Five-Year Review Report

Fifth Five-Year Review Report
for
A.L. Taylor (Valley of Drums)
KYD980500961

Brooks
Bullitt County, Kentucky

September 2013

The United States Environmental Protection Agency
Region 4
Atlanta, Georgia

Approved by:

Franklin E. Hill
Director, Superfund Division

Date: 9/26/13

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for
A.L. Taylor (Valley of Drums)
State Hwy 1020
Brooks
Bullitt County, Kentucky

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List of Acronyms

ARAR	Applicable or Relevant and Appropriate Requirement
ATV	All-terrain Vehicle
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CD	Consent Decree
CFR	Code of Federal Regulations
CIC	Community Involvement Coordinator
cm/sec	Centimeter per Second
COC	Contaminant of Concern
EPA	United States Environmental Protection Agency
FYR	Five-Year Review
FS	Feasibility Study
IC	Institutional Control
KDEP	Kentucky Department for Environmental Protection
KNREPC	Kentucky Natural Resources and Environmental Protection Cabinet
MCL	Maximum Contaminant Level
µg/L	Micrograms per Liter
mg/kg	Milligram per Kilogram
MW	Monitoring Well
NA	Not Applicable
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
ND	Not Detected
NPL	National Priorities List
O&M	Operation and Maintenance
PAH	Polycyclic Aromatic Hydrocarbon
PCB	Polychlorinated Biphenyl
PRP	Potentially Responsible Party
PRG	Preliminary Remediation Goal
RI/FS	Remedial Investigation/Feasibility Study
RAO	Remedial Action Objective
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
ROD	Record of Decision
RPM	Remedial Project Manager
RSL	Regional Screening Level
SARA	Superfund Amendments and Reauthorization Act
SSL	Soil Screening Level
TBC	To-Be-Considered
VOC	Volatile Organic Compound

Executive Summary

Introduction

The A.L. Taylor (Valley of Drums) Superfund site (the Site) is located in Brooks, Bullitt County, Kentucky. The Site covers 23 acres, which includes a 6-acre cap surrounded by a security fence and 17 wooded acres. From 1967 until 1977, the site owner used the Site as a waste disposal area without proper permits. Waste disposal and drum storage operations at the Site resulted in contamination of ground water, surface water, soil and sediment. Contaminated materials including ponded sediments, sludge and waste materials excavated outside the capped area were placed beneath the capped landfill. The United States Environmental Protection Agency (the EPA) has also found hardened sludge and drum carcasses in Wilson Creek immediately adjacent to the Site.

The EPA initially conducted emergency response actions at the Site between 1979 and 1981 to prevent the migration and future releases of contamination. The EPA constructed interceptor trenches and a temporary treatment system, secured leaking drums, and segregated and organized the drums on-site. Cleanup actions in the EPA's selected remedy included removal of ponded water; securing pond sediments, sludge and materials from low-lying areas beneath a cap on-site; installation of the clay cap, a perimeter drainage system, monitoring wells and a security fence; and drainage of a runoff control pond. The selected remedy did not establish contaminants of concern (COCs) for the Site or associated action levels. The remedy did not include institutional controls and there are no institutional controls currently in place to restrict ground water or land use at the Site. Operation and maintenance (O&M) activities at the Site include regular monitoring of Wilson Creek and regular site inspections and maintenance. The Commonwealth of Kentucky has been responsible for implementing O&M activities at the Site since 1990. The EPA deleted the Site from the National Priorities List (NPL) in 1996.

The triggering action for this Five-Year Review (FYR) was the signing of the previous FYR on June 26, 2008.

Remedial Action Objectives

The Site's 1986 Record of Decision (ROD) discussed the remedial action objectives (RAOs) to address human health concerns. The RAOs discussed in the ROD include:

- Air quality will be protected by the control of emissions of particulate matter and toxic gases.
- The recreational users and biota of downstream surface waters will be protected from leachate and contaminated runoff.
- Ground water contributions to surface water will be protected by reducing aquifer recharge.
- Local populations will be protected from direct contact with contaminated soils.

The Final Design Report for the Site noted the following RAOs:

- Provide on-site containment for the buried waste and contaminated soil.
- Protect public health and welfare and the environment.

- Protect recreational users and biota of downstream surface waters (Wilson Creek) from leachate and contaminated runoff (i.e., prevent migration of contaminants off site).
- Restore the Site by regrading and revegetation.
- Protect local populations from direct contact with contaminated soils and surface water.
- Preclude access to the Site by the general public.

Technical Assessment

Based on the site inspection, the landfill cap portion of the remedy appears to be functioning as intended by the selected remedy in the ROD. There is no visual evidence that the cap is eroding or that contaminants under the cap are migrating toward Wilson Creek. The EPA is evaluating whether current ground water sampling data and methodologies are sufficient for determining whether contaminated ground water may be migrating toward Wilson Creek. The EPA is also coordinating with KDEP to delineate contamination in Wilson Creek and other areas as deemed necessary. Currently, no one drinks ground water at the Site and there are no known recreational uses of Wilson Creek east of the landfill cap. Historical data had documented the presence of Aroclor 1254 and 1260 and early EPA documents cite burning of wastes, so the potential exists for the presence of dioxin and weathered polychlorinated biphenyls (PCBs). As a result, a more stringent analysis may be warranted to identify the presence of dioxin and polychlorinated biphenyls PCB congeners at the Site. If appropriate, following site characterization activities, the EPA and Kentucky Department for Environmental Protection (KDEP) will determine whether a decision document is necessary.

O&M activities have not taken place on a regular basis at the Site until recent years. Overgrowth in the letdown channels on the landfill cap may impede the proper function of the channels and cause ponding on the southeast side of the Site's fenced area. Regular sampling of ground water, surface water and sediment as required by the Revised Final O&M Plan is ongoing at the Site. As directed in the Revised Final O&M Plan, KDEP must evaluate and report analytical results of sampling to the Commonwealth of Kentucky and EPA Region 4.

Conclusion

The remedy at the Site currently protects human health and the environment in the short term. The landfill cap is effectively containing and preventing migration and contact with contaminants. For the remedy to be protective in the long term, the EPA and KDEP should take the following actions:

- KDEP should conduct regular O&M and monitoring activities.
- Select and implement institutional controls to restrict ground water use at the Site, land use on the landfill cap, and land use in other areas, as appropriate.
- Evaluate the need to conduct further investigations using updated sampling and analysis techniques in accordance with EPA standard operating procedures to evaluate if dioxin and PCB congeners are present on the Site.

Five-Year Review Summary Form

SITE IDENTIFICATION		
Site Name: A.L. Taylor (Valley of Drums)		
EPA ID: KYD980500961		
Region: 4	**State:** KY	**City/County:** Brooks/Bullitt County

SITE STATUS	
NPL Status: Deleted	
Multiple OUs? No	**Has the site achieved construction completion?** Yes

REVIEW STATUS
Lead agency: EPA **If "Other Federal Agency" selected above, enter Agency name:** Click here to enter text.
Author name: Kristin Sprinkle and Lynette Wysocki (Reviewed by the EPA)
Author affiliation: Skeo Solutions
Review period: October 2012 – August 2013
Date of site inspection: 10/03/2012
Type of review: Statutory
Review number: 5
Triggering action date: 06/26/2008
Due date *(five years after triggering action date)*: 06/26/2013

Five-Year Review Summary Form (continued)

Issues/Recommendations				
OU(s) without Issues/Recommendations Identified in the Five-Year Review:				
None				
Issues and Recommendations Identified in the Five-Year Review:				
OU(s): 1	**Issue Category: Operations and Maintenance**			
	Issue: Required O&M activities have not taken place on a regular basis. Lack of required O&M activities has resulted in overgrowth of vegetation in the letdown channels on the cap. Overgrowth may impede water from moving off the cap as designed and may contribute to the ponding of water near the fence line on the southeast side of the Site.			
	Recommendation: KDEP should ensure that O&M activities, including mowing, maintenance and vegetation control, occur on a regular basis. Also, KDEP should conduct regular monitoring of ground water, surface water and sediment.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Implementing Party**	**Oversight Party**	**Milestone Date**
No	Yes	State	EPA	06/26/2014
OU(s): 1	**Issue Category: Institutional Controls**			
	Issue: Institutional controls restricting ground water and land use at the Site are needed to ensure that the selected remedy will remain protective of human health and the environment. No institutional controls are in place.			
	Recommendation: Select and implement appropriate ground water and land use restrictions. Document the IC requirement in a modified decision document.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Implementing Party**	**Oversight Party**	**Milestone Date**
No	Yes	State/Other	EPA	06/26/2014
OU(s): 1	**Issue Category: Remedy Performance**			
	Issue: Testing has not been conducted to determine whether historical burning of chlorinated contaminants on site has resulted in the creation of dioxin and weathered PCB congeners.			
	Recommendation: Evaluate the need to conduct further investigations using updated sampling and analysis techniques in accordance with EPA standard operating procedures to evaluate the presence of dioxin and PCB congeners.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Implementing Party**	**Oversight Party**	**Milestone Date**
No	Yes	EPA/State	EPA	06/24/2014

Five-Year Review Summary Form (continued)

Protectiveness Statement(s)

Operable Unit:	*Protectiveness Determination:*	*Addendum Due Date (if applicable):*
1	Short-term Protective	Click here to enter date.

Protectiveness Statement:

The remedy at the Site currently protects human health and the environment in the short term. The landfill cap is effectively containing and preventing migration and contact with contaminants. For the remedy to be protective in the long term, the EPA and KDEP should take the following actions:

- KDEP should conduct regular O&M and monitoring activities.
- Select and implement institutional controls to restrict ground water use at the Site, land use on the landfill cap, and land use in other areas, as appropriate.
- Evaluate the need to conduct further investigations using updated sampling and analysis techniques in accordance with EPA standard operating procedures to evaluate if dioxin and PCB congeners are present on the Site.

Sitewide Protectiveness Statement (if applicable)

For sites that have achieved construction completion, enter a sitewide protectiveness determination and statement.

Protectiveness Determination:	*Addendum Due Date (if applicable):*
Short-term Protective	Click here to enter date.

Protectiveness Statement:

The remedy at the Site currently protects human health and the environment in the short term. The landfill cap is effectively containing and preventing migration and contact with contaminants. For the remedy to be protective in the long term, the EPA and KDEP should take the following actions:

- KDEP should conduct regular O&M and monitoring activities.
- Select and implement institutional controls to restrict ground water use at the Site, land use on the landfill cap, and land use in other areas, as appropriate.
- Evaluate the need to conduct further investigations using updated sampling and analysis techniques in accordance with EPA standard operating procedures to evaluate if dioxin and PCB congeners are present on the Site.

Five-Year Review Summary Form (continued)

Environmental Indicators

- Current human exposures at the Site are under control.
- Current ground water migration is under control.

Are Necessary Institutional Controls in Place?

☐ All ☐ Some ☒ None

The ROD does not require institutional controls. However, institutional controls restricting ground water and land use at the Site are needed to ensure that future use of the Site will remain protective of human health and the environment.

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

☐ Yes ☒ No

Has the Site Been Put into Reuse?

☐ Yes ☒ No

Fifth Five-Year Review Report
for
A.L. Taylor (Valley of Drums) Superfund Site

1.0 Introduction

The purpose of a Five-Year Review (FYR) is to evaluate the implementation and performance of a remedy in order to determine if the remedy will continue to be protective of human health and the environment. FYR reports document FYR methods, findings and conclusions. In addition, FYR reports identify issues found during the review, if any, and document recommendations to address them.

The United States Environmental Protection Agency (EPA) prepares FYRs pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 121 and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). CERCLA Section 121 states:

> "If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews."

The EPA interpreted this requirement further in the NCP; 40 Code of Federal Regulations (CFR) Section 300.430(f)(4)(ii), which states:

> "If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such actions no less often than every five years after the initiation of the selected remedial action."

Skeo Solutions, an EPA Region 4 contractor, conducted the FYR and prepared this report regarding the remedy implemented at the A.L. Taylor (Valley of Drums) site (the Site) in Brooks, Bullitt County, Kentucky. The EPA's contractor conducted this FYR from October 2012 to June 2013. The EPA is the lead agency for developing and implementing the remedy for the Superfund-financed cleanup at the Site. The Kentucky Department for Environmental Protection (KDEP), as the support agency representing the State of Kentucky, has reviewed all supporting documentation and provided input to the EPA during the FYR process.

This is the fifth FYR for the Site. The triggering action for this statutory review is the previous FYR. The FYR is required due to the fact that hazardous substances, pollutants or contaminants

remain at the Site above levels that allow for unlimited use and unrestricted exposure. The Site consists of one operable unit, which this FYR report addresses.

2.0 Site Chronology

Table 1 lists the dates of important events for the Site.

Table 1: Chronology of Site Events

Event	Date
Fire lasting over a week occurred at the Site	November 29, 1967
The Kentucky Natural Resources and Environmental Protection Cabinet (KNREPC, now KDEP) initially discovered contamination	1975
The EPA discovered site contamination	November 1, 1978
The EPA conducted a site inspection The EPA began emergency response actions	January 1, 1979
Potentially Responsible Parties (PRPs) performed voluntary cleanup actions	1980
The EPA completed emergency response actions	1981
The EPA began a removal action	September 15, 1981
The EPA began the Site's remedial investigation/feasibility study (RI/FS)	September 30, 1981
The EPA completed a removal action	November 1, 1981
The EPA proposed the Site for listing on the National Priorities List (NPL)	December 30, 1982
The EPA finalized the Site on the NPL	September 8, 1983
The EPA began the Site's remedial design	May 30, 1986
The EPA completed the Site's Remedial Investigation /FS The EPA signed the Site's Record of Decision (ROD)	June 18, 1986
The EPA began remedial action The EPA began a removal action	April 21, 1987
The EPA completed remedial action The EPA completed a removal action	August 31, 1987
The EPA completed remedial design	September 30, 1987
The EPA began operation & maintenance (O&M) activities	June 15, 1988
The EPA began a removal action	September 12, 1988
The EPA completed a removal action	September 23, 1988
The EPA began a removal action	October 28, 1988
The EPA and KNREPC signed a Superfund State Contract for KNREPC to take over O&M activities	July 1989
The EPA completed a removal action	July 1, 1989
Site achieved EPA Construction Complete designation The EPA issued the Site's Close-Out Report	August 10, 1990
The EPA conducted a removal assessment	September 10, 1990
The EPA and PRPs signed Consent Decree (CD)	October 30, 1991
The EPA signed Site's first FYR	July 16, 1992
The EPA issued notice of intent to delete the Site from the NPL	March 1996
The EPA deleted the Site from the NPL	May 17, 1996
The EPA signed Site's second FYR	March 6, 1998
The EPA signed Site's third FYR	March 28, 2003
The EPA collected surface water and sediment samples from Wilson Creek	December 2007
The EPA issued Site's fourth FYR	June 26, 2008
The EPA approved KDEP's use of O&M funds for further investigations of Wilson Creek	July 2009
KDEP began investigations of Wilson Creek	2010

