, October 2015 and January 2017.

Institutional Control (IC) Review

Institutional controls were not called for in decision documents. The Site's arsenic and lead surface soil cleanup goals are not protective of residential use. Soil institutional controls are necessary. Current groundwater sampling indicates groundwater COCs have not yet met MCLs. Groundwater institutional controls are necessary until MCLs are achieved (Figure 2). There is no current use on site. Table 3 lists the institutional controls associated with areas of interest at the Site.

Table 3: Summary of Planned and/or Implemented 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 Parcel(s)	IC Objective	Title of IC Instrument Implemented and Date (or planned)
Groundwater	Yes	No	136-00-00-027	Prevent exposure to contaminated groundwater	None in place
Soil	Yes	No	136-00-00-027	Prevent exposure to contaminated soil	None in place

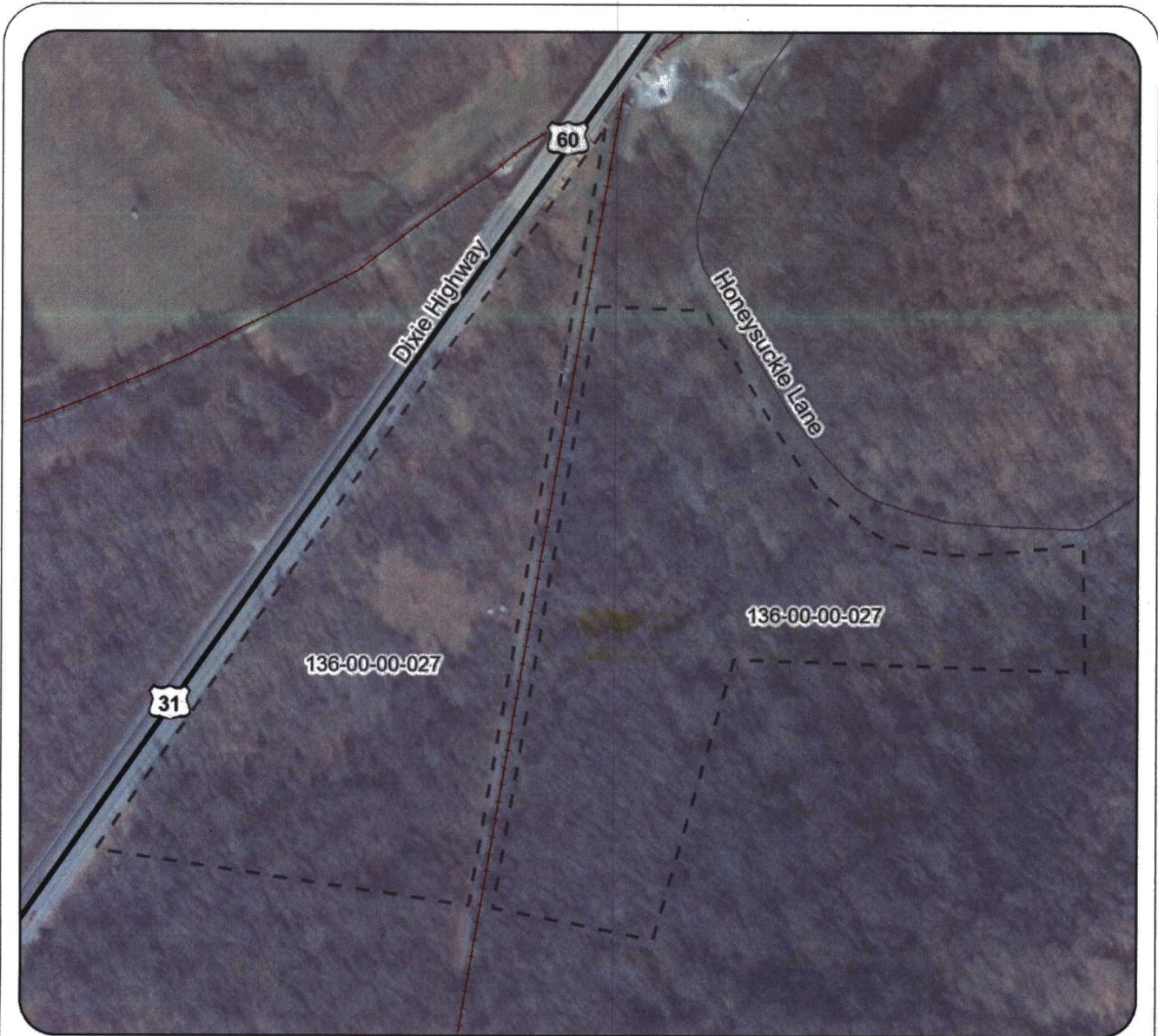
Systems Operations/Operation and Maintenance (O&M)

ROD-estimated annual operating costs for years three to 30 for groundwater were \$45,360 per year. KDEP is responsible for current O&M activities. These activities consist of mowing and general site maintenance, including fencing, signage and a locked gate. No remediation is being conducted while remaining contamination is delineated and next steps are being determined. In 2013, costs were high because KDEP abandoned wells that were no longer usable. 2014 costs include the installation of three new paired monitoring wells. Table 4 shows annual O&M costs for construction activities. KDEP conducts activities, costs are recovered from a potentially responsible party (PRP) group.

Table 4: O&M Costs Over the FYR Period

Year	Total Cost
2013	\$105,000
2014	\$25,000
2015	\$3,000
2016	0
2017	\$1,000

Figure 2: Institutional Control Map



0 125 250 500
 Feet

Legend

- Approximate Property Boundaries
- Railroads

Sources: Esri, DeLorme, AND, Tele Atlas, First American, UNEP-WCMC, USGS, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, the GIS User Community and the 2013 FYR.



Distler Brickyard Superfund Site
 City of West Point, Hardin County, Kentucky

Disclaimer: This map and any boundary lines within the map are approximate and subject to change. The map is not a survey. The map is for informational purposes only regarding the EPA's response actions at the Site.

III. PROGRESS SINCE THE PREVIOUS REVIEW

This section includes the protectiveness determinations and statements from the previous FYR as well as the recommendations from the previous FYR and the status of those recommendations.

