# REMEDIAL INVESTIGATION
# PHASE 1 DATA EVALUATION REPORT

## Revision 0

## Southeastern Wood Preserving Superfund Site
## Canton, Madison County, Mississippi

**Prepared under:**
**EPA Contract No. EP-S4-09-02**
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# Acronyms and Abbreviations

| | |
|---|---|
| BaP | benzo(a)pyrene |
| Black & Veatch | Black & Veatch Special Projects Corp. |
| bls | below land surface |
| BOA | Basic Ordering Agreement |
| CDDs | chlorinated dibenzo-p-dioxins |
| CDFs | chlorinated dibenzofurans |
| CLP | Contract Laboratory Program |
| CMU | Canton Municipal Utilities |
| cPAH | carcinogenic polycyclic aromatic hydrocarbon |
| CSM | Conceptual Site Model |
| cy | cubic yard |
| DER | Data Evaluation Report |
| Dickson | Dickson Treating Company |
| DO | dissolved oxygen |
| DPT | direct push technology |
| DQO | data quality objectives |
| EPA | Environmental Protection Agency |
| ERRS | Emergency and Rapid Response Services |
| ESI | Expanded Site Investigation |
| FSP | field sampling plan |
| ft | feet/foot |
| gpm | gallon per minute |
| HMW | high molecular weight |
| ID | inner diameter |
| IP | International Paper |
| LDR | land disposal restriction |
| LMW | low molecular weight |
| MBPC | Mississippi Bureau of Pollution Control |
| MDEQ | Mississippi Department of Environmental Quality |
| µg/kg | micrograms per kilogram |
| µg/L | micrograms per liter |
| mg/kg | milligrams per kilogram |
| MNA | monitored natural attenuation |
| msl | mean sea level |
| NAPL | non-aqueous phase liquid |
| NFRAP | No further remedial action planned |

## Acronyms and Abbreviations (Continued)

| | |
|---|---|
| ng/kg | nanograms per kilogram |
| NPL | National Priorities List |
| NRWQC | National Recommended Water Quality Criteria |
| ORP | oxidation reduction potential |
| PAH | polycyclic aromatic hydrocarbon |
| PCP | pentachlorophenol |
| PID | photoionization detector |
| PRG | preliminary remediation goal |
| QAPP | quality assurance project plan |
| RAC II | Remedial Action Contract |
| RI | Remedial Investigation |
| ROD | Record of Decision |
| RSL | Regional Screening Level |
| SAP | Sampling and Analysis Plan |
| SESD | Science and Ecosystem Support Division |
| SI | Site Inspection |
| SLERA | screening-level ecological risk assessment |
| SVOC | semi-volatile organic compound |
| SWP | Southeastern Wood Preserving Site |
| TCDD | 2,3,7,8-tetrachlorodibenzo-p-dioxin |
| TEF | toxicity equivalence factor |
| TEQ | toxicity equivalent |
| Tetra Tech | Tetra Tech EM Inc |
| TO | Task Order |
| TOC | Total organic carbon |
| USCS | United Soil Classification System |
| VOC | volatile organic compound |
| WHO | World Health Organization |

# 1.0 Introduction

Black & Veatch Special Projects Corp. (Black & Veatch), under U.S. Environmental Protection Agency (EPA) Region 4 Remedial Action Contract (RAC II), has been tasked to conduct a remedial investigation (RI) under Contract Number EP-S4-09-02. The work is being conducted under specific authorization contained in Task Order (TO) 065-RICO-4ADT, Statement of Work for the Southeastern Wood Preserving (SWP) Superfund Site in Canton, Madison County, Mississippi.

The overall purpose of the RI is to define the nature and extent of contamination at the Site. Toward this end, Black & Veatch sought to gather representative data necessary to address the Data Quality Objectives (DQO) presented in the Site-specific Quality Assurance Project Plan (QAPP) (Black & Veatch, 2012a) and address the data gaps identified in the Conceptual Site Model (CSM). These data gaps prevent a complete evaluation of the nature and extent of groundwater, soil, surface water, and sediment contamination which is needed to select a remedy for the Record of Decision (ROD) for the Site.