3.0 Background

3.1 Physical Characteristics

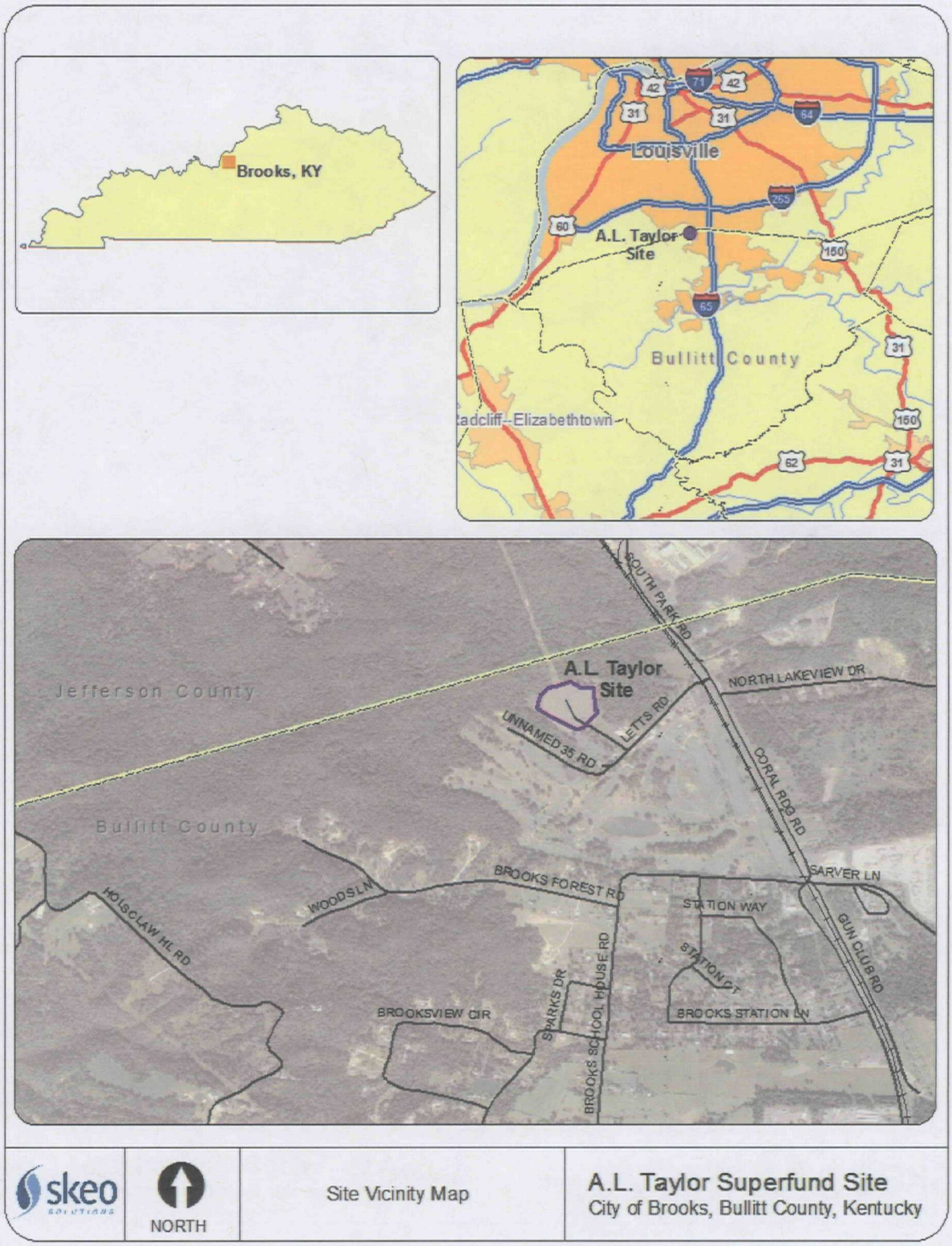
The 23-acre Site is located on Letts Road, directly off State Highway 1020, in Brooks, Bullitt County, Kentucky, just south of the Jefferson County line (Figure 1). The Site does not have a numbered street address but is located at the end of Unnamed Road-36 and its approximate location is 38°04'55" north latitude and 85°42'56" west longitude. The Site includes Bullitt County property parcel number 034-000-00-011. Site features include 17 acres of wooded, grassy areas and a 6-acre capped landfill enclosed by a security fence. Vegetation including grasses and shrubs covers the capped landfill portion of the Site.

Although the Site is not located in a heavily populated area, several residences border the Site to the south and east. The nearest residence is within a few thousand feet of the Site. Woods border the Site to the north and west. Wilson Creek, located on the eastern edge of the Site, flows northward about 2.5 miles into Pond Creek, which eventually drains into the Salt River just before the Salt River's confluence with the Ohio River. The EPA considers Wilson Creek an environmentally sensitive area. The normal stream flow of Wilson Creek is low and subject to fluctuation from seasonal rains and snowmelt. The Crossing golf course is located immediately south of the Site, across Letts Road. Figure 2 shows the Site and its features as well as the surrounding area.

Waste disposal and drum storage operations at the Site resulted in contamination of ground water, surface water, soil and sediment. Contaminated materials, including ponded sediments, sludge and waste materials excavated outside the capped area, are located beneath the capped landfill. Site investigations found hardened sludge and drum carcasses in Wilson Creek as recently as 2011.

The Site is located in the Knobs physiographic region, a series of erosional remnants formed of Mississippian and Pennsylvanian rocks overlying Silurian and Devonian rocks. The Mississippian rocks include limestone and siltstone with some shale beds, while the Pennsylvanian rocks include sandy limestone and sandstone, which form the cap rocks in the Knobs. Ground water at the Site is located in two aquifers. The shallow aquifer is between 3 and 25 feet thick in the site area and has water levels that range from 2.4 to 6.4 feet below the land surface. The ground water flow in the aquifer is southeasterly toward the valley of Wilson Creek. A deep aquifer occurs in the limestone under the shale. The shale composes the geologic formation closest to the surface in the site area. Most of the water in the deep aquifer is pumped from consolidated rocks and moves along interconnected fractures and solution channels.

Figure 1: Site Location 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.

Figure 2: 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.

3.2 Land and Resource Use

Land use near the Site primarily consists of agricultural, residential and commercial uses. Homes and the Crossing golf course border the Site to the south and east. Letts Road provides access to the golf course just before the access road to the Site. Mr. Taylor is the owner listed on the deed to the Site property. However, he has passed away. The Site property was subject to a bank foreclosure in 1985 when Citizens Federal Bank (now Fifth Third Bank) took possession of it. During site inspections and operation and maintenance (O&M) activities, KDEP has noted evidence of recreational all-terrain vehicle (ATV) use on portions of the Site outside the fenced capped area. During the October 2012 site inspection, participants did not identify evidence of ATV use at the Site. Bullitt County has made efforts in recent years to sell the Site property to collect delinquent taxes. No sale has taken place.

The two aquifers under the Site produce low water yields of poor quality. As a result, they are not major ground water sources. Ground water flows in a down slope, downgradient direction toward Wilson Creek. According to the Site's 1986 Record of Decision (ROD), ground water is not a source of drinking water near the Site. Residences and businesses near the Site use the public water supply. However, there has been precedence at the Site for the installation of ground water wells. During the site inspection in October 2012, participants discussed a well installed by a nearby resident that did not successfully draw water due to low yield conditions. In April 2013, water supply information for the properties surrounding the Site was obtained from the Louisville Water Supply Company. Public water supply service is active for most of the properties surrounding the Site. The two properties with no active service do not appear to be residences.

3.3 History of Contamination

From 1967 until 1977, Mr. Taylor used the Site as a waste disposal area without proper permits. Materials disposed of at the Site included wastes from paint and coating industries in the surrounding Louisville area. Mr. Taylor excavated pits and then emptied the contents of waste-containing storage drums into the pits. The waste dumped in the pits often consisted of solvents, which Mr. Taylor would then burn off. Reports stated that a fire continuously burned at the Site for over a week in late 1967. After the Kentucky Natural Resources and Environmental Protection Cabinet (KNREPC, now KDEP) required that Mr. Taylor stop burning solvents, Mr. Taylor transitioned operations to burying wastes containing chemical liquids, sludge and crushed drums in landfill cells at the Site. The EPA also reported the storage of about 17,000 drums on the ground surface at the Site.

KNREPC initially documented releases of hazardous substances from the Site in 1975 and pursued legal action against Mr. Taylor. KNREPC identified contamination in ground water, surface water and soil. Contaminants included: heavy metals, volatile organic compounds (VOCs) such as ketones, plastics such as phthalates, and polychlorinated biphenyls (PCBs) from spills and deteriorating waste drums. Mr. Taylor

received and disposed of wastes at the Site until his death in late 1977. In January 1979, the EPA identified contamination at the Site as pollutants leaked from drums and spread into Wilson Creek. Accidental ingestion and direct contact with contaminated ground water, surface water, sediment and soil presented possible health threats.

3.4 Initial Response

In January 1979, at the request of KNREPC, the EPA conducted emergency response actions at the Site to prevent the migration and future releases of contamination. The EPA constructed interceptor trenches and a temporary treatment system, secured leaking drums, and segregated and organized the drums on-site. The EPA recorded 17,051 remaining drums at the Site, which included 11,629 empty drums. The EPA operated and maintained the on-site treatment system until December 1979, when KNREPC assumed responsibility for the system.

The EPA contacted potentially responsible parties (PRPs) in 1980 and asked them to remove and properly dispose of drums that belonged to their companies. Five principal PRPs (Ford Motor Co., Reliance Universal. Inc., Louisville Varnish Co., George W. Whitesides Co. and Kurfee's Coating, Inc.) identified and removed about 20 percent of the drummed waste that remained on the ground surface at the Site. EPA follow-up investigations in 1981 identified about 4,200 drums remaining on-site that continued to leak and discharge contamination into Wilson Creek. The EPA conducted four CERCLA removal actions between 1981 and 1989 to remove the remaining drums on-site, upgrade the treatment system, and regrade the Site to promote positive drainage and reduce the amount of ponded water and surface erosion. These actions removed drummed waste from the on-site ground surface but left contaminated soil and buried drums on-site. In 1984, the EPA issued letters to Site PRPs and the Site owner for reimbursement of costs associated with investigations and removal actions.

3.5 Basis for Taking Action

Between 1975 and 1981, the EPA and KNREPC conducted investigations and identified contamination at the Site. Deteriorating and leaking drums at the Site discharged contaminants into Wilson Creek. Contaminants including heavy metals, VOCs, plastics and PCBs in ground water, surface water, sediment and soil posed possible human health threats if ingestion or direct contact were to occur. Over the course of investigations, sampling identified 140 contaminants. The Site's 1981 remedial investigation/feasibility study (RI/FS) identified priority pollutants in soil and water samples at the Site (Appendix F).

The 1984 Feasibility Study Addendum and Endangerment Assessment identified the contaminants found most often and in highest concentrations. These contaminants included: xylene, phthalates, toluene, alkyl benzenes, methyl ethyl ketone, methylene chloride, acetone, anthracene, vinyl chloride, trans-1,2 dichloroethylene, fluoranthene and aliphatic acids. Sampling detected PCBs in low concentrations as well as metals, including barium, zinc, copper, strontium, magnesium and chromium in concentrations

that exceeded background levels for ground water but were below National Drinking Water Standards.

Other than samples of drum contents, liquid samples collected from the test pits had the highest organic contaminant concentrations on site. Water samples collected from borings located downgradient of the test pits contained some of the same compounds as samples of drum contents. Some of these water samples were collected immediately downgradient of disposal cells that Mr. Taylor used during site operations. However, these water samples demonstrated relatively low contaminant concentrations compared to the test pit samples.

The risk evaluation in the Site's 1984 Feasibility Study Addendum and Endangerment Assessment identified ground water and surface water as potential routes of exposure to hazardous substances released from the Site. Neither type of water source appeared to be a likely route of exposure to populations located downstream of surface water routes or downgradient of ground water movement from the Site. There is little potential for exposure to contaminants in ground water because most nearby properties are connected to the public water supply. Additionally, the aquifer produces low yields. Like ground water, surface water does not serve as a drinking water source downstream of the Site and Wilson Creek. The risk evaluation discussed the potential for exposure during recreational use of surface waters as low due to the high dilution factor. The risk evaluation identified the principal means of environmental exposure from the Site as the discharge of contaminated surface water runoff to Wilson Creek.

4.0 Remedial Actions

The EPA considered a number of remedial alternatives for the Site. The EPA selected the final remedy for the Site in the 1986 ROD based on an evaluation of each alternative against various evaluation criteria. The 1986 ROD specified these evaluation criteria as reliability, implementability, Resource Conservation and Recovery Act (RCRA) conformance, environmental concerns, safety requirements, and O&M.

4.1 Remedy Selection

On June 16, 1983, the EPA presented a proposal for the Site's cleanup. The remedial alternatives evaluated at the Site represented source control measures. The objectives of the remedial action broadly covered all routes of release, but focused on areas displaying the greatest potential for adverse effects on public health and the environment. The remedy also took into account cost-effectiveness considerations. The Site's 1986 ROD discussed the remedial action objectives (RAOs) to address human health concerns. The RAOs discussed in the ROD include:

- Air quality will be protected by the control of emissions of particulate matter and toxic gases.
- The recreational users and biota of downstream surface waters will be protected from leachate and contaminated runoff.

- Ground water contributions to surface water will be protected by reducing aquifer recharge.
- Local populations will be protected from direct contact with contaminated soils.

The Final Design Report for the Site noted the following RAOs:

- Provide on-site containment for the buried waste and contaminated soil.
- Protect public health and welfare and the environment.
- Protect recreational users and biota of downstream surface waters (Wilson Creek) from leachate and contaminated runoff (i.e., prevent migration of contaminants off site).
- Restore the Site by regrading and revegetation.
- Protect local populations from direct contact with contaminated soils and surface water.
- Preclude access to the Site by the general public.

On June 18, 1986, the EPA signed the ROD to address contamination at the Site. The selected remedy included:

- Removing ponded water from the Site.
- Securing pond sediments, sludge and materials (from low-lying areas) beneath the cap.
- Installing final cap cover for containment of waste materials.
- Constructing a surface water drainage diversion to route surface water around the cap area and accommodate a 25-year/24-hour storm.
- Implementing a performance-monitoring program on Wilson Creek (the only potential receptor of chemical migration) to evaluate the effectiveness of the clay cap in mitigating surface contaminant migration.
- Monitoring ground water quality using eight newly installed nested wells placed along the creek valley at four locations, to monitor both the shallow and the deeper ground waters. In addition, these wells would provide an early warning of any contaminant migration toward Wilson Creek via ground water.
- Following the completion of the remedial construction, securing the Site with the installation of a 6-foot-high chain link fence with appropriate gates.
- Conducting a regular inspection and maintenance program for a period of 30 years following completion of remedial construction.

The 1986 ROD identified contaminants found most often and in highest concentrations during site investigations. These contaminants included: xylene, phthalates, toluene, alkyl benzenes, methyl ethyl ketone, methylene chloride, acetone, anthracene, vinyl chloride, trans-1,2 dichloroethylene, fluoranthene and aliphatic acids. The ROD also identified contaminants that exceeded background levels for ground water including: PCBs, barium, zinc, copper, strontium, magnesium and chromium. The ROD did not establish specific contaminants of concern (COCs) for the Site or any cleanup levels associated with the COCs. Additionally, the ROD did not discuss institutional controls as part of the remedy for the Site.