Table 5: Protectiveness Determinations/Statements from the 2013 FYR

OU #	Protectiveness Determination	Protectiveness Statement
1	Short-term Protective	The remedy at the Site currently protects human health and the environment because contaminated soils were removed from the Site and, historically, contaminated groundwater has not been detected at sentinel wells. However, in order for the remedy to be protective in the long-term, the following actions need to be taken to ensure protectiveness: properly abandon groundwater wells that no longer provide accurate data and install groundwater monitoring wells and sample quarterly for at least one year to determine final status of groundwater contamination.

Table 6: Status of Recommendations from the 2013 FYR

OU #	Issue	Recommendations	Current Status	Current Implementation Status Description	Completion Date (if applicable)
1	Some wells are no longer providing accurate data.	Properly abandon wells that no longer provide accurate data.	Ongoing	KDEP abandoned 40 monitoring wells in 2013. Additional monitoring wells need to be abandoned in difficult-to-access locations.	NA
1	New groundwater monitoring wells have not been installed and confirmatory sampling of groundwater contamination has not been adequately conducted.	Install groundwater monitoring wells and sample quarterly for at least one year to determine final status of groundwater contamination.	Completed	KDEP installed three paired monitoring wells in May 2014 and sampled them in April 2015, October 2015 and January 2017.	1/1/2017

IV. FIVE-YEAR REVIEW PROCESS

Community Notification, Community Involvement and Site Interviews

A public notice was made available by posting in the Sentinel newspaper on 3/15/2018 (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, West Point City Hall, located at 509 Elm Street in West Point, Kentucky.

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.

KDEP's Cheryl Harris stated that the groundwater remediation system has not been operational for some time. KDEP installed three pairs of new wells in 2014. One shallow well yielded water containing contaminants. Areas around the former brick ovens where underground voids are present are a potential

safety hazard. Additional work is needed to address remaining groundwater contamination. She recommends a hydrogeologic review of the well logs and geology at the Site to determine if the new wells are screened at the proper interval. She also noted that a soil sample taken during the installation of the groundwater monitoring wells identified trichloroethene present at 557 µg/kg at 35 feet below the surface of the ground.

Data Review

This section summarizes groundwater and soil sampling conducted during the past five years in the FGA (shallow aquifer) and the CGA (deeper aquifer).

Groundwater

A total of six new wells are currently located on site (Figure 3). The wells were placed in areas of previous contamination discovered during initial RI work. The new wells were sampled during three events, in April and October 2015 and January 2017.

DBMW-1S is the only shallow well that could be sampled during the sampling events. The other two shallow wells (DBMW-2S and DBMW-3S) did not contain any water during the sampling events. Table 7 shows results from shallow well DBMW-1S. Samples collected in April 2015 were analyzed for metals and VOCs. Later samples were only analyzed for VOCs. TCE is the only contaminant that exceeded ESD cleanup goals. However, only one shallow well yielded water; it is unknown if additional contamination may be present and at what concentrations. No COCs were detected in groundwater samples above ESD cleanup goals from the deep groundwater wells (DBMW-1D, DBMW-2D and DBMW-3D). The arsenic detection limits are greater than the current MCL. Detection limits were not provided for all samples without detections.

Table 7: Groundwater Sampling Results

COC	ESD Groundwater Cleanup Goal (µg/L)	Current MCL (µg/L) ^a	DBMW-1S		
			April 2015	October 2015	January 2017
Arsenic	50	10	<50 dissolved <25 total	NT	NT
Chromium	50	100	<10 dissolved 8.1 total	NT	NT
Lead	50	15	<10 dissolved 22 total	NT	NT
Benzene	5	5	ND	ND	<5
2-Butanone	170	No MCL	ND	ND	<25
1,1-DCE	7	7	ND	ND	<5
Trans-1,2-DCE	70	100	6.9	<5	5.8
Toluene	2,000	1,000	ND	ND	<5
1,1,1-TCA	200	200	ND	ND	<5
TCE	5	5	13	12	5.6

Notes:

a. National Primary Drinking Water Regulations, available at: <https://www.epa.gov/ground-water-and-drinking-water/national-primary-drinking-water-regulations> (accessed 2/28/2018)

< = not detected above listed detection limit

NT = not tested

ND = not detected, detection limit not provided (from Table 3 of the 2017 Sampling Report)

Bold = detected above cleanup goals
 µg/L = micrograms per liter
 Source: 2017 Sampling Report. KDEP. September 2017.

KDEP recommends a hydrogeologic review of the dry wells to evaluate their locations and screened intervals. Additional remedial measures such as additional in-situ groundwater treatment may be considered for remaining groundwater contamination.