The data collection activities for the RI are being conducted in a phased approach with results from each phase or field event interpreted prior to initiating the next phase. This Data Evaluation Report (DER) documents the findings of Phase 1 of the RI that was conducted by Black & Veatch between October 2012 and January 2013. The purpose of this DER is to compile, reduce, evaluate and summarize the results of the RI Phase 1 work. In addition, this DER includes recommendations for Phase 2 of the RI and refinement of the CSM based on the results of the RI Phase 1 activities.

## 1.1 Problem Definition and Background

A CSM was developed for the SWP by Black & Veatch after a thorough review of existing Site data and was presented at a technical meeting at EPA Region 4 offices on May 30, 2012. Data gaps identified in the CSM that need to be addressed during the RI include:

- An inadequate characterization of the presence or lack thereof Site-related contaminants within Batchelor Creek and its floodplains downstream of the Site. Historic reports suggest that Site-related contaminants were present downstream of the Site, but the nature and extent had not been defined. Batchelor Creek flows into Big Black River approximately 10 to 12 miles

downstream. There is evidence of fishing and recreational usage in the Big Black River.

- The nature and extent of the Yazoo Clay underneath the Site and its viability as a confining or semi-confining unit for potential Site remedies that include subsurface containment. Soil borings advanced as part of the Expanded Site Investigation (ESI) (Tetra Tech, 2009a) and by a Soil Boring Investigation conducted by Tetra Tech EM, Inc. (Tetra Tech) and the EPA Science and Ecosystem Support Division (SESD) in 2008 (Tetra Tech, 2009b) did not extend past 36 feet (ft) below land surface (bls) and did not penetrate completely through the clay into the underlying Cockfield Formation. The Cockfield Formation has been identified as one of the water sources to some domestic wells within Madison County.
- It is unclear if Site-related contamination may have penetrated through the Yazoo Clay into the underlying Cockfield Formation and impacted domestic wells in the vicinity of the Site.
- The impacts to the surrounding residential properties by Site contaminants, specifically dioxins in the surface soils and semi-volatile organic compounds (SVOCs) in subsurface soils, are not known.
- Contaminant mass distribution and characterization of the nature of the non-aqueous phase liquid (NAPL) at and near the Site are not known.
- Soil samples collected during the ESI (Tetra Tech, 2009a) suggest an area of pentachlorophenol (PCP) contamination may exist on the eastern portion of the Site. The extent and magnitude are unknown.
- The presence or lack thereof of contamination in the on-Site treated stockpile is not well known.

The objectives of Phase 1 of the RI were to collect data to address these identified data gaps:

1. Determine the presence and concentrations of surface soil/sediment contamination in Batchelor Creek and in areas affected by overflows of the creek.
2. Collection and analyses of surface and subsurface soil samples from residential properties adjacent to the SWP Site that may have been contaminated from stormwater runoff or other transport mechanisms.

3. Determine if the domestic supply wells in the vicinity of the Site are contaminated with Site-related contaminants.
4. Characterization of Site-specific geology/hydrogeology data, including geochemical analyses, in anticipation that bioremediation or monitored natural attenuation (MNA) be used as potential remedies for the Site.

## 1.2 Report Organization

This DER presents RI Phase 1 sampling results. Section 2.0 presents the Site background and characterizations including some of the observations made during the RI Phase 1. Section 3.0 presents the sampling approach and specifications. Section 4.0 discusses the sample results. Section 5.0 presents the summary and conclusions. Section 6.0 provides the references used in this DER.

# 2.0 Site Background and Characteristics

This section presents the physical description of the SWP Site and surrounding areas. It includes a summary of the historical sampling and remedial activities that have occurred at the SWP Site. Information and observations made during the Phase 1 RI have been included to provide a better understanding of the current Site conditions and the sample results presented in Section 4.0. Much of the information in this section was excerpted from the following sources, each of which is included in its entirety on the accompanying CD:

- *Final Expanded Site Inspection* (ESI), July 2009 (Tetra Tech, 2009a)
- *Borehole Logs*, February 2009 (Tetra Tech, 2009b)
- *Final CERCLA Removal Action Report*, March 2011 (Tetra Tech, 2011).