Although the ROD did not discuss COCs or cleanup levels for the Site, it does require monitoring of ground water and surface water. Air quality monitoring also occurred until the cap was placed over the landfill. Monitoring did not identify airborne contaminants. For the first three years after remedy implementation, ground water sampling occurred quarterly. Between years four and 30, the ground water was to be sampled annually. The ROD also required a performance monitoring program for Wilson Creek. The monitoring program functions to ensure the effectiveness of the cap in mitigating the migration of contaminants to Wilson Creek. The monitoring program requires two surface water samples from Wilson Creek following the same sampling schedule as the ground water. If there is not sufficient surface water available for analysis, sediment samples are required instead. Sampling should occur upstream of any runoff or shallow seepage from the landfill and downstream of any area providing surface runoff to Wilson Creek.

The Site's 1989 Revised Final O&M Plan presented a list of contaminants, including VOCs, other organic compounds and PCBs, for analysis during ground water and surface water monitoring. Monitoring includes these contaminants because the RI/FS initially identified these compounds as high priority pollutants. Table 2 lists these contaminants.

Table 2: Parameters for Ground Water and Surface Water Sampling

Contaminant		
VOCs	*Other Organic Compounds*	*PCB Compounds*
Chloroethane	Naphthalene	PCB-1242
1,1-dichloroethane	Phthalates	PCB-1248
1,1-dichloroethylene	Anthracene	PCB-1254
Toluene	3,3-dichlorobenzidine	PCB-1260
Ethylbenzene	Fluorene	
Benzene	Hexachlorobenzene	
1,1,1-trichloroethane	Phenanthrene	
Vinyl chloride	Pentachlorophenol	
Xylene	Phenol	
Trichloroethylene	Isophorone	
Tetrachloroethylene	Acenaphthene	
1,2-trans-dichloroethylene	Pyrene	

4.2 Remedy Implementation

Remedial design for the Site began in May 1986. In 1987, the EPA completed remedial design and began cleanup activities at the Site, including removal of ponded water; securing pond sediments, sludge and materials from low-lying areas beneath a cap

on-site; and installation of the clay cap, a perimeter drainage system, monitoring wells and a security fence. The cap consists of a 30-inch-thick layer of clay to attain a permeability of 10^{-7} centimeters per second (cm/sec), overlain by an 18-inch layer of material with permeability between 10^{-3} and 10^{-5} cm/sec. Cleanup activities then added a 6-inch layer of topsoil to the cap and vegetated the cap with plants with root systems to stabilize the topsoil and loam against erosion without penetrating the clay material of the cap.

Cleanup also included the draining of a runoff control pond constructed by the EPA in 1981 during the initial emergency response actions. In original design plans, the cap consisted of a single level that would slope to the southeast. However, the topography of the area made the construction infeasible. Instead, EPA contractors shaped the subgrade into four terraces using borrow materials and placed the cap over the terraces. The perimeter drainage systems consisted of a series of surface water diversion ditches constructed around the cap. EPA contractors also constructed two culverts at the northern and southern ends of the Site.

Following completion of the cap and ditches in July 1987, EPA contractors seeded the cap and surrounding areas to prevent erosion. Twelve ground water monitoring wells and a security fence surround the perimeter of the cap. In 1988, the EPA began O&M activities. However, the EPA determined that reseeding and regrading should take place at the Site to address erosion problems. Also, the EPA required larger drainage ditches and culverts to withstand a 25-year/24-hour rainfall event. By March 1989, the EPA officially completed all remedial construction. Construction of the remedy's components did not affect about 17 acres of the Site. The ROD called for a security fence to enclose about 6 acres of the Site to protect the cap and components of the remedy.

In July 1989, the EPA and KNREPC (now KDEP) signed a Superfund State Contract for O&M activities. The contract stated that KNREPC would perform the Site's O&M activities and identified the specific responsibilities of both agencies. The EPA and site PRPs signed a Consent Decree (CD) in October 1991. In the CD, the PRPs agreed to repay costs incurred by the EPA during the initial response actions to clean up the Site. The PRPs also agreed to provide funding to perform monitoring and O&M activities at the Site. The Superfund State Contract required that EPA provide KNREPC with this funding from the PRPs to conduct O&M activities and repair on-site utility poles as needed. However, the contract required that KNREPC provide all necessary personnel, equipment and services to carry out required O&M activities. In May 1996, the EPA deleted the Site from the NPL.

4.3 Operation and Maintenance (O&M)

The EPA developed the final O&M plan for the Site in May 1988 and later revised the plan in November 1989. The 1989 Revised Final O&M Plan and the Field Operations Plan, issued in October 1988, provide details for the specific field and monitoring activities required to meet O&M objectives. The EPA performed O&M activities from September 1988 through February 1990. Since then, KNREPC (now KDEP) has

conducted O&M activities as part of a Superfund State Contract with the EPA. Activities include:ground water monitoring, surface water monitoring, mowing and vegetation control, security fence maintenance and cap maintenance. According to the Revised Final O&M Plan, activities required for the closure and 30-year post-closure period at the Site include:

- Fill out Field Observation Reports each year during January and during April through October.
- Observe topsoil and grass cover regularly to ensure erosion does not occur.
- Conduct regular observations for settlement of the cover and the landfill.
- Check for leachate seepage when inspecting the cap.
- Ensure adequate growth of grass cover to prevent erosion.
- Perform regular observations for areas with ponded water.
- Regularly mow the cover and areas adjacent to facilities constructed at the Site to maintain the grass at a maximum height of 8 inches during the first year and 1-foot for the remainder of the O&M period.
- Sample and analyze surface water and ground water.
- Sample surface water upstream and downstream of any areas contributing to Wilson Creek.
- Sample ground water from the monitoring wells annually to check water quality.
- Remove any vegetation causing the drainage ditch to function improperly.

Ground water and surface water sampling occurred on a quarterly basis for the first three years of the Site's 30-year post-closure period. Each year after this, the Revised Final O&M Plan requires sampling on an annual basis for up to 30 years. The Revised Final O&M Plan estimated the total long-term O&M costs for a period of 30 years to be $998,875.

KDEP performed regular O&M activities at the Site between 1999 and 2003. From 2003 to 2007, regular monitoring did not occur at the Site. In 2008, KDEP provided several reasons for why O&M activities and monitoring took place less frequently. Since 2008, O&M activities have taken place on a more regular basis. The Site's O&M contractor has conducted mowing, maintenance and vegetation control activities on a semiannual basis since 2009. Annual ground water monitoring took place in October 2010 and October 2011. During both of these monitoring events, KDEP purged and then sampled each of the twelve monitoring wells. Additional O&M activities conducted during the current FYR period included repair of the Site's access road and fence in 2011. The EPA is reviewing the sampling methodologies to determine whether collection methods are sufficient.

During July 2009, KDEP proposed to use O&M funds to develop a site characterization plan and site remediation plan to address one of the issues identified in the 2008 FYR. The 2008 FYR recommended activities to investigate drums and materials in Wilson Creek. The EPA considered the recommended activities to be part of the ongoing O&M at the Site and approved KDEP's use of $300,000 of the O&M funds for the activities.

Table 3 presents the annual O&M costs during the current FYR period. These costs represent the total amount of O&M funds used annually and include labor costs. The increase in total costs after 2009 represents the additional site characterization activities conducted as part of the Site's O&M.

Table 3: Annual O&M Costs

Date	Total Cost (rounded to the nearest $1,000)
2008	$2,000
2009	$5,000
2010	$18,000
2011	$65,000
2012	$38,000

5.0 Progress Since the Last Five-Year Review

The protectiveness statement from the 2008 FYR for the Site stated:

"The remedy at the A.L. Taylor Site currently protects human health and the environment because the cap portion of the remedy appears to be functioning as intended by the selected remedy within the ROD by preventing off-site contaminant migration. However, in order for the remedy to be protective in the long term, the drainage ditch needs to be maintained to function as intended by the selected remedy within the ROD, which will require removing any vegetation or fill that is obstructing the drainage ditches both inside and outside of the fenced area. EPA should also work with the State to fill in a large hole just outside of the fence on the southeastern portion of the capped area to prevent ponding adjacent to the cap. Appropriate steps should be taken to promote drainage towards Wilson Creek in this area and discourage activities that may result in future ponding. EPA should confer with the State to determine whether signage identifying the Site as a Superfund site should be posted to discourage trespassing, or if these signs might have the opposite effect. Installing an additional gate at the entrance to the Site may be another option to deter trespassing.

In addition, ground water monitoring wells need to be located, marked and restored to working order, and all O&M activities need to occur on a quarterly basis. This includes maintaining the sampling and observation schedules required by the 1988 O&M Plan to observe any trends that may indicate migration of contaminants of concern (COCs). The requirement of ICs was not documented in the selected remedy within the ROD. However, options for implementing ICs to restrict ground water and land use should be evaluated. ICs restricting ground water and land use are needed, so that any future use of the Site will remain protective of human health and the environment. EPA and the State should conduct further investigations to determine the source of PCBs and take appropriate actions to remove them from Wilson Creek in a timely manner."

The 2008 FYR included twelve issues and recommendations. Table 4 summarizes each recommendation and its current status below.

Table 4: Progress on Recommendations from the 2008 FYR

Section	Recommendations	Party Responsible	Milestone Date	Action Taken and Outcome	Date of Action
5.1	Work with KDEP to determine appropriate action to place use restrictions on the Site.	EPA, KDEP	12/31/2009	Ongoing	Ongoing
5.2	Conduct further investigations to determine if the drums and materials in Wilson Creek are contaminants and take appropriate future actions.	EPA, KDEP	12/31/2009	KDEP began investigations of Wilson Creek in 2010.	Ongoing
5.3	Perform maintenance on the ditch both inside and outside of the fence by removing vegetation to ensure its functionality.	KDEP	12/31/2009	Regular semiannual O&M activities began in 2009, including mowing, maintenance and vegetation control.	06/09/2009
5.4	Work with KDEP to ensure site data are regularly collected in the future and ensure the sampling at the Site is in accordance with the O&M plan.	KDEP	12/31/2009	KDEP conducted annual ground water monitoring in October 2010 and October 2011. No surface water samples were collected.	10/07/2010 and 10/06/2011
5.5	Work with KDEP to ensure the O&M schedule is being followed.	KDEP	12/31/2009	Regular semiannual O&M activities began in 2009, including mowing, maintenance and vegetation control. Ground water monitoring took place in 2010 and 2011. Surface water data were not collected. The EPA is reviewing the sampling methodologies to determine whether collection methods are sufficient to inform protectiveness determinations related to the remedy.	06/09/2009, 10/07/2010 and 10/06/2011

Section	Recommendations	Party Responsible	Milestone Date	Action Taken and Outcome	Date of Action
5.6	Conduct further investigations to determine the source of PCBs and appropriate actions to remove them from the Site.	EPA, KDEP	12/31/2009	KDEP began investigations of Wilson Creek in 2010.	Ongoing
5.7	Clearly mark the ground water monitoring wells.	KDEP	12/31/2009	KDEP has cleaned, repainted and clearly marked ground water monitoring wells at the Site.	10/03/2012
5.8	Conduct investigations to determine what is causing ponding and take appropriate actions to stop ponding from occurring and promote drainage toward Wilson Creek.	EPA, KDEP	12/31/2009	No action	Incomplete
5.9	Work with KDEP to consider actions to deter trespassing that may potentially interfere with the remedy.	KDEP	12/31/2009	A KDEP contractor replaced the chain link fencing at the Site.	06/10/2011
5.10	Conduct investigations of the unmarked pipe and evaluate whether it compromises human health and the environment; if so, determine appropriate actions.	EPA, KDEP	12/31/2009	No investigation has taken place.	Incomplete
5.11	Determine actions necessary to repair monitoring wells to become functional or abandon and replace as needed.	KDEP	12/31/2009	KDEP has cleaned, repainted and clearly marked ground water monitoring wells at the Site.	Ongoing
5.12	Confer with KDEP to determine if signs are necessary to protect the remedy or if they will have unintended impacts.	EPA, KDEP	12/31/2009	No action	Incomplete

5.1 Determine site use restrictions

Ground water and land use restrictions have not been implemented at the Site. Although the ROD did not require them, institutional controls restricting ground water and land use are needed to ensure that future use of the Site will remain protective of human health and the environment. According to the 1986 ROD, ground water is not a source of

drinking water near the Site because the two aquifers beneath the Site produce low water yields of poor quality. The residences and businesses near the Site obtain their drinking water from the public water supply. However, there is a precedent at the Site for the installation of ground water wells. During the site inspection in October 2012, participants discussed a well that a nearby resident installed but did not successfully draw water from due to low yield conditions. Thus, the EPA and KDEP are continuing to work to evaluate options for selecting and implementing institutional controls at the Site and other areas as deemed appropriate.

5.2 Conduct further investigations of Wilson Creek

In July 2009, the EPA approved KDEP's use of O&M funds for further investigations of Wilson Creek. A contractor for KDEP conducted investigations in 2010 and 2011. The contractor investigated soil and sediment as discussed in Section 6.4. At the time of this FYR, the EPA is reviewing the information collected and will take next steps as necessary.

5.3 Perform ditch maintenance

KDEP awarded a contract to the O&M contractor in 2008 for mowing, cap maintenance and vegetation control activities at the Site. KDEP's O&M contractor began semiannual O&M activities at the Site in 2009. Although O&M activities have taken place on a regular basis, site inspection participants observed overgrowth of vegetation on the cap within the fenced area of the Site during the October 2012 site inspection. Overgrowth of vegetation may impede the letdown channels on the cap from functioning properly.

5.4 Ensure data collection and sampling is in accordance with the O&M plan

During the October 3, 2012 site inspection, participants observed that each of the twelve ground water monitoring wells at the Site had been cleaned. KDEP conducted annual ground water sampling in 2010 and 2011.

5.5 Ensure O&M schedule is followed

KDEP awarded a contract to the O&M contractor in 2008 for mowing, cap maintenance and vegetation control activities at the Site. KDEP's O&M contractor has performed cap maintenance activities on a semiannual basis at the Site since 2009. However, participants observed overgrowth on the cap during the 2012 site inspection. Overgrowth may impede the letdown channels from functioning properly. KDEP conducted ground water monitoring in 2010 and 2011. The EPA is reviewing the sampling methodologies to determine whether collection methods are sufficient to inform protectiveness determinations related to the remedy.

5.6 Conduct further investigations of PCBs

The EPA approved KDEP's use of O&M funds for further investigations of the Site, including Wilson Creek. A contractor for KDEP conducted investigations during 2010 and 2011. The results of the investigation are under review.

5.7 Clearly mark monitoring wells

During the site inspection on October 3, 2012, site inspection participants confirmed that the O&M contractor for KDEP cleaned, repainted and clearly marked the 12 ground water monitoring wells at the Site.

5.8 Address ponding and promote drainage toward Wilson Creek

Investigations of the ponding on the southeast side of the Site's fenced area are ongoing. During the October 2012 site inspection, participants observed the grass on the east side of the Site pushed down in the direction of the area where water historically ponds on the Site. There appears to be overgrowth of vegetation in the letdown channels on the cap, which may impede water moving off the cap and therefore be contributing to the ponding of water near the fence line on the southeast side of the Site.