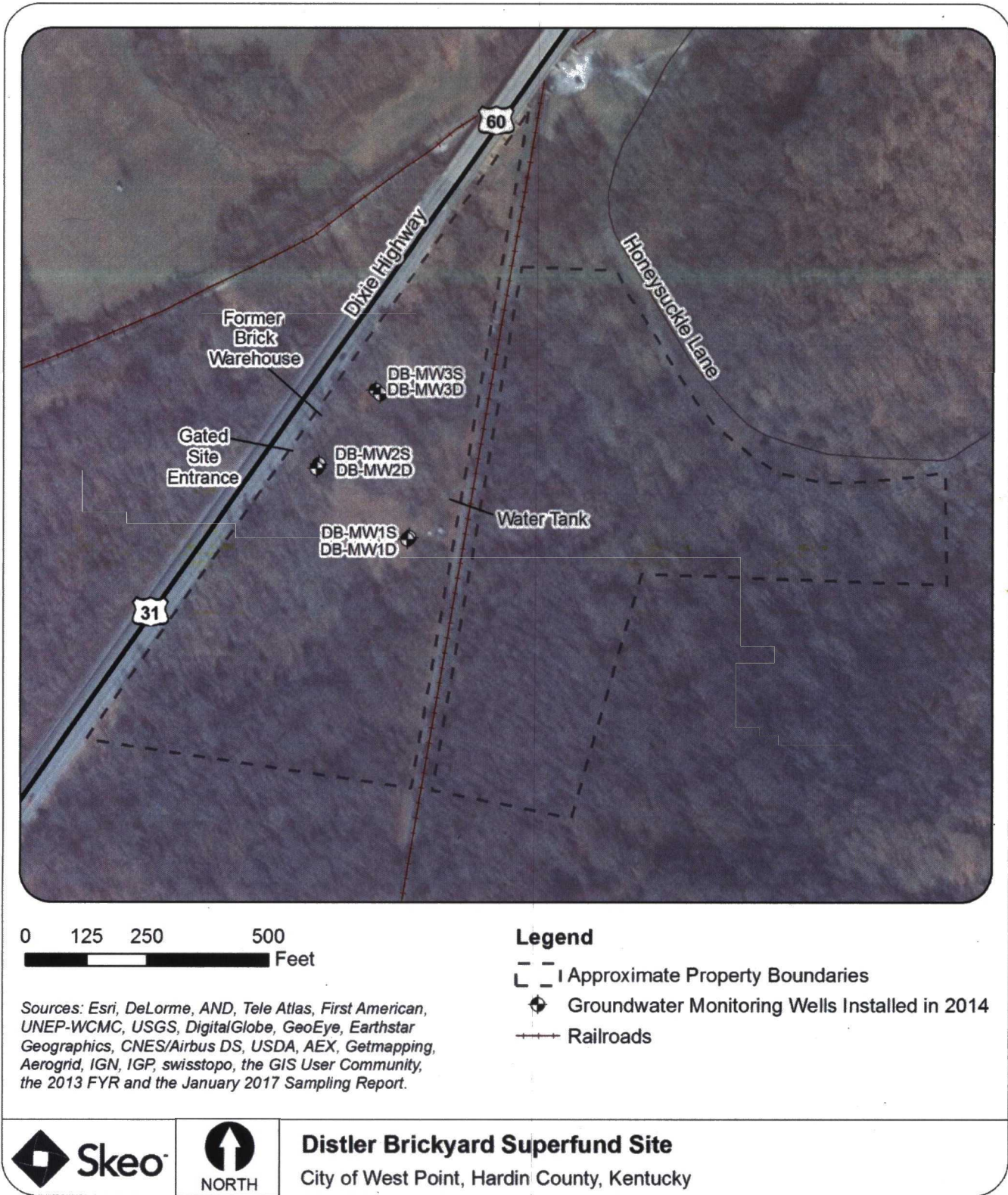
Soil

Soil remediation in 1988 removed contaminated soils above ASCs. The Site’s arsenic and lead surface soil cleanup goals are not protective of residential use (Table I-2). KDEP conducted soil sampling during the installation of the new groundwater monitoring wells in 2014. Samples were taken at incremental depths of 35, 55 and 70 feet below ground surface. Soil analytical results are shown in Table 8. No contaminants were detected above their ESD cleanup goals at depth in 2014.

Table 8: Soil Concentrations in 2014

COC	ESD Soil ASCs (mg/kg)	Maximum Concentration 2014 (mg/kg)
Arsenic	208	11.2 (DBMW3D55)
Chromium	25,000	16.9 (DBMW2D35)
Lead	21,000	14.6 (DBMW2D35)
Benzene	0.485	0.0519 (DBMW2S35)
2-Butanone	1.178	ND (0.9) (DBMW2S35)
1,1-DCE	1.471	ND (0.180) (DBMW2S35)
Trans-1,2-DCE	11.966	0.0033 (DBMW1D70)
Toluene	803.880	ND (0.450) (DBMW2S35)
1,1,1-TCA	13.398	ND (0.180) (DBMW2S35)
TCE	0.716	0.557 (DBMW2S35)
<i>Notes:</i> Source: 2014 Soil Assessment and Monitoring Well Installation Report mg/kg = milligrams per kilogram ND = not detected		

Figure 3: Detailed Site Map



Disclaimer: This map and any boundary lines within the map are approximate and subject to change. The map is not a survey. The map is for informational purposes only regarding the EPA's response actions at the Site.

Site Inspection

The FYR site inspection took place on January 18, 2018. In attendance were Shital Jiwane and Cheryl Brown from KDEP and Johnny Zimmerman-Ward and Kirby Webster from EPA FYR contractor Skeo. The purpose of the inspection was to assess the protectiveness of the remedy. Appendix F includes the site inspection checklist. Appendix G includes site inspection photographs.

The Site was accessed from the Dixie Highway. A locked gate restricted access to the Site. Participants toured the former location of the old brickyard. Brick debris remains from the brick kilns. Debris from the brickyard also remains on site. Underground voids are present around the former brick ovens and are a potential safety hazard. Empty tanks remain on site from previous remedial activities. The Site was not overgrown and wells were clearly visible. Access is not restricted from the east of the Site. KDEP and the EPA are working to determine next steps for the Site.

In 2007, the Site was leased for three years for oil and natural gas exploration and exploitation. In 2010, the lease was extended for an additional three years. Current plans for these operations are unknown; no oil and natural gas exploration equipment was observed on site during the site inspection.

On January 18, 2018, Skeo staff visited West Point City Hall, the designated site repository, as part of the site inspection. There were no documents related to the Site at the repository. KDEP updated the repository in February 2018 with all site documents.

V. TECHNICAL ASSESSMENT

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

Question A Summary:

The remedy is functioning partially as intended by decision documents. The 1986 ROD and 1988 ESD included excavation of contaminated soil and extraction and treatment of contaminated groundwater. Soil excavations have finished. The groundwater extraction and treatment system was shut down before groundwater cleanup goals were met. KDEP installed new groundwater wells in 2014 and conducted three rounds of sampling in newly installed groundwater wells. Two shallow wells have not produced water for sampling. The third shallow groundwater well shows levels of TCE above cleanup goals, though concentrations have decreased from 2015 to 2017. To evaluate the extent of remaining shallow groundwater TCE contamination, KDEP recommends a hydrogeologic review of the dry wells to evaluate their locations and screened intervals.

Institutional controls were not called for in decision documents. Soil remediation was conducted in late 1988. After each round of excavation, samples from the excavation pits and trenches were analyzed to determine levels of residual contamination. This process continued until about six inches of native soil had been removed and the final laboratory analysis indicated that all contaminants were either at or below ASCs. The Site's arsenic and lead surface soil cleanup goals are not protective of residential use (Table I-2). Subsurface soil sampling conducted in 2014 in coordination with the installation of groundwater monitoring wells indicates that remaining concentrations of arsenic and lead at depth at the Site are less than current residential regional screening level (RSLs) (Appendix I, Table I-3). Institutional controls are necessary when soil conditions can no support unrestricted use.

Groundwater sampling indicates some contamination remains in one well that yielded water. Institutional controls are required when groundwater contamination exists.

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:

The exposure assumptions and RAOs used at the time of the remedy are still valid. The groundwater cleanup goals established in the 1988 ESD were based on federal and state drinking water standards. Since 1988, the MCLs have become more stringent for arsenic, lead and toluene (Appendix H, Table H-1). Current groundwater standards should be used to evaluate remedy performance, once additional data are obtained on aquifer conditions. The chemical 1,4-dioxane, which has historically been used as a stabilizing agent in chlorinated solvents, primarily 1,1,1-trichloroethane (1,1,1-TCA), was most recently analyzed in site groundwater in May 2007. As 1,1,1-TCA was identified as a COC at the Site, it is possible that 1,4-dioxane may have been present. May 2007 sampling did not detect 1,4-dioxane with a detection limit of 10 µg/L. This detection limit is higher than the current Tap Water Screening Level of 0.46 µg/L.

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

No additional 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:	
None	

Issues and Recommendations Identified in the FYR:	
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OU(s): 1	Issue Category: Monitoring			
	Issue: Only one shallow groundwater monitoring well has yielded water so the current status and extent of remaining groundwater contamination at the Site is unclear. Detection limits are not below current MCLs for all contaminants sampled.			
	Recommendation: Determine the amount and extent of remaining groundwater contamination at the Site using appropriate detection limits.			
Affect Current Protectiveness	Affect Future Protectiveness	Party Responsible	Oversight Party	Milestone Date
No	Yes	EPA	EPA/State	7/1/2020

OU(s): 1	Issue Category: Monitoring			
	Issue: The chemical 1,4-dioxane has not been analyzed recently in site groundwater samples.			
	Recommendation: Sample for 1,4-dioxane using appropriate detection limits.			
Affect Current Protectiveness	Affect Future Protectiveness	Party Responsible	Oversight Party	Milestone Date
No	Yes	EPA	EPA/State	7/1/2019

OU(s): 1	Issue Category: Remedy Performance			
	Issue: There is no functioning remedy in place to address remaining groundwater contamination.			
	Recommendation: Evaluate and implement options for addressing remaining groundwater contamination.			
Affect Current Protectiveness	Affect Future Protectiveness	Party Responsible	Oversight Party	Milestone Date
No	Yes	EPA	EPA/State	7/1/2021

OU(s): 1	Issue Category: Institutional Controls			
	Issue: Groundwater and soil institutional controls are not required by decision documents and have not been implemented.			
	Recommendation: Require institutional controls for groundwater and soil in a decision document and implement the institutional controls.			
Affect Current Protectiveness	Affect Future Protectiveness	Party Responsible	Oversight Party	Milestone Date
No	Yes	EPA	EPA/State	7/1/2020

OTHER FINDINGS

One additional recommendation was identified during the FYR. This recommendation does not affect current and/or future protectiveness.

- Make a plan to resolve concerns about safety related to the underground workings remaining from the brick kilns.

VII. PROTECTIVENESS STATEMENT

Sitewide Protectiveness Statement
<i>Protectiveness Determination:</i> Short-term Protective
<i>Protectiveness Statement:</i>

The remedy at the Site currently protects human health and the environment because there are currently no completed exposure pathways. However, in order for the remedy to be protective in the long term, the following actions need to be taken: determine the amount and extent of remaining groundwater contamination at the Site using appropriate detection limits; sample for 1,4-dioxane using appropriate detection limits; evaluate and implement options for addressing remaining groundwater contamination; and require institutional controls for groundwater and soil in a decision document and implement the institutional controls.

VIII. NEXT REVIEW

The next FYR Report for the Distler Brickyard Superfund site is required five years from the completion date of this review.

APPENDIX A – REFERENCE LIST

2017 Sampling Report. Distler Brickyard NPL Site Dixie Highway. Westpoint, Kentucky. Prepared by KDEP September 2017.

Analysis Report. Distler Brickyard. McCoy & McCoy Laboratories, Inc. Received by KDEP May 23, 2007.

EPA Superfund Record of Decision. Distler Brickyard. EPA Region 4. August 19, 1986.

Explanation of Significant Differences: Distler Brickyard and Distler Farm. West Point, Kentucky. United States Environmental Protection Agency Region 4. October 26, 1988.

Fourth Five-Year Review Report for Distler Brickyard. West Point, Hardin County, Kentucky. United States Environmental Protection Agency. September 2013.

Soil Assessment and Monitoring Well Installation Report. Distler Brick Yard. West Point, Jefferson County, Kentucky. Prepared by Micah Group Energy & Environmental for KDWM Superfund Branch. June 12, 2014.

Superfund Preliminary Close Out Report (Long-Term Remedial Action). Distler Brickyard Site. Jefferson County, Kentucky. January 11, 1995.