5.9 Consider actions to deter trespassing

The 2008 FYR stated that state representatives noted that posting Superfund signs at the Site could lead to increased vandalism and trespassing in the area. In June 2011, KDEP's O&M contractor replaced the fencing to restrict access to the capped portion of the Site and deter trespassing. There was no evidence of trespassing at the time of this FYR site inspection.

5.10 Investigate unmarked pipe

No investigation has taken place.

5.11 Repair monitoring wells to become functional or abandon and replace as needed

The 2008 FYR noted that the EPA was unable to collect ground water samples from the Site's monitoring wells in December 2007 because the wells were not functioning properly. The EPA believed that the wells may have been compromised. Monitoring wells observed during the 2012 site inspection appeared clean and clearly marked. During the 2012 site inspection, representatives from KDEP indicated that the Site's O&M contractor had cleaned the wells.

5.12 Determine if signs are necessary to protect the remedy

The 2008 FYR stated that KDEP representatives noted that posting Superfund signs at the Site could lead to increased vandalism and trespassing in the area. The perimeter fencing at the Site deters trespassing and protects the cap and components of the remedy.

6.0 Five-Year Review Process

6.1 Administrative Components

EPA Region 4 initiated the FYR in October 2012 and scheduled its completion for June 2013. EPA Remedial Project Manager (RPM) Yvonne Jones led the EPA site review team, which also included EPA Site Attorney Stedman Southall, the EPA Enforcement Project Manager Felicia Jackson, EPA Community Involvement Coordinator (CIC) Angela Miller and contractor support provided to the EPA by Skeo Solutions. In January 2013, the EPA held a scoping call with the review team to discuss the Site and items of interest as they related to the protectiveness of the remedy currently in place. The review schedule established consisted of the following activities:

- Community notification.
- Document review.
- Data collection and review.
- Site inspection.
- Local interviews.
- FYR Report development and review.

6.2 Community Involvement

In April 2013, the EPA published a public notice in the *Pioneer News* newspaper announcing the commencement of the FYR process for the Site, providing contact information for Yvonne Jones and Angela Miller and inviting community participation. The press notice is available in Appendix B. No one contacted the EPA as a result of the advertisement.

The EPA will make the final FYR Report available to the public. The EPA will place copies of the document in the designated site repository: Ridgway Memorial Library, located at 127 Walnut Street, Shepherdsville, Kentucky 40165. Upon completion of the FYR, the EPA will place a public notice in the *Pioneer News* newspaper to announce the availability of the final FYR Report in the Site's document repository.

6.3 Document Review

This FYR included a review of relevant, site-related documents including the ROD, the previous FYR, and monitoring data. A complete list of the documents reviewed can be found in Appendix A.

ARARs Review

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. Applicable requirements are those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that specifically address a hazardous substance, remedial action, location or other circumstance found at a CERCLA site. Relevant and appropriate requirements are those standards that, while not "applicable," address problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well suited to the particular site. Only those state standards more stringent than federal requirements may be applicable or relevant and appropriate. To-be-considered criteria are non-promulgated advisories and guidance that are not legally binding but should be considered in determining the necessary remedial action. For example, to-be-considered criteria may be particularly useful in determining health-based levels where no ARARs exist or in developing the appropriate method for conducting a remedial action.

ARARs were not defined for the Site in the June 1986 ROD because the Superfund Amendments and Reauthorization Act (SARA) was enacted in September 1986; pre-SARA RODs were not required to identify ARARs within the remedy selection discussions. In addition, the 1986 ROD did not establish specific COCs nor any action levels associated with those COCs, such as Safe Drinking Water Act Maximum Contaminant Levels (MCLs). Therefore, this FYR does not evaluate changes in these standards. Should the EPA choose to modify the remedy for the Site, specific ARARs and cleanup goals may be identified.

Institutional Controls Review

The EPA's contractor conducted a review of institutional controls at the Site and surrounding properties. No institutional controls have been implemented for the Site or the surrounding properties. Although the ROD did not require them, institutional controls restricting ground water and land use are needed at the Site and other areas as deemed appropriate to ensure that future use will remain protective of human health and the environment. According to the ROD, ground water is not a source of drinking water near the Site because the aquifers produce low yields of poor quality. Additionally, residences and businesses near the Site obtain their drinking water from the public water supply.

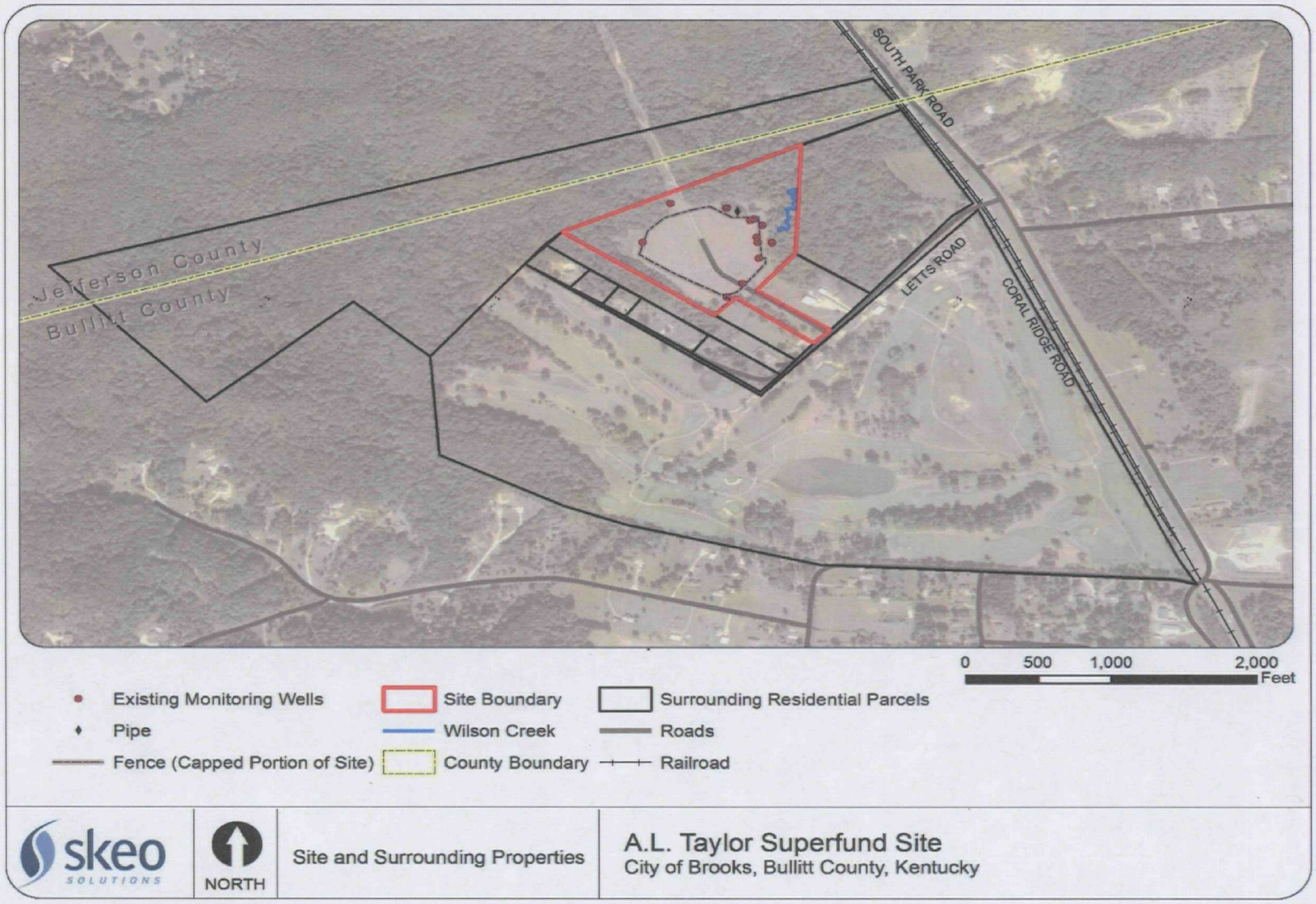
The Bullitt County Property Record cards provided information regarding whether public utilities served a specific parcel. Bullitt County officials indicated that if public utilities were not indicated on the card, then it is likely that the resident uses a cistern as a potable water source. Table 5 presents property information collected from the Bullitt County

Property Record cards about the site property and institutional controls needed. Figure 3 shows the location of the Site and surrounding parcels in relation to the Site.

Table 5: Bullitt County Property Record for the Site

Parcel Number	Current Owner	ICs called for in Decision Documents	ICs Needed
034-000-00-011	Citizens Fidelity Bank and Trust Company	No	Yes, ground water and land use restrictions

Figure 3: Site and Surrounding Properties Potentially Impacted by IC Implementation



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.

6.4 Data Review

Ground Water

Although ground water at the Site is not of sufficient quantity and quality to be considered as a drinking water source, institutional controls are not in place at the Site. Public use of ground water as a drinking water source at and near the Site could potentially occur. Ground water sampling has not been conducted regularly at the Site. The following discussion of contaminant concentrations in ground water – MCLs and Regional Screening Levels (RSLs) – provides a reference point. The 1986 ROD did not establish specific COCs or any action levels associated with those COCs. The 1989 Revised Final O&M Plan presented a list of high priority contaminants but did not establish specific action levels.

The 2008 FYR presented ground water sampling results from monitoring events between 1998 and 2003. Between 1995 and 2000, monitoring for the contaminants presented in the 1989 Revised Final O&M Plan took place. Sampling did not detect any VOCs during this time. However, sampling did detect bis (2-ethylexyl) phthalate above the MCL in several monitoring wells and nickel above the MCL in monitoring well (MW) 7. In January 2003, KDEP collected ground water samples from MW 1, MW 2, MW 4, MW 5, MW 10, MW 11 and MW 12. Concentrations of contaminants presented in the 1989 Revised Final O&M Plan were below MCLs. Samples from MW 1 and MW 2 were composed of mud rather than ground water. Therefore, the samples were compared to Region 4's Preliminary Remediation Goals (PRGs) and Soil Screening Levels (SSLs) instead of MCLs. Nickel concentrations in MW 1 and MW 2 were above SSLs and concentrations of Aroclor 1254 in MW 1 and MW 2 were above PRGs. In December 2007, KDEP attempted to collect ground water samples at the Site but ground water was murky and most wells ran dry before adequate samples were collected.

KDEP conducted ground water sampling in October 2010 and October 2011. KDEP analyzed samples for a variety of metals, VOCs and pesticides. Table 6 presents the contaminants in ground water that exceeded RSLs or MCLs in October 2010. Table 7 presents the contaminants in ground water that exceeded RSLs or MCLs in October 2011. During the October 2010 ground water sampling event, arsenic and vinyl chloride concentrations exceeded both the RSL and the MCL. Lead in MW DW2 and 1,1-dichloroethylene in MW 9 exceeded the MCLs. 1,1-dichloroethane exceeded the RSL in MW 3 and MW 9. During the October 2011 ground water sampling event, arsenic and vinyl chloride concentrations exceeded both RSLs and MCLs. Benzene, manganese, iron, trichloroethylene and 1,1-dichloroethane exceeded RSLs. Appendix G presents all constituents detected during KDEP's analyses of ground water samples in 2010 and 2011.

Table 6: Wells With Contaminants Exceeding RSL or MCL during October 2010 Ground Water Sampling Event

Contaminant	RSL	MCL	10/7/2010									
			MW 1	MW DW 2	MW 3	MW 4	MW 5	MW 6	MW 7	MW 8	MW 9	MW 10
VOCs												
1,1-dichloroethane	2.4	NA	ND	ND	**5.4**	ND	ND	ND	ND	ND	**42**	ND
1,1-dichloroethylene	260	7	ND	ND	ND	ND	ND	ND	ND	ND	**13**	ND
Vinyl Chloride	0.015	2	ND	ND	ND	ND	ND	ND	ND	ND	**11**	ND
Metals												
Arsenic	0.045	10	**8**	ND	**4**	**3**	**2**	**7**	**3**	**2**	**11**	**5**
Lead	NA	15	ND	**97**	ND	ND	ND	ND	ND	3	ND	ND

All values are in micrograms per liter (µg/L)
RSL = http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm
ND = Not detected above the laboratory detection limit
NA = Not applicable
Bolded and highlighted = concentration exceeded MCL or RSL

Table 7: Wells With Contaminants Exceeding RSL or MCL during October 2011 Ground Water Sampling Event

Contaminant	RSL	MCL	10/6/2011-10/7/2011 MW 1	MW 2	MW 3	MW 4	MW 5	MW 6	MW 7	MW 8	MW 9	MW 10	MW 11	MW 12
VOCs														
1,1-dichloroethane	2.4	NA	ND	ND	**4.08**	1.24	ND	ND	ND	ND	**21.4**	ND	ND	ND
Benzene	0.39	5	ND	ND	ND	ND	ND	ND	ND	ND	**0.540**	ND	ND	ND
Trichloroethylene	0.44	5	ND	ND	**0.732**	0.260	ND	0.301	ND	ND	ND	ND	ND	ND
Vinyl chloride	0.015	2	ND	ND	ND	**0.365**	ND	ND	ND	ND	**4.28**	ND	ND	ND
Metals														
Arsenic	0.045	10	**2.3**	**1.1**	**2.44**	**2.04**	**1.31**	**8.33**	**5.03**	**2.19**	**14.2**	**5.06**	**2.4**	**1.26**
Iron	11,000	NA	ND	ND	ND	ND	ND	ND	315	188	**14,200**	262	2,310	**14,200**
Manganese[a]	320	NA	**686**	77.8	**1,030**	**1,620**	17.6	33.8	69.2	70.6	**8,400**	128	**606**	228

All values are in micrograms per liter (µg/L)
RSL = http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm
ND = Not detected above the laboratory detection limit
NA = Not applicable
Bolded and highlighted = concentration exceeded MCL or RSL
a. Manganese (non-diet)

Surface Water

In December 2007, surface water samples were collected for the 2008 FYR to identify levels of VOCs, PCBs and other organic compounds as required by the parameters established in the 1988 Field Operations Plan. The samples were collected in Wilson Creek near hardened sludge and drum carcasses. The results of the sampling data indicated no evidence of contaminants in the surface water. No samples were collected for this 2013 FYR.