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
Kentucky officials discovered and inspected the Site	December 1976
The EPA conducted preliminary assessment	February 1, 1980
The EPA conducted site inspection	April 1, 1980
The EPA began emergency removal action at the Site	March 1, 1982
The EPA completed emergency removal action at the Site	April 27, 1982
The EPA proposed Site's listing on NPL	December 30, 1982
The EPA finalized Site's listing on NPL	September 8, 1983
The EPA began Site's RI/FS	September 30, 1983
The EPA began enforcement activities	December 1985
Proposed plan public meeting held	April 1986
The EPA completed Site's RI/FS	August 19, 1986
The EPA signed Site's ROD	
The EPA began remedial design	April 18, 1987
The EPA completed remedial design	September 14, 1988
Superfund-State Contract signed	September 28, 1988
The EPA began remedial action	
The EPA began soil removal action	September 30, 1988
The EPA issued Site's ESD	October 26, 1988
Agency for Toxic Substances and Disease Registry issued public health assessment	November 22, 1988
Groundwater remedial action started	July 1989
KDEP began O&M activities	September 30, 1990
The EPA completed soil removal action	December 31, 1991
Remedial action construction completed	September 15, 1994
KDEP began LTRA	
Interim Site Close-Out Report signed	January 11, 1995
USGS started special monitoring services	August 1995
Consent Decree issued	October 12, 1995
Consent Decree issued	November 15, 1995
State-Lead-Fund-Financed Cooperative Agreement for LTRA signed	April 1, 1996
USGS monitoring services completed	1997
The EPA signed Site's first FYR Report	September 28, 1998
The EPA signed Site's second FYR Report	September 29, 2003
North Wind Environmental issued bioremediation report	April 2005
KDEP conducted groundwater sampling	May 2007
Brick kilns and warehouse demolished	Summer 2007
The EPA signed Site's third FYR Report	September 26, 2008
KDEP conducted sampling event	December 2009
The EPA signed Site's fourth FYR Report	September 20, 2013
KDEP installed new groundwater wells	June 6, 2014
KDEP conducted groundwater sampling event	April 2015
KDEP conducted groundwater sampling event	October 2015
KDEP conducted groundwater sampling event	January 2017

APPENDIX D – PRESS NOTICE

The Sentinel, March 15, 2018



The U.S. Environmental Protection Agency, Region 4 Announces Five-Year Reviews for the Distler Farm and Distler Brickyard Superfund Sites, West Point, Kentucky

Purpose/Objective: The EPA is conducting Five-Year Reviews of the remedies for the Distler Farm and Distler Brickyard Superfund sites (the Sites) in West Point, Kentucky. The purpose of the Five-Year Reviews is to make sure the selected cleanup actions effectively protect human health and the environment.

Site Background: The 3-acre Distler Farm site is located in the southwest corner of Jefferson County. Unauthorized chemical waste disposal and storage activities took place there in the 1970s. Drums and containers of industrial wastes were buried and stored above ground. The EPA's initial site inspection identified about 600 waste drums. Ohio River flooding in 1978 led to the identification of more than 800 additional drums. Site activities contaminated soil and groundwater with volatile organic compounds (VOCs) such as toluene and benzene and heavy metals including chromium and lead.

The 3-acre Distler Brickyard site is located in West Point, Kentucky. From the late 1800s to the mid-1970s, a brick manufacturer operated on site. Waste storage operations took place on site from 1976 to 1979. These operations resulted in the contamination of groundwater and soil. The EPA placed both sites on the Superfund program's National Priorities List (NPL) in 1983.

Cleanup Actions: The EPA selected the remedy for the Distler Farm site in the Agency's August 1986 Record of Decision. Major parts of the remedy included digging up and removal of contaminated soil to background levels and disposal of contaminated soil at a permitted hazardous waste landfill; extraction and temporary on-site storage of contaminated groundwater; treatment and discharge of water at a publicly owned treatment facility; and reinjection of uncontaminated water into the aquifer. The EPA updated the Site's remedy in the Agency's October 1988 Explanation of Significant Differences. Major changes included the use of alternate groundwater cleanup levels. Additionally, soil contaminant concentrations were below levels that would cause groundwater to exceed drinking water standards. For this reason, the EPA determined that it would not be necessary to dig up and remove site soils.

The EPA selected the remedy for the Distler Brickyard site in the Agency's August 1986 Record of Decision. Major parts of the remedy included digging up contaminated soils and disposing of them off site and extracting, treating, and re-injecting groundwater on site. The EPA updated the site's remedy in the Agency's October 1988 Explanation of Significant Differences, selecting alternate groundwater cleanup levels.

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. Both the sixth of the Five-Year Reviews for the Distler Farm site and the fifth of the Five-Year Reviews for the Distler Brickyard site will be completed by September 2018.

EPA Invites Community Participation in the Five-Year Review Process: The EPA is conducting these Five-Year Reviews to evaluate the effectiveness of the remedies and to ensure that the remedies remain 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 Sites. Community members who have questions about the Sites or the Five-Year Review process, or who would like to participate in a community interview, are asked to contact:

Michael Townsend, EPA Remedial Project Manager
Coordinator
Phone: (404) 562-8813
Email: townsend.michael@epa.gov

Angela Miller, EPA Community Involvement
Phone: (404) 562-8561 | (800) 241-1754 (toll-free)
Email: miller.angela@epa.gov

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

A copy of the completed Five-Year Review will be made available at the Site's local document repository, West Point City Hall, located at 509 Elm Street in West Point, Kentucky, and online at <http://www.epa.gov/superfund/distler-farm> and <http://www.epa.gov/superfund/distler-brickyard>.

as possible, of the scale of the damage. Consumers have difficulty getting a representative to answer the questions. The claims process is a contact with DOI's Consumer Protection Division.

"The Division stands that this is a disaster causing troubling and as the disaster. Josh Rayborn the consumer division.

"We have caring and able individuals can help people through difficult circumstances," Rayborn

Free Flood Zone Information Available in Radcliff

As a free City of Radcliff provide the public information re FEMA Flood Rate Map (1 Determination

Information available upon request:

- Whether property is in a Special Flood Hazard Area

- The flood zone number;

- The parcel and suffix;

- The date of the Flood Insurance Study (cover

- The FIRI as A, C, X, V, etc.);

- The base elevation (the zones) where

6. Are you comfortable with the status of the institutional controls at the Site? If not, what are the associated outstanding issues? **There are no institutional controls at the Site.**
7. Are you aware of any changes in projected land use(s) at the Site? **No.**
8. Do you have any comments, suggestions or recommendations regarding the management or operation of the Site's remedy? **Recommend having a hydrogeologist review the well logs and geology at the Site to determine if the new wells are screened at the proper interval.**
9. Do you consent to have your name included along with your responses to this questionnaire in the FYR report? **Yes.**

APPENDIX F – SITE INSPECTION CHECKLIST

FIVE-YEAR REVIEW SITE INSPECTION CHECKLIST																																																	
I. SITE INFORMATION																																																	
Site Name: Distler Brickyard	Date of Inspection: 01/18/2018																																																
Location and Region: West Point, KY, Region 4	EPA ID: KYD980602155																																																
Agency, Office or Company Leading the Five-Year Review: EPA Region 4	Weather/Temperature: high teens, sunny																																																
Remedy Includes: (Check all that apply) <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> <input type="checkbox"/> Landfill cover/containment <input type="checkbox"/> Access controls <input type="checkbox"/> Institutional controls <input checked="" type="checkbox"/> Groundwater pump and treatment <input type="checkbox"/> Surface water collection and treatment <input checked="" type="checkbox"/> Other: Soil excavation and disposal </td> <td style="width: 50%; vertical-align: top;"> <input type="checkbox"/> Monitored natural attenuation <input type="checkbox"/> Groundwater containment <input type="checkbox"/> Vertical barrier walls </td> </tr> </table>		<input type="checkbox"/> Landfill cover/containment <input type="checkbox"/> Access controls <input type="checkbox"/> Institutional controls <input checked="" type="checkbox"/> Groundwater pump and treatment <input type="checkbox"/> Surface water collection and treatment <input checked="" type="checkbox"/> Other: Soil excavation and disposal	<input type="checkbox"/> Monitored natural attenuation <input type="checkbox"/> Groundwater containment <input type="checkbox"/> Vertical barrier walls																																														
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Attachments: <input type="checkbox"/> Inspection team roster attached <input type="checkbox"/> Site map attached																																																	
II. INTERVIEWS (check all that apply)																																																	
1. O&M Site Manager <table style="width: 100%; border: none;"> <tr> <td style="width: 30%; text-align: center;">Name _____</td> <td style="width: 30%; text-align: center;">Title _____</td> <td style="width: 40%; text-align: center;">Date _____</td> </tr> <tr> <td colspan="3">Interviewed <input type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone Phone: _____</td> </tr> <tr> <td colspan="3">Problems, suggestions <input type="checkbox"/> Report attached: _____</td> </tr> </table>		Name _____	Title _____	Date _____	Interviewed <input type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone Phone: _____			Problems, suggestions <input type="checkbox"/> Report attached: _____																																									
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Interviewed <input type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone Phone: _____																																																	
Problems, suggestions <input type="checkbox"/> Report attached: _____																																																	
2. O&M Staff <table style="width: 100%; border: none;"> <tr> <td style="width: 30%; text-align: center;">Name _____</td> <td style="width: 30%; text-align: center;">Title _____</td> <td style="width: 40%; text-align: center;">Date _____</td> </tr> <tr> <td colspan="3">Interviewed <input type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone Phone: _____</td> </tr> <tr> <td colspan="3">Problems/suggestions <input type="checkbox"/> Report attached: _____</td> </tr> </table>		Name _____	Title _____	Date _____	Interviewed <input type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone Phone: _____			Problems/suggestions <input type="checkbox"/> Report attached: _____																																									
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Problems/suggestions <input type="checkbox"/> Report attached: _____																																																	
3. Local Regulatory Authorities and Response Agencies (i.e., state and tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices). Fill in all that apply. <table style="width: 100%; border: none;"> <tr> <td style="width: 20%;">Agency <u>KDEP</u></td> <td style="width: 30%;">Contact <u>Cheryl Harris</u></td> <td style="width: 20%;">Date <u>01/29/2018</u></td> <td style="width: 30%;">Phone No. <u>502-782-6645</u></td> </tr> <tr> <td></td> <td style="text-align: center;">Name _____ Title _____</td> <td style="text-align: center;">Date _____</td> <td style="text-align: center;">Phone No. _____</td> </tr> <tr> <td colspan="4">Problems/suggestions <input checked="" type="checkbox"/> Report attached: <u>Appendix E</u></td> </tr> <tr><td colspan="4"> </td></tr> <tr> <td>Agency _____</td> <td>Contact _____ Name _____</td> <td style="text-align: center;">Title _____</td> <td style="text-align: center;">Date _____ Phone No. _____</td> </tr> <tr> <td colspan="4">Problems/suggestions <input type="checkbox"/> Report attached: _____</td> </tr> <tr><td colspan="4"> </td></tr> <tr> <td>Agency _____</td> <td>Contact _____ Name _____</td> <td style="text-align: center;">Title _____</td> <td style="text-align: center;">Date _____ Phone No. _____</td> </tr> <tr> <td colspan="4">Problems/suggestions <input type="checkbox"/> Report attached: _____</td> </tr> <tr><td colspan="4"> </td></tr> <tr> <td>Agency _____</td> <td>Contact _____ Name _____</td> <td style="text-align: center;">Title _____</td> <td style="text-align: center;">Date _____ Phone No. _____</td> </tr> <tr> <td colspan="4">Problems/suggestions <input type="checkbox"/> Report attached: _____</td> </tr> </table>		Agency <u>KDEP</u>	Contact <u>Cheryl Harris</u>	Date <u>01/29/2018</u>	Phone No. <u>502-782-6645</u>		Name _____ Title _____	Date _____	Phone No. _____	Problems/suggestions <input checked="" type="checkbox"/> Report attached: <u>Appendix E</u>								Agency _____	Contact _____ Name _____	Title _____	Date _____ Phone No. _____	Problems/suggestions <input type="checkbox"/> Report attached: _____								Agency _____	Contact _____ Name _____	Title _____	Date _____ Phone No. _____	Problems/suggestions <input type="checkbox"/> Report attached: _____								Agency _____	Contact _____ Name _____	Title _____	Date _____ Phone No. _____	Problems/suggestions <input type="checkbox"/> Report attached: _____			
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Problems/suggestions <input type="checkbox"/> Report attached: _____																																																	