Soil

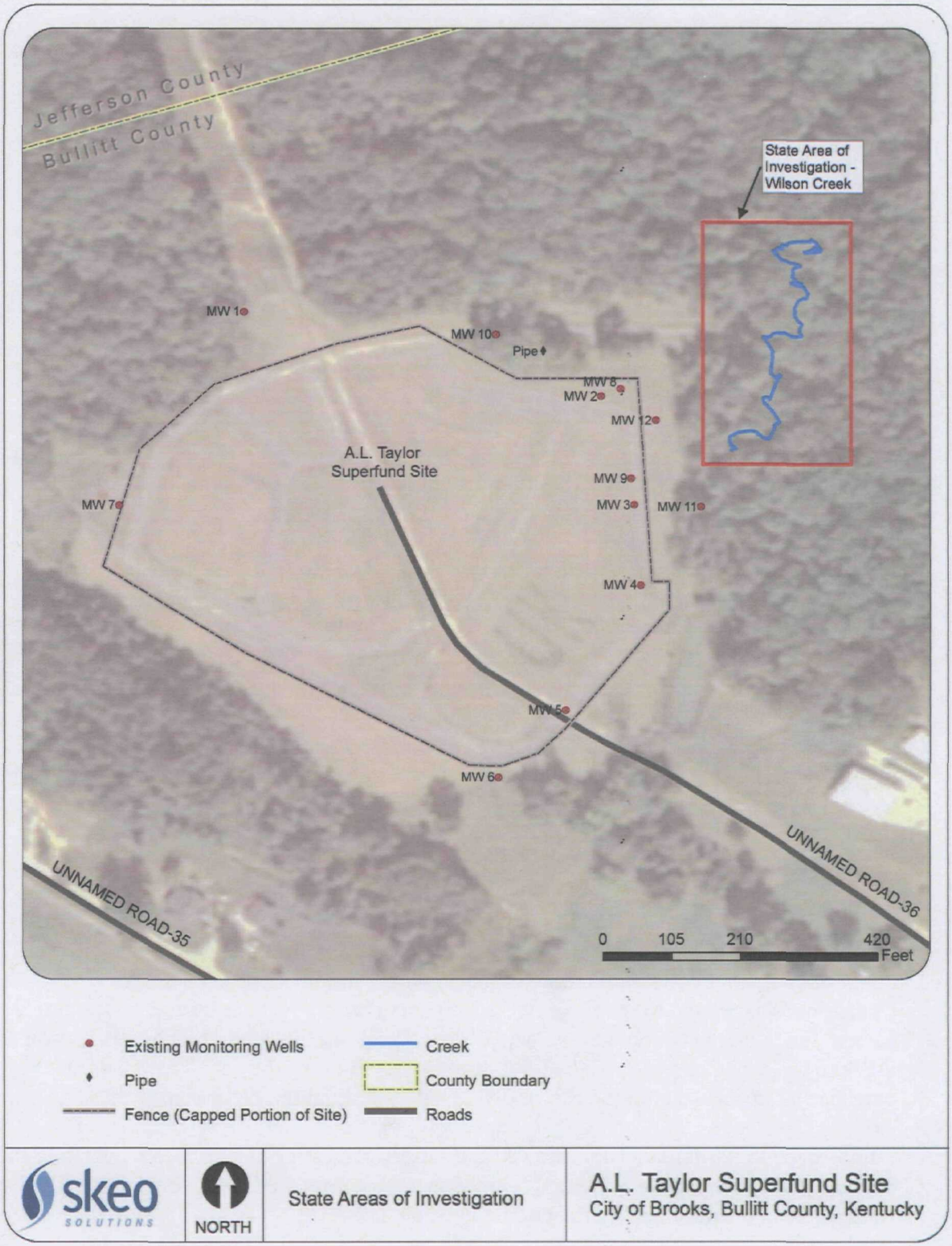
In July 2009, the EPA approved KDEP's use of O&M funds for further investigations of Wilson Creek. A contractor for KDEP conducted investigations during 2010 and 2011 and presented the findings in a draft report that is currently under review by the EPA.

Sediment

In December 2007, sediment samples were collected for the 2008 FYR to identify levels of VOCs, PCBs and other organic compounds as required by the parameters established in the 1988 Field Operations Plan. The samples were collected in Wilson Creek near hardened sludge and drum carcasses. Sediment samples from Wilson Creek contained PCBs and organic compounds. Organic compounds present at detectable levels included benzo(b)fluoranthene, chrysene, fluoranthene and isophorone. The concentrations for these contaminants were below PRGs. With the exception of isophorone, concentrations also did not exceed SSL levels. PCBs were the only contaminants that were detected above acceptable PRG and SSL levels.

KDEP investigations in 2010 and 2011 assessed a portion of Wilson Creek and its associated flood plain containing hardened paint sludge, PCB and polycyclic aromatic hydrocarbon (PAH) constituents (Figure 4). The area of Wilson Creek and the adjacent property that KDEP investigated was about 830 feet long and 90 feet wide at its widest extent. The EPA is currently reviewing KDEP's report and will determine appropriate next steps related to Wilson Creek.

Figure 4: KDEP Area of Investigation for Wilson Creek



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.

6.5 Site Inspection

On October 3, 2012, Nestor Young and Felicia Jackson (EPA); Kristin Sprinkle and Lynette Wysocki (Skeo Solutions); and Wesley Turner, Cheryl Brown and Dan Phelps (KDEP) met at the Site's entrance, located off of Letts Road to participate in the site inspection. Wesley Turner gave an overview of the site area and led a tour of the Site. The group toured the Site to observe the condition of all remedial components as well as the Jefferson Memorial Site located adjacent to the site area. The group observed the condition of the following areas:

- The capped landfill area.
- Monitoring wells.
- Perimeter ditches.
- Letdown channels.
- Roadway conditions.
- Vegetation.
- Wilson Creek.
- Excavated drums and temporary monitoring wells at the adjacent Jefferson Memorial site.

Site inspection participants discussed the O&M activities at the Site. KDEP representatives explained that they have been in the process of rebidding the maintenance and mowing contracts. Mowing had taken place in the spring and spraying for vegetation growth in the ditches and letdown channels would happen soon. Site inspection participants observed overgrown vegetation in perimeter ditches and letdown channels. Site inspection participants discovered two undocumented wells, both of which were labeled MW DW2. These wells were in good condition but were unlocked. Site inspection participants identified all other known wells, the majority of which were locked. KDEP representatives stated that monitoring wells had not been replaced but that the wells had been recently cleaned and repainted.

KDEP explained the sampling that has been performed at the Site from the eastern fence line to Wilson Creek. Additionally, KDEP conducted annual sampling of ground water at the Site in 2010 and 2011.The EPA is reviewing the sampling methodologies to determine whether collection methods are sufficient to inform protectiveness determinations related to the remedy. Participants observed ponded water on the Site's eastern fence line between the Site and Wilson Creek. In this area, the bottom portion of the fencing has been removed to allow water to move off of the cap. There was no evidence of trespassing on the cap or use of ATVs around the perimeter of the cap.

Site inspection participants also viewed the Jefferson Memorial site, located north of the Site. Excavated drum carcasses and temporary monitoring wells were observed. KDEP is working with relevant parties to conduct cleanup activities.

KDEP representatives noted that there has been interest from Bullitt County in selling the tax delinquent site property and from other parties in purchasing the property. A sale has

not yet taken place. Skeo Solutions staff took photographs of remedial components. Later, Skeo Solutions staff revisited the Site and observed the major remedial components and Wilson Creek with Yvonne Jones (EPA). The completed Site Inspection Checklist is presented in Appendix D. Site inspection photographs are presented in Appendix E.

On October 3, 2012, Kristin Sprinkle and Lynette Wysocki from EPA contractor Skeo Solutions visited the designated site repository – Ridgway Memorial Library, located at 127 Walnut Street, Shepherdsville, Kentucky 40165 – as part of the site inspection. The information at the library included: the Administrative Record since 1979, the NPL Site Deletion Docket and the 2003 FYR with Appendices. The 2008 FYR and appendices should be added to the site repository.

Skeo Solutions staff conducted research at the Bullitt County Public Records Office and the Jefferson County Public Records Office. The Site is located immediately adjacent to the county lines and Skeo Solutions staff visited both offices to ensure a complete search of deed information. The Bullitt County Public Records Office, located at 149 North Walnut Street, Shepherdsville, Kentucky 40165, provided the deed record for the Site, as presented in Table 8.

Table 8: Site Deed Document from Bullitt County Public Records Office

Parcel Number	Current Owner	Description of Document	Date	Book #	Page #
034-000-00-011	Citizens Fidelity Bank and Trust Company	Commissioner's Deed for the purchase of the site property from public auction	4/25/1985	272	318-320

On April 25, 2013, the EPA contacted the Louisville Water Company to obtain water supply information regarding the properties located near the Site. The EPA found that 19 out of the 21 properties investigated have active public water supply service. The two properties with no active service do not appear to be residences.

6.6 Interviews

The FYR process included interviews with parties impacted by the Site, including the current landowners and regulatory agencies involved in Site activities or aware of the Site. The purpose was to document the perceived status of the Site and any perceived problems or successes with the phases of the remedy implemented to date. All of the interviews took place via email or phone between January 2013 and June 2013. The report summarizes the interviews below. Appendix C provides the complete interviews.

Wesley Turner: Wesley Turner is the KDEP representative for the Site. Mr. Turner feels that the Site is generally progressing as expected. He explained that because of paint waste identified during the previous FYR, KDEP has conducted an investigation of PCB contamination in Wilson Creek. KDEP has submitted the findings to the EPA for review

in late 2012. After a decision regarding how to address Wilson Creek, Mr. Turner stated that he would be able to make a more definitive statement concerning the performance of the entire Site. He explained that the area within the restricted area of the Site is protective and performing as designed. Mr. Turner stated that KDEP has noted increased recreational ATV use at the Site and that an environmental covenant should be placed on the property to restrict use. KDEP has received two inquiries from community members and has provided them with information or directed them to the EPA. KDEP has also contacted Bullitt County to make them aware of the need for a covenant on the property in response to the county's proposal to sell the Site property. Mr. Turner stated that he is pleased with the open communication with the EPA and the progress at the Site in recent years.

Eddie Taylor: Eddie Taylor is the O&M contractor for the Site. Mr. Taylor's overall impression of the Site is very good. He does not have any knowledge of the performance of the remedy. Mr. Taylor maintains the Site property including mowing and maintenance activities. He stated that O&M activities are ongoing at the Site and working with the project staff has been a good experience. He does not perform sampling activities for the ground water monitoring wells. There have been no changes to the O&M requirements or schedules in the last five years, no opportunities to optimize O&M activities and no unexpected costs. Mr. Taylor suggested that information be posted on the front gate of the Site as four-wheelers are using the area outside of the fence and making large ruts in the ground surface.

Residents: Approximately 8 residents were interviewed during this Five-Year Review. The residents living near the Site have lived in the area for years and are aware and very knowledgeable about the Site and the cleanup activities. Most of the residents did not have any complaints or concerns about the Site or the remedy. One resident stated that she moved into the area in 1982 and did not have any knowledge of the Site until two years later. She stated that she would not have moved to the area if she had known about the Site. However, she stated that she is comforted that the Site continues to be monitored. Most residents have been informed about the Site through the media, as well as EPA meetings and fact sheets.

7.0 Technical Assessment

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

Based on the site inspection and investigations conducted by KDEP, the landfill cap appears to remain effective in containing contaminants and preventing further migration of hazardous substances off site to Wilson Creek. While previous investigations have identified PCBs in the Wilson Creek area, these contaminants do not appear to be migrating from the capped area. The EPA and KDEP are working together to obtain reliable samples for areas between the cap and creek, and to delineate the extent of contamination in the creek. Historic sampling has indicated the presence of Aroclor 1254 and 1260 in excess of risk-based screening levels. A more stringent analysis may be warranted to identify whether these PCBs have weathered. Sampling for dioxin may be

warranted. The EPA is currently determining the next steps related to data and sampling techniques for Wilson Creek and other areas if deemed necessary.

The drainage ditch designed to divert water around the Site is overgrown. Based on evidence of significant overland flow, it may not be functioning as intended. O&M activities should take place as required in the Revised Final O&M Plan to ensure that overgrowth in the letdown channels does not occur. According to the health risk discussions in the ROD, the pathway of concern at the Site is migration of surface water runoff that has come into contact with on-site waste. The landfill cap acts to contain waste materials and prevent contact between surface water and waste. The Revised Final O&M Plan also requires regular sampling of sediment and surface water to confirm that no contaminants are migrating and the landfill cap remains effective. The EPA is working with KDEP to delineate the extent of contamination in Wilson Creek.

The EPA is evaluating whether ground water data collected in 2010 and 2011 by KDEP is sufficient for making conclusions regarding potential migration of contaminated ground water toward Wilson Creek. There are no RAOs related to the cleanup of ground water. Ground water at and near the Site is not used for potable purposes, so there is no immediate threat posed to human health and the environment. Although the ROD did not require institutional controls, they may be needed to restrict ground water use at the Site and other areas as appropriate to ensure that the remedy remains protective for the long term. Institutional controls are also needed to restrict land use activities on the Site's landfill cap and maintain the effectiveness of the remedy.

The EPA will work with KDEP to collect additional data and conduct additional risk assessments as deemed necessary.

7.2 Question B: Are the exposure assumptions, toxicity data, cleanup levels and remedial action objectives (RAOs) used at the time of remedy selection still valid?

The 1984 Feasibility Study Addendum and Endangerment Assessment identified ground water and surface water as potential routes of exposure to hazardous substances released from the Site. There is little potential for exposure to ground water contamination under current conditions because nearby residences are connected to the public water supply. However, at least one nearby resident installed a well. The one known well does not successfully draw water. There are no ground water or land use restrictions in place that consider future land use scenarios.

Surface water does not serve as a drinking water source downstream of the Site and Wilson Creek. If appropriate, following additional data collection and site characterization, the EPA will reevaluate risk at the Site. Exposure assumptions will be reevaluated during these additional activities.

The 1986 ROD identified contaminants found most often and in highest concentrations during site investigations. These contaminants included: xylene, phthalates, toluene, alkyl benzenes, methyl ethyl ketone, methylene chloride, acetone, anthracene, vinyl chloride,

trans-1,2 dichloroethylene, fluoranthene and aliphatic acids. The ROD also identified contaminants that exceeded background levels for ground water including: PCBs, barium, zinc, copper, strontium, magnesium and chromium. The ROD did not establish specific COCs for the Site or any cleanup levels associated with the COCs. The 1989 Revised Final O&M Plan established a list of contaminants, including VOCs, other organic compounds and PCBs for analysis during ground water and surface water monitoring.

Since the ROD did not establish COCs, a review of toxicity data, cleanup levels and RAOs cannot be completed.

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

Sampling conducted during the 1984 Feasibility Study Addendum and Endangerment Assessment as well as during the previous FYR period detected Aroclor 1254 and 1260 in excess of risk-based screening levels. Aroclor refers to a mixture of individual PCB compounds called PCB congeners and each Aroclor mixture could contain up to 209 individual PCB congeners. As Aroclors are released in the environment, the mixtures of the different PCB congeners undergo weathering over time (e.g., through partitioning, chemical transformation, preferential bioaccumulation), which often results in a PCB composition markedly different from the original commercial Aroclor mixture. As such, carcinogenic risk assessment guidelines recommend the calculation of congener-specific or total PCB data when available (EPA 1994)[1]. Congener-specific analyses utilize the direct quantification of each unique PCB congener. The result is a precise description of PCB profiles, which provides a more accurate representation of total PCBs.

Early EPA documents cite regular burning of wastes and a fire that burned continuously for more than one week during site operations. Burning of wastes containing chlorinated compounds that were known to have been disposed of at the Site may have resulted in the creation of dioxin and PCB congeners. As a result, a more stringent analysis may be warranted to identify concentrations of dioxin and total PCBs.

7.4 Technical Assessment Summary

Based on the site inspection, the landfill cap portion of the remedy appears to be functioning as intended by the selected remedy in the ROD. There is no visual evidence that the cap is eroding or that contaminants under the cap are migrating toward Wilson Creek. The EPA is evaluating whether current ground water sampling data and methodologies are sufficient for determining whether contaminated ground water may be migrating toward Wilson Creek. The EPA is also coordinating with KDEP to delineate contamination in Wilson Creek and other areas as deemed necessary. Currently, no one drinks ground water at the Site and there are no known recreational uses of Wilson Creek east of the landfill cap. Historical data had documented the presence of Aroclor 1254 and

[1] EPA (U.S. Environmental Protection Agency). 1994. *Method 1613, Tetra-Through Octa-Chlorinated Dioxins and Furans by Isotope Dilution HRGS/HRMS, Revision B.* Environmental Protection Agency, Office of Water, Washington D.C. [Online] Available: http://www.epa.gov/ost/methods/1613.html. October.

1260 and early EPA documents cite burning of wastes, so the potential exists for the presence of dioxin and weathered PCBs. As a result, a more stringent analysis may be warranted to identify the presence of dioxin and PCB congeners at the Site. If appropriate, following site characterization activities, the EPA and KDEP will determine whether issuing a decision document is necessary.

O&M activities have not taken place on a regular basis at the Site until recent years. Overgrowth in the letdown channels on the landfill cap may impede the proper function of the channels and cause ponding on the southeast side of the Site's fenced area. Regular sampling of ground water, surface water and sediment as required by the Revised Final O&M Plan is ongoing. As directed in the Revised Final O&M Plan, KDEP must evaluate and report analytical results of sampling to the Commonwealth of Kentucky and EPA Region 4.

8.0 Issues

Table 9 summarizes the current site issues.

Table 9: Current Site Issues

Issue	Affects Current Protectiveness (Yes or No)	Affects Future Protectiveness (Yes or No)
Required O&M activities have not taken place on a regular basis. Lack of required O&M activities has resulted in overgrowth of vegetation in the letdown channels on the cap. Overgrowth may impede water from moving off the cap as designed and may contribute to the ponding of water near the fence line on the southeast side of the Site.	No	Yes
Institutional controls restricting ground water use at the Site, land use on the landfill cap, and land use in other areas, as appropriate, are needed to ensure protectiveness, but are not required by the Site's decision documents. No institutional controls have been put in place.	No	Yes
The EPA has not tested to determine whether dioxin and PCB congeners are present at the Site. Further testing has not been conducted to determine whether historical burning of chlorinated contaminants on site has resulted in the creation of dioxin and weathered PCB congeners.	No	Yes

9.0 Recommendations and Follow-up Actions

Table 10 provides recommendations to address the current site issues.

Table 10: Recommendations to Address Current Site Issues

Issue	Recommendations / Follow-Up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness? (Yes or No)	
					Current	Future
Required O&M activities have not taken place on a regular basis. Lack of required O&M activities has resulted in overgrowth of vegetation in the letdown channels on the cap. Overgrowth may impede water from moving off the cap as designed and may contribute to the ponding of water near the fence line on the southeast side of the Site.	KDEP should ensure that O&M activities, including mowing, maintenance and vegetation control, occur on a regular basis. Also, KDEP should conduct regular monitoring of ground water, surface water and sediment.	KDEP	EPA	06/26/2014	No	Yes
Institutional controls restricting ground water and land use at the Site are needed to ensure that the selected remedy will remain protective of human health and the environment. No institutional controls are in place.	Select and implement appropriate ground water and land use restrictions. Document the IC requirement in a modified decision document.	KDEP/ Bullitt County	EPA	06/26/2014	No	Yes
Testing has not been conducted to determine whether historical burning of chlorinated contaminants on site has resulted in the creation of dioxin and weathered PCB congeners.	Evaluate the need to conduct further investigations using updated sampling and analysis techniques in accordance with EPA standard operating procedures to evaluate the presence of dioxin and PCB congeners.	KDEP/EPA	EPA	06/26/2014	No	Yes

The following additional items, though not expected to affect protectiveness, warrant additional follow up:

- An unmarked pipe remains just outside of the cap near MW 10.
- Site inspection participants found two undocumented wells, both of which were labeled MW DW2. Participants observed these wells to be in good condition but unlocked.
- The EPA should provide the Bullitt County Public Records Office with public water supply data collected for properties surrounding the Site so that Bullitt County can update its property record information cards as necessary.

10.0 Protectiveness Statement

The remedy at the Site currently protects human health and the environment in the short term. The landfill cap is effectively containing and preventing migration and contact with contaminants. For the remedy to be protective in the long term, the EPA and KDEP should take the following actions:

- KDEP should conduct regular O&M and monitoring activities.
- Select and implement institutional controls to restrict ground water use at the Site, land use on the landfill cap, and land use in other areas, as appropriate.
- Evaluate the need to conduct further investigations using updated sampling and analysis techniques in accordance with EPA standard operating procedures to evaluate if dioxin and PCB congeners are present on the Site.

11.0 Next Review

The next FYR will be due within five years of the signature/approval date of this FYR.

Appendix A: List of Documents Reviewed

Consent Decree Agreement. Civil Action No. C86-0310-L(A). United States of America, Plaintiff v. Nell Taylor (individually and as the executrix of the Estate of Arthur L. Taylor); et al. Defendants. October 30, 1991.

Feasibility Study Addendum and Endangerment Assessment. Final Report. A.L. Taylor Site, Brooks, Kentucky. November 1984. Prepared by Metcalf & Eddy, Inc. Prepared for the U.S. Environmental Protection Agency.

Field Investigation Report (December 2007). A. L. Taylor Site, Brooks, Kentucky. Project Identification Number: 08-0084. U.S. EPA Region 4. February 11, 2008.

Field Operations Plan. A.L. Taylor Site, Bullitt County, Kentucky. October 1988. Prepared by Ebasco Services Incorporated (EBASCO). Prepared for the U.S. EPA.

Final Operation and Maintenance Plan. A.L. Taylor Site, Bullitt County, Kentucky. May 1988. Revised 11/13/89. Prepared by Ebasco Services Incorporated (EBASCO). Prepared for the U.S. EPA.

Fourth Five-Year Review Report: A.L. Taylor (Valley of Drums) Superfund Site, Brooks, Kentucky. Prepared by E2 Inc. for EPA Region 4, May 2008.

Memo. Re: Operation and Maintenance, A.L. Taylor Site, Bullitt Co., KY. Received by Mr. Tim Hubbard, Assistant Director, Kentucky Division of Waste Management on June 24, 2009. Sent by R. Donald Rigger, Chief, Superfund Remedial and Site Evaluation Branch, U.S. EPA Region 4.

Memorandum. Subject: A.L. Taylor Dump, Bullitt County. From William D. Holland, Public Health Representative, Solid Waste Program. To Charles C. Iglehart, Jr., Director, Solid Waste Program. December 13, 1967.

Memorandum. Subject: Cursory Estimate of the Ecological Risk from PCBs in the Wilson Creek (AOC3) area of the A.L. Taylor site in Brooks, Kentucky. From Brett Thomas, Ph.D., Life Scientist, Technical Services Section, Superfund Division, Superfund Support Branch. To Yvonne Jones, Remedial Project Manager, Superfund Division. April 30, 2013.

Record of Decision. A.L. Taylor (Valley of Drums). EPA ID: KYD980500961. OU1. Brooks, KY. June 18, 1986.

Sampling Investigation Report. A. L. Taylor Site, Brooks, Kentucky. Prepared for the Hazardous Site Control Division, the U.S. EPA. August 15, 1983.

Superfund Site Close Out Report. A.L. Taylor "Valley of the Drums" Superfund Site, Shepherdsville, Kentucky. August 10, 1990.

Superfund State Contract for Operations and Maintenance Activities at A.L. Taylor, Commonwealth of Kentucky and the U.S. Environmental Protection Agency, Region IV. Prepared by the EPA and KNREPC. July 1989.

Appendix B: Press Notice

The U. S. Environmental Protection Agency, Region 4
Announces a Five-Year Review for
the A.L. Taylor (Valley of Drums) Superfund Site,
Brooks, Bullitt County, Kentucky

Purpose/Objective: The U.S. Environmental Protection Agency (EPA) is conducting a Five-Year Review of the remedy for the A.L. Taylor (Valley of Drums) Superfund site (the Site) in Brooks, Kentucky. The purpose of the Five-Year Review is to ensure that the selected cleanup actions effectively protect human health and the environment.

Site Background: The 23-acre Site is located off of State Highway 1020, 10 miles south of Louisville in Brooks, Bullitt County, Kentucky. Forested areas surround the site to the north and west. Residential areas are located east and south of the Site. From 1967 until 1977, waste disposal operations took place at the Site. Site operators emptied the contents of waste drums from nearby paint and coating facilities into pits on site and then recycled the drums. Site operators also burned off solvents disposed of in the pits, used soil from nearby hillsides to cover the pits and stored drums on site. The Kentucky Natural Resources and Environmental Protection Cabinet (now the Kentucky Department of Environmental Protection (KDEP)) first documented contamination at the site in 1975. In 1979, EPA documented site contamination and identified 4,000 deteriorating and leaking drums leaking into nearby Wilson Creek. EPA proposed the Site for inclusion on the National Priorities List (NPL) in 1982; EPA finalized the Site on the NPL in 1983. Major contaminants at the Site included heavy metals, volatile organic compounds (VOCs) such as ketones, plastics such as phthalates, and polychlorinated biphenyls (PCBs).

Cleanup Actions: EPA designated one operable unit (OU) to address the Site's contamination. EPA signed the Site's Record of Decision in June 1986, selecting a remedy to treat the Site's soil, sediment, surface water and ground water contamination. The major components of the remedy included placing a cap on site over sediment, sludge and waste material, constructing a surface water drainage system; monitoring the cap, surface water and ground water; installing a fence around the Site and conducting regular inspections and maintenance.

Five-Year Review Schedule: The National Contingency Plan requires that 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 be reviewed every five years to ensure the protection of human health and the environment. The fifth Five-Year Review for the Site will be completed by June 2013 and a copy of the final report will be placed in the local information repository located at the Ridgeway Memorial Library, 127 N. Walnut Street in Sheperdsville, KY.

EPA Invites Community Participation in the Five-Year Review Process: 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 are 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:

Yvonne Jones, EPA Remedial Project Manager
Phone: (404) 562-8793
Email: jones.yvonneo@epa.gov

Angela Miller, EPA Community Involvement Coordinator
Phone: (404) 562-8561 or toll free (877)718-3752
E-mail: miller.angela@epa.gov

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

Additional site information is available at the Site's local document repository, located at Ridgeway Memorial Library, 127 N. Walnut St., Shepherdsville, Kentucky, 40165 and online at: http://www.epa.gov/region4/superfund/sites/npl/kentucky/altayky.html

Appendix C: Interview Forms

A.L. Taylor (Valley of Drums) Superfund Site — Five-Year Review Interview Form

Site Name: A.L. Taylor (Valley of Drums) **EPA ID No.:** KYD980500961
Interviewer Name: N/A **Affiliation:** N/A
Subject Name: Wesley Turner **Affiliation:** KDEP Superfund PM
Subject Contact Information: Wesley.turner@ky.gov
Time: 9:22 a.m. **Date:** 1/29/2013
Interview Location: Via email

Interview Format: In Person Phone Mail Other: e-mail

Interview Category: State Agency

1. What is your overall impression of the project, including cleanup, maintenance and reuse activities (as appropriate)? For the most part, the Site is progressing as expected. Recent activities concerning the paint waste in Wilson Creek, as identified in previous FYRs, are progressing in a positive manner. The new project manager has a large degree of ownership with the project and has been wonderful to work with.

2. What is your assessment of the current performance of the remedy in place at the Site? Once the decision is made on how to deal with the Wilson Creek portion of the Site, I will be able to make a more definitive statement concerning the entire Site. The area within the restricted zone appears to be performing as designed and is protective of the environment and human health based on data collected thus far.

3. Are you aware of any complaints or inquiries regarding site-related environmental issues or remedial activities from residents in the past five years? We have had a number of complaints from one of the adjacent property owners concerning his pond. He claims that the remedy has adversely affected his pond's structural stability. I have not seen evidence of this but have referred him to the EPA to discuss the issue.
   We also had an inquiry from a resident who lives a few miles from the Site who has expressed concern for her family members which live downstream from the Site. Our Assistant Director has supplied her with information concerning the sampling in Wilson Creek and we will continue to follow up as the cleanup progresses.

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. KDEP conducted an investigation of the Wilson Creek PCB contamination, defined its extent and proposed a corrective action measure for the site. The entire package was submitted to the EPA for review late in 2012 and is currently under review by the Risk Assessment arm of the EPA. Once that report is fully reviewed, the EPA and the Commonwealth will determine what course of action to pursue.
   In addition to the characterization of Wilson Creek, KDEP has also conducted sampling events and O&M activities such as grass mowing and riprap maintenance.

5. Are you aware of any changes to state laws that might affect the protectiveness of the Site's remedy? None.

6. Are you comfortable with the status of the institutional controls at the Site? If not, what are the associated outstanding issues? There needs to be an environmental covenant placed on the property that will restrict the use of the property. We have also been noting increased ATV traffic at the Site this year.

7. Are you aware of any changes in projected land use(s) at the Site? The County had proposed the sale of the land during this FYR period. State personnel contacted the county to make them aware of the need for a covenant on the property and some of the restrictions related to the property. The County did not pursue the sale to our knowledge.

8. Do you have any comments, suggestions or recommendations regarding the management or operation of the Site's remedy?
   Additional cleanup is needed at the Site due to the Wilson Creek contamination. The EPA is currently reviewing the data and will make a decision within the next few months. I have been very pleased with the openness and willingness to discuss issues with the current RPM. She makes every effort to communicate on a regular basis. Overall, I am very pleased with the progress with the Site in the last couple of years especially.

Site Name: A.L. Taylor (Valley of Drums) **EPA ID No.:** KYD980500961
Interviewer Name: NA **Affiliation:** NA
Subject Name: Eddie Taylor **Affiliation:** O&M Contractor
Subject Contact Information: etaylor1965@yahoo.com
Time: NA **Date:** 05/22/2013
Interview Location: Kentucky

Interview Format (circle one): **In Person** **Phone** **Mail** **Other:** e-mail

Interview Category: **O&M Contractor**

1. What is your overall impression of the project, including cleanup, maintenance and reuse activities (as appropriate)? Very good.

2. What is your assessment of the current performance of the remedy in place at the Site?
   I do not have any knowledge of the performance of remedy.

3. What are the findings from the monitoring data? What are the key trends in contaminant levels that are being documented over time at the Site?
   I do not sample any of the monitoring wells and never have sampled them.

4. Is there a continuous on-site O&M presence? If so, please describe staff responsibilities and activities. Alternatively, please describe staff responsibilities and the frequency of site inspections and activities if there is not a continuous on-site O&M presence.
   The Site has maintained ongoing O&M activities. The staff has been good to work with.

5. Have there been any significant changes in site O&M requirements, maintenance schedules or sampling routines since start-up or in the last five years? If so, do they affect the protectiveness or effectiveness of the remedy? Please describe changes and impacts.
   There have been no different O&M requirements or schedules in the last five years.

6. Have there been unexpected O&M difficulties or costs at the Site since start-up or in the last five years? If so, please provide details.
   There have been no unexpected costs.

7. Have there been opportunities to optimize O&M activities or sampling efforts? Please describe changes and any resulting or desired cost savings or improved efficiencies.
   There have been none on my end.