Agency _____				
Contact _____	Name _____	Title _____	Date _____	Phone No. _____
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 type="checkbox"/> O&M manual	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" 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 type="checkbox"/> Maintenance logs	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" 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 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** Readily available Up to date N/A
 Remarks: _____

IV. O&M COSTS

1. **O&M Organization**

State in-house Contractor for state
 PRP in-house Contractor for PRP
 Federal facility in-house Contractor for Federal facility
 PRP via State

2. **O&M Cost Records**

Readily available Up to date
 Funding mechanism/agreement in place Unavailable

Original O&M cost estimate: _____ Breakdown attached

Total annual cost by year for review period if available

From: 01/01/2013	To: 12/31/2013	\$105,000	<input type="checkbox"/> Breakdown attached
Date	Date	Total cost	
From: 01/01/2014	To: 12/31/2014	\$25,000	<input type="checkbox"/> Breakdown attached
Date	Date	Total cost	
From: 01/01/2015	To: 12/31/2015	\$3,000	<input type="checkbox"/> Breakdown attached
Date	Date	Total cost	
From: 01/01/2016	To: 12/31/2016	\$0	<input type="checkbox"/> Breakdown attached
Date	Date	Total cost	
From: 01/01/2016	To: 12/31/2017	\$1,000	<input type="checkbox"/> Breakdown attached
Date	Date	Total cost	

3. **Unanticipated or Unusually High O&M Costs during Review Period**
 Describe costs and reasons: _____

V. ACCESS AND INSTITUTIONAL CONTROLS Applicable N/A

A. Fencing

1. **Fencing Damaged** Location shown on site map Gates secured N/A
 Remarks: _____

B. Other Access Restrictions

1. **Signs and Other Security Measures** Location shown on site map N/A
 Remarks: _____

C. Institutional Controls (ICs)

1. **Implementation and Enforcement**

Site conditions imply ICs not properly implemented Yes No N/A

Site conditions imply ICs not being fully enforced Yes No N/A

Type of monitoring (e.g., self-reporting, drive by): _____

Frequency: _____

Responsible party/agency: _____

Contact _____

Name	Title	Date	Phone no.

Reporting is up to date Yes No N/A

Reports are verified by the lead agency Yes No N/A

Specific requirements in deed or decision documents have been met Yes No N/A

Violations have been reported Yes No N/A

Other problems or suggestions: Report attached

2. **Adequacy** ICs are adequate ICs are inadequate N/A

Remarks: ICs were not called for in decision documents but because contamination remains onsite above UU/UE, ICs should be implemented.

D. General

1. **Vandalism/Trespassing** Location shown on site map No vandalism evident

Remarks: _____

2. **Land Use Changes On Site** N/A

Remarks: _____

3. **Land Use Changes Off Site** N/A

Remarks: _____

VI. GENERAL SITE CONDITIONS

A. Roads Applicable N/A

1. **Roads Damaged** Location shown on site map Roads adequate N/A

Remarks: _____

B. Other Site Conditions

Remarks: _____

VII. LANDFILL COVERS Applicable N/A

VIII. VERTICAL BARRIER WALLS Applicable N/A

IX. GROUNDWATER/SURFACE WATER REMEDIES Applicable N/A

A. Groundwater Extraction Wells, Pumps and Pipelines Applicable N/A

1. **Pumps, Wellhead Plumbing and Electrical**

Good condition All required wells properly operating Needs maintenance N/A

Remarks: The groundwater extraction system has been shut off.

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

<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 checked="" type="checkbox"/> Is routinely submitted on time <input checked="" 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 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 checked="" type="checkbox"/> N/A</p> <p>Remarks: _____</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). <u>The remedy included soil removal and groundwater extraction. Groundwater extraction is no longer occurring. KDEP has conducted groundwater sampling. Contamination remains. KDEP and the EPA are working on determining next steps for the Site.</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. <u>There are no O&M issues.</u></p>
<p>C. Early Indicators of Potential Remedy Problems</p> <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. <u>No early indicators of potential remedy problems.</u></p>
<p>D. Opportunities for Optimization</p> <p>Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy. <u>KDEP and the EPA are working on determining and implementing next steps for the Site.</u></p>

APPENDIX G – SITE INSPECTION PHOTOS



Locked entrance gate on Dixie Highway



Signage within fenceline near site entrance



New wells DBMW-2S and DBMW-2D



New wells DBMW-1S and DBMW-1D (on right)



Former brick kilns



Tanks and railroad tracks on site



MW-6 on east side of railroad tracks



Remnants of former remedial components near new DBMW3 wells

APPENDIX H – DETAILED ARARS REVIEW TABLES

CERCLA Section 121(d)(1) requires that Superfund remedial actions attain “a degree of cleanup of hazardous substance, pollutants, and contaminants released into the environment and of control of further release at a minimum which assures protection of human health and the environment.” The remedial action must achieve a level of cleanup that at least attains those requirements that are legally applicable or relevant and appropriate. In performing the FYR for compliance with applicable or relevant and appropriate requirements (ARARs), only those ARARs that address the protectiveness of the remedy are reviewed.

Groundwater ARARs

The 1988 ESD identified federal MCLs under the Safe Drinking Water Act (SDWA) as ARARs. Cleanup goals were based on the MCLs. When primary MCLs were unavailable, health-based levels were established as the cleanup goals. These health-based values are further discussed in Appendix I. Table H-1 compares 1988 cleanup goals to current standards. Current standards are more stringent for arsenic, lead and toluene.

Table H-1: Previous and Current ARARs for Groundwater COCs

COCs ^a	1988 ESD Cleanup Goals ^c (µg/L)	Current ARARs ^d (µg/L)	ARAR Change
Arsenic	50	10	more stringent
Chromium	50	100	less stringent
Lead	50	15	more stringent
Benzene	5	5	none
2-Butanone	170	NE	NA
1,1-DCE	7	7	none
Trans-1,2-DCE	70	100	less stringent
Toluene	2,000	1,000	more stringent
1,1,1-TCA	200	200	none
TCE	5	5	none

Notes:

- a. COCs from Site’s 1988 ESD
 - b. Based on the SDWA primary MCL. Current SDWA standards can be found at: <https://www.epa.gov/ground-water-and-drinking-water/table-regulated-drinking-water-contaminants> (accessed 12/28/2017).
- NE = Chemical-specific ARARs in the form of MCLs have not been established for these COCs.
Thus, the EPA developed health-based criteria for these COCs.
- NA = not applicable
µg/L = micrograms per liter

Soil ARARs

There are no chemical-specific soil ARARs for the Site identified in the decision documents for OU1.