8. Do you have any comments, suggestions or recommendations regarding O&M activities and schedules at the Site?
   There should be contact information posted on the front gate. Four wheelers are making large ruts outside the control [fenced] area.

Community Interviews
Five Year Review – 2013
A.L. Taylor (Valley of Drums) Superfund Site
Brooks, Bullitt County, Kentucky

The U.S. Environmental Protection Agency is conducting the fifth Five-Year Review of the cleanup remedy implemented at the A.L. Taylor Site. The 23-acre Site is located off of State Highway 1020, 10 miles south of Louisville in Brooks, Bullitt County, Kentucky. The National Contingency Plan requires that remedial actions that result in any hazardous substances, pollutants or contaminants remaining at the Superfund Sites above levels that allow for unlimited use and unrestricted exposure be reviewed every five years to ensure the protection of human health and the environment.

Due to budget constraints, the community interviews were conducted by phone with citizens that live in the area surrounding the A.L. Taylor Site. Forested areas surround the site to the north and west. Residential areas are located east and south of the site. Residents that live in this community have been there for years and were very knowledgeable about the site and the cleanup that took place. Many followed the cleanup through the media, EPA meetings and fact sheets. Most of the residents did not have any complaints or concerns about the site or the remedy that was implemented. One resident stated that she moved in the area in 1982 and did not have any knowledge that the site was located in the same area until 2 years later. Although she and her family have never had any trouble as a result of living near the site, she said would have never moved there had she known about it. She stated that she finds comfort in the fact that the site continues to be monitored.

During the community interviews, citizens were notified that a final report of the Five-Year Review will be placed in the information repository for the site. The repository is located at the Ridgeway Memorial Library on 127 N. Walnut Street in Sheperdsville, Kentucky.

Interviews conducted by:
Angela R. Miller, US EPA
Public Affairs Specialist
miller.angela@epa.gov

Appendix D: Site Inspection Checklist

FIVE-YEAR REVIEW SITE INSPECTION CHECKLIST

I. SITE INFORMATION

Site Name: A. L. Taylor (Valley of Drums)	**Date of Inspection: 10/3/2012**
Location and Region: Brooks, Bullitt County, KY Region 4	**EPA ID: KYD980500961**
Agency, Office or Company Leading the Five-Year Review: EPA Region 4	**Weather/Temperature: Sunny, 75°F**

Remedy Includes: (Check all that apply)

- ☒ Landfill cover/containment
- ☒ Access controls
- ☐ Institutional controls
- ☐ Ground water pump and treatment
- ☐ Surface water collection and treatment
- ☒ Other: Perimeter ditch located outside of fence
- ☐ Monitored natural attenuation
- ☐ Ground water containment
- ☐ Vertical barrier walls

Attachments: ☐ Inspection team roster attached ☐ Site map attached

II. INTERVIEWS (check all that apply)

1. **O&M Site Manager** _____ (Name) _____ (Title) mm/dd/yyyy (Date)
   Interviewed ☐ at site ☐ at office ☐ by phone Phone: _____
   Problems, suggestions ☐ Report attached: _____

2. **O&M Staff** Eddie Taylor (Name) O&M contractor (Title) 05/22/2013 (Date)
   Interviewed ☐ at site ☒ at office ☐ by phone Phone: NA; etaylor1965@yahoo.com
   Problems/suggestions ☒ Report attached: Yes

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.

Agency KDEP
Contact Wesley Turner (Name) | KDEP Superfund PM (Title) | 1/29/2013 (Date) | N/A (Phone No.)
Problems/suggestions ☒ Report attached: Yes

Agency _____
Contact _____ (Name) | _____ (Title) | _____ (Date) | _____ (Phone No.)
Problems/suggestions ☐ Report attached: _____

Agency _____
Contact _____ (Name) | _____ (Title) | _____ (Date) | _____ (Phone No.)
Problems/suggestions ☐ Report attached: _____

Agency _____
Contact _____ (Name) | _____ (Title) | _____ (Date) | _____ (Phone No.)
Problems/suggestions ☐ Report attached: _____

Agency _____
Contact _____ (Name) | _____ (Title) | _____ (Date) | _____ (Phone No.)
Problems/suggestions ☐ Report attached: _____

4. **Other Interviews** (optional) ☐ Report attached: _____

III. ON-SITE DOCUMENTS AND RECORDS VERIFIED (check all that apply)

1. **O&M Documents**

☐ O&M manual	☐ Readily available	☐ Up to date	☒ N/A
☐ As-built drawings	☐ Readily available	☐ Up to date	☒ N/A
☐ Maintenance logs	☐ Readily available	☐ Up to date	☒ N/A

Remarks: _____

2. **Site-Specific Health and Safety Plan** ☐ Readily available ☐ Up to date ☒ N/A
☐ Contingency plan/emergency response plan ☐ Readily available ☐ Up to date ☒ N/A
Remarks: _____

3. **O&M and OSHA Training Records** ☐ Readily available ☐ Up to date ☒ N/A
Remarks: _____

4.	**Permits and Service Agreements**			
	☐ Air discharge permit	☐ Readily available	☐ Up to date	☒ N/A
	☐ Effluent discharge	☐ Readily available	☐ Up to date	☒ N/A
	☐ Waste disposal, POTW	☐ Readily available	☐ Up to date	☒ N/A
	☐ Other permits: _____	☐ Readily available	☐ Up to date	☒ N/A
	Remarks: _____			
5.	**Gas Generation Records**	☐ Readily available	☐ Up to date	☒ N/A
	Remarks: _____			
6.	**Settlement Monument Records**	☐ Readily available	☐ Up to date	☒ N/A
	Remarks: _____			
7.	**Ground Water Monitoring Records**	☐ Readily available	☐ Up to date	☒ N/A
	Remarks: _____			
8.	**Leachate Extraction Records**	☐ Readily available	☐ Up to date	☒ N/A
	Remarks: _____			
9.	**Discharge Compliance Records**			
	☐ Air	☐ Readily available	☐ Up to date	☒ N/A
	☐ Water (effluent)	☐ Readily available	☐ Up to date	☒ 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	
	☐ _____		

2. **O&M Cost Records**

☒ Readily available ☒ Up to date

☒ Funding mechanism/agreement in place ☐ Unavailable

Original O&M cost estimate: $998,875 for a 30-year period ☐ Breakdown attached

Total annual cost by year for review period if available

From: 01/01/2008 Date	To: 12/31/2008 Date	$2,495.00 Total cost	☐ Breakdown attached
From: 01/01/2009 Date	To: 12/31/2009 Date	$4,792.50 Total cost	☐ Breakdown attached
From: 01/01/2010 Date	To: 12/31/2010 Date	$18,034.80 Total cost	☐ Breakdown attached
From: 01/01/2011 Date	To: 12/31/2011 Date	$65,294.50 Total cost	☐ Breakdown attached
From: 01/01/2012 Date	To: 12/31/2012 Date	$37,897.50 Total cost	☐ Breakdown attached

3. **Unanticipated or Unusually High O&M Costs during Review Period**

Describe costs and reasons: In 2009, the EPA approved KDEP's use of O&M funds for further investigations of the Site, including Wilson Creek, resulting in higher O&M costs in 2010, 2011 and 2012.

V. ACCESS AND INSTITUTIONAL CONTROLS ☒ Applicable ☐ N/A

A. Fencing

1. **Fencing Damaged** ☐ Location shown on site map ☒ Gates secured ☐ N/A

Remarks: Fencing is raised and one fence pole has been damaged in the southeast portion of the fencing.

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 _____ _____ mm/dd/yyyy _____

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: Ground water and land use restrictions have not been put into place at the Site.

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: The small shed directly south of the Site is vacant and appears to be unused. The fence surrounding the horse pasture directly south of the Site has been removed.

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: The capped area was overgrown with grasses and other vegetation. The letdown channels on the cap were overgrown and may not be functioning properly. Large shrubs and trees were observed in perimeter ditch outside of the capped/fenced area.

VII. LANDFILL COVERS ☒ Applicable ☐ N/A

A. Landfill Surface

1.	**Settlement** (low spots)	☐ Location shown on site map	☐ Settlement not evident
	Arial extent: _____		Depth: _____
	Remarks: Vegetation and long grass on the capped area did not allow a full inspection of low spots on the landfill cover.		
2.	**Cracks**	☐ Location shown on site map	☐ Cracking not evident
	Lengths: _____	Widths: _____	Depths: _____
	Remarks: Vegetation and long grass on the capped area did not allow a full inspection of cracks in the landfill cover.		
3.	**Erosion**	☐ Location shown on site map	☒ Erosion not evident
	Arial extent: _____		Depth: _____
	Remarks: _____		
4.	**Holes**	☐ Location shown on site map	☐ Holes not evident
	Arial extent: _____		Depth: _____
	Remarks: Vegetation and long grass on the capped area did not allow a full inspection of holes in the landfill cover.		
5.	**Vegetative Cover**	☒ Grass	☐ Cover properly established
	☐ No signs of stress	☒ Trees/shrubs (indicate size and locations on a diagram)	
	Remarks: Capped area was overgrown with long grass and other vegetation. Vegetation was also observed growing in letdown.channels and on benches.		
6.	**Alternative Cover** (e.g., armored rock, concrete)		☒ N/A
	Remarks: _____		
7.	**Bulges**	☐ Location shown on site map	☐ Bulges not evident
	Arial extent: _____		Height: _____
	Remarks: Vegetation and long grass on the capped area did not allow a full inspection of buldges on the landfill cover.		
8.	**Wet Areas/Water Damage**	☐ Wet areas/water damage not evident	
	☒ Wet areas	☐ Location shown on site map	Arial extent: _____
	☒ Ponding	☐ Location shown on site map	Arial extent: _____
	☐ Seeps	☐ Location shown on site map	Arial extent: _____
	☐ Soft subgrade	☐ Location shown on site map	Arial extent: _____
	Remarks: Ponded water was observed in the southeast area of the Site near Wilson Creek where the raised fencing was also observed.		
9.	**Slope Instability**	☐ Slides	☐ Location shown on site map
	☒ No evidence of slope instability		
	Arial extent: _____		
	Remarks: _____		

B. Benches ☒ Applicable ☐ 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** ☐ Location shown on site map ☒ N/A or okay

   Remarks: _____

2. **Bench Breached** ☐ Location shown on site map ☒ N/A or okay

   Remarks: _____

3. **Bench Overtopped** ☐ Location shown on site map ☒ N/A or okay

   Remarks: _____

C. Letdown Channels ☒ Applicable ☐ 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) ☐ Location shown on site map ☐ No evidence of settlement

   Arial extent: _____ Depth: _____

   Remarks: Unable to observe whether areas of settlement were present due to overgrown vegetation on the cap.

2. **Material Degradation** ☐ Location shown on site map ☐ No evidence of degradation

   Material type: Rocks Arial extent: _____

   Remarks: Vegetation is growing between rocks that make up letdown channels.

3. **Erosion** ☐ Location shown on site map ☒ No evidence of erosion

   Arial extent: _____ Depth: _____

   Remarks: _____

4. **Undercutting** ☐ Location shown on site map ☒ No evidence of undercutting

   Arial extent: _____ Depth: _____

   Remarks: _____

5. **Obstructions** Type: Excessive vegetation ☐ No obstructions

   ☐ Location shown on site map Arial extent: _____

   Size: _____

   Remarks: Vegetation is growing in letdown channels and may be impacting the effectiveness of the channels.

6. **Excessive Vegetative Growth** Type: Grasses and shrubs

   ☐ No evidence of excessive growth

   ☐ Vegetation in channels does not obstruct flow

   ☐ Location shown on site map Arial extent: _____

   Remarks: The landfill cap and letdown channels were overgrown.

D. Cover Penetrations ☐ Applicable ☒ N/A

1. **Gas Vents** ☐ Active ☐ Passive
   ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
   ☐ Evidence of leakage at penetration ☐ Needs maintenance ☐ N/A
   Remarks: _____

2. **Gas Monitoring Probes**
   ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
   ☐ Evidence of leakage at penetration ☐ Needs maintenance ☐ N/A
   Remarks: _____

3. **Monitoring Wells** (within surface area of landfill)
   ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
   ☐ Evidence of leakage at penetration ☐ Needs maintenance ☐ N/A
   Remarks: _____

4. **Extraction Wells Leachate**
   ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
   ☐ Evidence of leakage at penetration ☐ Needs maintenance ☐ N/A
   Remarks: _____

5. **Settlement Monuments** ☐ Located ☐ Routinely surveyed ☐ N/A
   Remarks: _____

E. Gas Collection and Treatment ☐ Applicable ☒ N/A

1. **Gas Treatment Facilities**
   ☐ Flaring ☐ Thermal destruction ☐ Collection for reuse
   ☐ Good condition ☐ Needs maintenance
   Remarks: _____

2. **Gas Collection Wells, Manifolds and Piping**
   ☐ Good condition ☐ Needs maintenance
   Remarks: _____

3. **Gas Monitoring Facilities** (e.g., gas monitoring of adjacent homes or buildings)
   ☐ Good condition ☐ Needs maintenance ☐ N/A
   Remarks: _____

F. Cover Drainage Layer ☐ Applicable ☒ N/A

1. **Outlet Pipes Inspected** ☐ Functioning ☐ N/A
   Remarks: _____

2. **Outlet Rock Inspected** ☐ Functioning ☐ N/A
   Remarks: _____

G. Detention/Sedimentation Ponds ☐ Applicable ☒ N/A

1. **Siltation** Area extent: _____ Depth: _____ ☐ N/A
   ☐ Siltation not evident
   Remarks: _____

2. **Erosion** Area extent: _____ Depth: _____
   ☐ Erosion not evident
   Remarks: _____

3. **Outlet Works** ☐ Functioning ☐ N/A
   Remarks: _____

4. **Dam** ☐ Functioning ☐ N/A
   Remarks: _____

H. Retaining Walls ☐ Applicable ☒ N/A

1. **Deformations** ☐ Location shown on site map ☐ Deformation not evident
   Horizontal displacement: _____ Vertical displacement: _____
   Rotational displacement: _____
   Remarks: _____

2. **Degradation** ☐ Location shown on site map ☐ Degradation not evident
   Remarks: _____

I. Perimeter Ditches/Off-Site Discharge ☒ Applicable ☐ N/A

1. **Siltation** ☐ Location shown on site map ☒ Siltation not evident
   Area extent: _____ Depth: _____
   Remarks: _____

2. **Vegetative Growth** ☐ Location shown on site map ☐ N/A
   ☐ Vegetation does not impede flow
   Area extent: _____ Type: _____
   Remarks: Grasses, shrubs and small trees were observed growing in the perimeter ditches but do not appear to impede flow.