APPENDIX I – SCREENING-LEVEL RISK REVIEW

MCLs were not established for all groundwater COCs at the Site. The EPA selected health-based levels as the cleanup goals for 2-butanone. Table I-1 evaluates the health-based cleanup goal against current residential screening levels. The evaluation indicates the cleanup goal is valid for unrestricted use.

Table I-1: Health Evaluation of Sitewide Groundwater Cleanup Goals

COC	1988 ESD Cleanup Level (µg/L)	Tap Water RSL ^a (µg/L)		Cancer Risk ^b	Noncancer HQ ^c
		1 x 10 ⁻⁶ Risk	HQ=1.0		
2-Butanone	170	NE	5,600	--	0.03

Notes:

- Current EPA RSLs, dated November 2017, are available at <https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-november-2017> (accessed 12/29/2017).
- The cancer risks were calculated using the following equation, based on the fact that RSLs are derived based on 1 x 10⁻⁶ risk:

$$\text{cancer risk} = (\text{cleanup level} \div \text{cancer-based RSL}) \times 10^{-6}$$
- The noncancer hazard quotient (HQ) was calculated using the following equation:

$$\text{HQ} = \text{cleanup level} \div \text{noncancer-based RSL}$$

NE = toxicity values not established by the EPA
 -- = cancer risk or noncancer HQ could not be calculated; toxicity values not established
Bold = noncancer HQ exceeds 1.0 or a cancer risk of 1 x 10⁻⁴
 µg/L = micrograms per liter

According to the 1988 ESD, soil cleanup goals were based on the protection of groundwater. Table I-2 compares soil cleanup goals to current RSLs. Table I-2 indicates that soil cleanup goals are protective of unrestricted use, with the exception of the arsenic and lead cleanup goals. Table I-3 compares maximum detections of arsenic and lead from soil sampling in 2014. This evaluation indicates that remaining contamination at depth is below current residential soil screening standards.

Table I-2: Health Evaluation of Sitewide Soil Cleanup Goals

COC	1988 ESD Cleanup Level (mg/kg)	Resident Soil RSL ^a (mg/kg)		Cancer Risk ^b	Noncancer HQ ^c
		1 x 10 ⁻⁶ Risk	HQ=1.0		
Arsenic	208	0.68	35	3 x 10⁻⁴	6
Chromium ^d	25,000	NE	120,000	--	0.2
Lead	21,000	400 ^e		NA	
Benzene	0.485	1.2	82	4 x 10 ⁻⁷	0.006
2-Butanone	1.178	NE	27,000	--	0.00004
1-1-DCE	1.471	NE	230	--	0.006
Trans-1,2-DCE	11.966	NE	1,600	--	0.007
Toluene	803.880	NE	4,900	--	0.2
1,1,1-TCA	13.398	NE	8,100	--	0.002
TCE	0.716	0.94	4.1	8 x 10 ⁻⁷	0.17

COC	1988 ESD Cleanup Level (mg/kg)	Resident Soil RSL ^a (mg/kg)		Cancer Risk ^b	Noncancer HQ ^c
		1 x 10 ⁻⁶ Risk	HQ=1.0		
<p><i>Notes:</i></p> <p>a. Current EPA RSLs, dated November 2017, are available at https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-november-2017 (accessed 12/29/2017).</p> <p>b. The cancer risks were calculated using the following equation, based on the fact that RSLs are derived based on 1 x 10⁻⁶ risk: cancer risk = (cleanup level ÷ cancer-based RSL) × 10⁻⁶</p> <p>c. The noncancer HQ was calculated using the following equation: HQ = cleanup level ÷ noncancer-based RSL</p> <p>d. Chromium (III) insoluble salts used for comparison</p> <p>e. The EPA has not developed cancer or noncancer-based toxicity values for lead and evaluates lead exposure using blood-lead modeling. The cleanup goal is compared directly to the blood lead-based RSL.</p> <p>NA = not applicable NE = toxicity values not established by the EPA -- = cancer risk or noncancer HQ could not be calculated; toxicity values not established Bold = noncancer HQ exceeds 1.0 or a cancer risk of 1 x 10⁻⁴ mg/kg = milligrams per kilogram</p>					

Table I-3: Health Evaluation of Maximum Soil Detections at Depth in 2014

COC	Maximum Concentration Detected in 2014 (mg/kg)	Resident Soil RSL ^a (mg/kg)		Cancer Risk ^b	Noncancer HQ ^c
		1 x 10 ⁻⁶ Risk	HQ=1.0		
Arsenic	11.2	0.68	35	2 x 10 ⁻⁵	0.3
Lead	14.6	400 ^d		NA	
<p><i>Notes:</i></p> <p>a. Current EPA RSLs, dated November 2017, are available at https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables-november-2017 (accessed 12/29/2017).</p> <p>b. The cancer risks were calculated using the following equation, based on the fact that RSLs are derived based on 1 x 10⁻⁶ risk: cancer risk = (cleanup level ÷ cancer-based RSL) × 10⁻⁶</p> <p>c. The noncancer HQ was calculated using the following equation: HQ = cleanup level ÷ noncancer-based RSL</p> <p>d. The EPA has not developed cancer or noncancer-based toxicity values for lead and evaluates lead exposure using blood-lead modeling. The cleanup goal is compared directly to the blood lead-based RSL.</p> <p>NA = not applicable -- = cancer risk or noncancer HQ could not be calculated; toxicity values not established Bold = noncancer HQ exceeds 1.0 or a cancer risk of 1 x 10⁻⁴ mg/kg = milligram per kilogram</p>					