3. **Erosion** ☐ Location shown on site map ☒ Erosion not evident
   Area extent: _____ Depth: _____
   Remarks: _____

4. **Discharge Structure** ☐ Functioning ☒ N/A
   Remarks: _____

VIII. VERTICAL BARRIER WALLS ☐ Applicable ☒ N/A

1. **Settlement** ☐ Location shown on site map ☐ Settlement not evident

Area extent: _____ Depth: _____

Remarks: _____

2. **Performance Monitoring** Type of monitoring: _____

☐ Performance not monitored

Frequency: _____ ☐ Evidence of breaching

Head differential: _____

Remarks: _____

IX. GROUND WATER/SURFACE WATER REMEDIES ☒ Applicable ☐ N/A

A. *Ground Water 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: _____

2. **Extraction System Pipelines, Valves, Valve Boxes and Other Appurtenances**

☐ Good condition ☐ Needs maintenance

Remarks: _____

3. **Spare Parts and Equipment**

☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided

Remarks: _____

B. Surface Water Collection Structures, Pumps and Pipelines ☐ Applicable ☒ N/A

1. **Collection Structures, Pumps and Electrical**

☐ Good condition ☐ Needs maintenance

Remarks: _____

2. **Surface Water Collection System Pipelines, Valves, Valve Boxes and Other Appurtenances**

☐ Good condition ☐ Needs maintenance

Remarks: _____

3. **Spare Parts and Equipment**

☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided

Remarks: _____

C. Treatment System ☐ Applicable ☒ N/A

1. **Treatment Train** (check components that apply)

☐ Metals removal ☐ Oil/water separation ☐ Bioremediation

☐ Air stripping ☐ Carbon adsorbers

☐ Filters: _____

☐ Additive (e.g., chelation agent, flocculent): _____

☐ Others: _____

☐ Good condition ☐ Needs maintenance

☐ Sampling ports properly marked and functional

☐ Sampling/maintenance log displayed and up to date

☐ Equipment properly identified

☐ Quantity of ground water treated annually: _____

☐ Quantity of surface water treated annually: _____

Remarks: _____

2. **Electrical Enclosures and Panels** (properly rated and functional)

☐ N/A ☐ Good condition ☐ Needs maintenance

Remarks: _____

3. **Tanks, Vaults, Storage Vessels**

☐ N/A ☐ Good condition ☐ Proper secondary containment ☐ Needs maintenance

Remarks: _____

4. **Discharge Structure and Appurtenances**

☐ N/A ☐ Good condition ☐ Needs maintenance

Remarks: _____

5. **Treatment Building(s)**

☐ N/A ☐ Good condition (esp. roof and doorways) ☐ Needs repair

☐ Chemicals and equipment properly stored

Remarks: _____

6. **Monitoring Wells** (pump and treatment remedy)

☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition

☐ All required wells located ☐ Needs maintenance ☐ N/A

Remarks: _____

D. Monitoring Data

1. **Monitoring Data**

☐ Is routinely submitted on time ☐ Is of acceptable quality

2. **Monitoring Data Suggests:**

☐ Ground water plume is effectively contained ☐ Contaminant concentrations are declining

E. Monitored Natural Attenuation

1. **Monitoring Wells** (natural attenuation remedy)

☒ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☒ Good condition

☒ All required wells located ☐ Needs maintenance ☐ N/A

Remarks: Most of the wells were found to be locked and in good condition. However, there were several wells without locks. The wells have been cleaned and repaired. Two previously undocumented wells, both named ALT DW 2 were observed at the Site.

X. OTHER REMEDIES

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.

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

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).
The remedy should prevent migration of contaminants from the capped area. Monitoring wells need to be checked regularly and vegetation needs to be maintained to prevent erosion of the cap and ensure the effectiveness of the letdown channels.

B. Adequacy of O&M

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.
Regular maintenance of the Site needs to occur, specifically vegetation control in the capped area, letdown channels and perimeter ditches.

C. Early Indicators of Potential Remedy Problems

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.
N/A

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.
Regularly scheduled maintenance and inspections need to occur.

Site Inspection Team:

Nestor Young, EPA
Felicia Jackson, EPA
Yvonne Jones, EPA
Wesley Turner, KDEP
Cheryl Brown, KDEP
Dan Phelps, KDEP
Kristin Sprinkle, Skeo Solutions
Lynette Wysocki, Skeo Solutions

Appendix E: Photographs from Site Inspection Visit

Perimeter ditch outside of fenced area on the southern portion of the Site near MW 6.

Locked and secured gate on the southern portion of the Site.

Unoccupied shed on the southern portion of the Site near MW 6.

Excavated drums from the adjacent Jefferson Memorial site, located north of the Site.

Overgrown letdown channel along the eastern fence line of the Site.

Letdown channel in the northwestern portion of the fenced site area.

Ponding water and raised/missing fence on the eastern portion of the Site.

MW 6.

Undocumented wells, both marked ALT DW2, near MW 6 and MW 11.

Paint sludge in Wilson Creek.

A portion of Wilson Creek.

Adjacent resident's pond, which borders the southeastern portion of the Site.

Appendix F: Priority Pollutants Identified at the Site in the 1981 Remedial Action/Feasibility Study

PRIORITY POLLUTANT[a]	CONCENTRATION RANGES	
	Water Samples microgram/liter	Soil Samples micrograms/gram
Antimony	ND[b]	13-92
Beryllium	ND	1-3
Cadmium	ND	4-19
Chromium	10-147	1-8,212
Copper	17-970	9-12,760
Lead	16-1,890	15-292
Silver	ND	3
Thallium	11	210
Zinc	32-3,790	60-4,264
PCB-1242	3.1-7.6	.03-1.2
PCB-1248	23	.13
PCB-1254	4.2-63	.04-13
PCB-1260	4.4-71	.095-13
1,2-Benzanthracene	ND	10-78
Fluoranthene	ND	5-63
Pyrene	ND	6-70
Naphthalene	18-19	6-360
Fluorene	ND	5-19
Anthracene	ND	5-99
Acenaphthene	ND	10-450
Bis(2-Ethylhexyl)Phthalate	ND	6-2,800
Butyl Benzyl Phthalate	ND	9-25
Di-N-Octyl Phthalate	ND	7-30
Di-N-Butyl Phthalate	ND	10-55
Dimethyl Phthalate	90-1,300	ND
Diethyl Phthalate	4.9-44	ND
Pentachlorophenol	4.3	ND
Phenol	800-1,500	ND
3,3-Dichlorobenzidine	ND	33
Hexachlorobenzene	ND	5
1,2,4-Trichlorobenzene	2	ND
Benzene	9	ND
Ethyl Benzene	320-620	ND
Isophorone	370-500	ND
Toluene	400-840	ND
Vinyl Chloride	8	ND
Methylene Chloride	17-720	ND
Trans-1,2-Dichloroethylene	22-73	ND
Trichloroethylene	8	ND
Tetrachloroethylene	5-9	ND
1,1,1-Trichloroethane	9.4	ND
TOTAL ORGANIC CHEMICALS[c]	20,000-80,000	1,000-10,000

[a] Only those pollutants with quantifiable concentrations are listed. *Trace amounts of other compounds may be present.*

[b] ND - Not detected or below trace levels for sample size.

[c] Includes priority pollutants and other organic compounds found in site samples.

Appendix G: Contaminant Detections during the October 2010 and October 2011 Ground Water Sampling Events

Contaminant	RSL	MCL	10/7/2010													
			Blank	MW 1	MW DW 2	MW 2	MW 3	MW 4	MW 5	MW 6	MW 7	MW 8	MW 9	MW 10	MW 11	MW 12
1,1-dichloroethane	2.4	NA	ND	ND	ND	ND	**5.4**	ND	ND	ND	ND	ND	**42**	ND	ND	ND
1,1-dichloroethylene	260	7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**13**	ND	ND	ND
2-Butanone	4900	NA	74	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acetone	12000	NA	63	ND	7.8	5.3	ND	ND	ND	ND	ND	ND	5.1	ND	ND	ND
Arsenic	0.045	10	ND	**8**	ND	ND	**4**	**3**	**2**	**7**	**3**	**2**	**11**	**5**	ND	ND
Barium	2900	2000	ND	22	5	51	19	5	11	22	15	68	38	26	27	42
Chromium	NA	100	ND	2	2	4	8	6	10	ND	46	7	4	3	ND	ND
Lead	NA	15	ND	ND	**97**	ND	ND	ND	ND	ND	ND	3	ND	ND	ND	ND
Selenium	78	50	ND	9	ND	7	2	ND	8	10	10	4	ND	4	12	14
Vinyl chloride	0.015	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**11**	ND	ND	ND

All values are in micrograms per liter (µg/L)
RSL = www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm
ND = Not detected above the laboratory detection limit
NA = Not applicable
Bolded and highlighted = concentration exceeded MCL or RSL

Contaminant	RSL	MCL	10/6/2011-10/7/2011						
			Blank	MW 1	MW 2	MW 3	MW 4	MW5	MW 6
1,1-dichloroethane	2.4	NA	ND	ND	ND	**4.08**	1.24	ND	ND
1,1-dichloroethylene	260	7	ND	ND	ND	ND	ND	ND	ND
2-Butanone	4,900	NA	19.2	ND	ND	ND	ND	ND	ND
4-Methyl-2-pentanone	NA	NA	0.79	ND	ND	ND	ND	ND	ND
Acetone	12,000	NA	31.1	8.99	9.36	9.57	8.02	6.78	7.6
Aluminum	16,000	NA	ND	10.9	627	276	207	151	33.8
Arsenic	0.045	10	ND	**2.3**	**1.1**	**2.44**	**2.04**	**1.31**	**8.33**
Barium	2,900	2,000	ND	23.8	36.1	14.9	5.58	9.72	18.8
Benzene	0.39	5	ND	ND	ND	ND	ND	ND	ND
Benzoic acid	58,000	NA	ND	2.69	2.27	2.61	2.96	2.27	2.19
bis(2-Ethylhexyl) phthalate	4.8	6	ND	ND	ND	2.17	ND	ND	ND
Calcium	NA	NA	ND	439,000	274,000	415,000	156,000	333,000	119,000
Chromium	NA	100	ND	1.58	1.69	1.62	2.09	15.8	1.86
cis-1,2-dichloroethene	28	70	ND	ND	ND	2.02	0.915	ND	4.84
Copper	620	1,300	ND	7.9	4.22	5.61	2.83	3.88	2.47
Dibutyl phthalate	670	NA	ND	3.81	ND	ND	7.73	ND	ND
Heptachlor epoxide	0.003	0.2	ND	0.00	0.00	0.00	0.00	0.00	0.00
Iron	11,000	NA	ND	ND	667	703	183	204	58.9
Lead	NA	15	ND	0.35	0.53	0.262	0.226	0.328	0.25
Magnesium	NA	NA	ND	1,630,000	255,000	442,000	221,000	378,000	141,000
Manganese[a]	320	NA	ND	**686**	77.8	**1,030**	**1,620**	17.6	33.8
Mercury	0.63	2	ND	0.022	ND	ND	ND	ND	ND
Nickel[b]	300	NA	ND	114	23.9	34.5	24.7	30.5	29.4
Potassium	NA	NA	ND	118,000	30,000	35,600	10,000	35,900	19,800
Selenium	78	50	ND	3.51	4.04	7.7	9.85	6.36	6.19
Sodium	NA	NA	ND	1,620,000	455,000	976,000	933,000	818,000	475,000
tert-Butylbenzene	NA	NA	ND	ND	ND	ND	ND	ND	ND

Contaminant	RSL	MCL	10/6/2011-10/7/2011						
			Blank	MW 1	MW 2	MW 3	MW 4	MW5	MW 6
Tetrachloroethylene	9.7	5	ND	ND	ND	ND	ND	ND	0.268
Tetrahydrofuran	3,200	NA	76.5	ND	ND	ND	0.706	ND	ND
Trichloroethylene	0.44	5	ND	ND	ND	**0.732**	0.260	ND	0.301
Trihalomethanes	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vinyl chloride	0.015	2	ND	ND	ND	ND	**0.365**	ND	ND
Xylene	190	10,000	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Zinc	4,700	NA	ND	20	6.97	8.59	6.16	8.34	4.79

All values are in micrograms per liter (µg/L)
RSL = www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm
ND = Not detected above the laboratory detection limit
NA = Not applicable
Bolded and highlighted = concentration exceeded MCL or RSL
a. Manganese (non-diet)
b. Nickel, soluble salts

Contaminant	RSL	MCL	10/6/2011-10/7/2011					
			MW 7	MW 8	MW 9	MW 10	MW 11	MW 12
1,1-dichloroethane	2.4	NA	ND	ND	**21.4**	ND	ND	ND
1,1-dichloroethylene	260	7	ND	ND	6.56	ND	ND	ND
2-Butanone	4,900	NA	ND	ND	ND	0.56	ND	ND
4-Methyl-2-pentanone	NA	NA	ND	ND	ND	ND	ND	ND
Acetone	12,000	NA	12.2	8.26	8.67	10.3	10.2	8.1
Aluminum	16,000	NA	23.9	216	136	81.2	431	96.3
Arsenic	0.045	10	**5.03**	**2.19**	**14.2**	**5.06**	**2.4**	**1.26**
Barium	2,900	2,000	14.3	22.8	44.6	25.8	21.8	28.4
Benzene	0.39	5	ND	ND	**0.540**	ND	ND	ND
Benzoic acid	58,000	NA	2.4	2.32	2.76	ND	2.55	2.2
bis(2-Ethylhexyl) phthalate	4.8	6	ND	ND	ND	ND	ND	ND
Calcium	NA	NA	67,200	70,300	117,000	155,000	220,000	143,000
Chromium	NA	100	20	0.96	4.25	1.08	2.02	3.4

Contaminant	RSL	MCL	10/6/2011-10/7/2011					
			MW 7	MW 8	MW 9	MW 10	MW 11	MW 12
cis-1,2-dichloroethene	28	70	ND	ND	2.120	ND	ND	ND
Copper	620	1,300	2.5	1.81	1.77	2.69	3.04	1.95
Dibutyl phthalate	670	NA	3.56	3.85	ND	ND	ND	7.24
Heptachlor epoxide	0.003	0.2	0.00	0.00	0.00	0.00	0.00	0.00
Iron	11,000	NA	315	188	**14,200**	262	2,310	**14,200**
Lead	NA	15	0.292	0.416	0.31	ND	0.478	0.266
Magnesium	NA	NA	60,600	66,800	119,000	198,000	257,000	144,000
Manganese[a]	320	NA	69.2	70.6	**8,400**	128	**606**	228
Mercury	0.63	2	ND	ND	ND	ND	ND	ND
Nickel[b]	300	NA	28.3	7.83	22.3	28.3	8.39	12.8
Potassium	NA	NA	25,400	8,690	31,500	41,300	34,900	31,700
Selenium	78	50	14.1	1.61	5.6	5.52	8.7	2.71
Sodium	NA	NA	1,420,000	150,000	301,000	1,460,000	1,620,000	360,000
tert-Butylbenzene	NA	NA	ND	ND	0.398	ND	ND	ND
Tetrachloroethylene	9.7	5	ND	ND	ND	ND	ND	ND
Tetrahydrofuran	3,200	NA	ND	ND	1.07	ND	ND	ND
Trichloroethylene	0.44	5	ND	ND	ND	ND	ND	ND
Trihalomethanes	NA	NA	0.00	0.00	0.00	0.00	0.00	0.00
Vinyl chloride	0.015	2	ND	ND	**4.28**	ND	ND	ND
Xylene	190	10,000	0.00	0.00	0.00	0.00	0.00	0.00
Zinc	4,700	NA	3.58	4.75	5.53	4.8	7.43	2.09

All values are in micrograms per liter (µg/L)
RSL = www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm
ND = Not detected above the laboratory detection limit
NA = Not applicable
Bolded and highlighted = concentration exceeded MCL or RSL
a. Manganese (non-diet)
b. Nickel, soluble salts