## 2.1 Site Location

The SWP Site is located along Covington Drive in Canton, Madison County, Mississippi, in a predominantly agricultural and residential area. Specifically, the geographic coordinates for the SWP Site, as measured from the center of the on-Site waste stockpile, are 32.6180611° north latitude and 90.0181889° west longitude. A Site Location Map is presented as Figure 2-1.

The Site covers approximately 25 acres of land. Current Site features include a scale house presently being used by a wood chipping operation that leases property on the eastern portion of the Site; a silo which housed wood chips used for boiler fuel currently being used for storage; and a large stockpile of contaminated soil and waste. The Site is bounded to the north by Batchelor Creek, and the Illinois Central Gulf Railroad which is no longer in operation; to the east by a residential and industrial area; to the south by Covington Drive; and to the west by residential and agricultural properties. The City of Canton owns active and inactive municipal drinking water wells north, south, east, and west of Site. The Site Layout is shown on Figure 2-2.

## 2.2 Site Description and Background

The current Site area was originally part of a larger property owned by King Lumber, which operated the Site as a saw mill, lumber yard, and wood treating

facility beginning in 1928. Canton Treating Company leased the wood treating operation portion of the King Lumber property (currently the SWP Site property) in 1961 and later purchased the property in 1964. At an unknown time, Dickson Treating Company (Dickson) began operations on the property. Dickson operated the facility until it filed for bankruptcy in late 1979. The assets were held by bankruptcy court from 1979 until 1982, when Southeastern Wood Preserving purchased the Site. In 1984, SWP defaulted on its small business administration loan, without ever operating the facility. The Madison County Industrial Development Authority is the current owner of the property.

During former operations, southern yellow pine timbers were stripped of bark and placed in retort cylinders for drying. Coal tar creosote and PCP were used as wood preservatives. Three on-Site, unlined wastewater treatment surface impoundments were constructed for disposal of wood preserving treatment sludges and process wastewater. During the 1970s, the facility received several notices of violation and fines from the Mississippi Pollution Control Commission (currently the Mississippi Bureau of Pollution Control [MBPC]) for gross contamination of the process area; releases of hazardous substances to Batchelor Creek; and inadequate treatment of process wastewater before it was discharged into the city sewage treatment facility. Before 1977, when the Clean Water Act was enacted, the facility reportedly discharged wastewater directly into Batchelor Creek, which flowed through a city park, a residential area, and to downtown Canton before it entered Bear Creek. When operations ceased, the property included large areas of contamination in the treatment and storage areas, as well as piles of contaminated soil, creosote sludge storage tanks, and three unlined wastewater surface impoundments.

In September 1985, the MBPC conducted a preliminary assessment of the SWP Site. The MBPC observed several piles of creosote-contaminated soil and several violations concluding that a Site Investigation was warranted. In December 1985, MBPC conducted a Site Inspection (SI). Their investigation included collection of one soil sample from the process area, two collocated surface water and sediment samples from Batchelor Creek upstream of the Site, and two collocated surface water and sediment samples from Batchelor Creek downstream of the Site. The soil sample contained detected concentrations of SVOCs. No contaminants were detected in surface water upstream of the Site, and downstream of the Site the surface water contained detectable SVOC concentrations.

As a result of the MBPC SI, the EPA initiated an emergency response action (ERA) at the SWP in 1986 to stabilize three unlined surface impoundments that contained creosote sludge and water. The impoundments were excavated and sludge and soil stabilized with lime kiln dust. Approximately 8000 cubic yards (cy) of stabilized waste were stockpiled on the Site to await treatment or disposal. In 1988, oily waste was observed leaching into the creek. In response, the EPA removed contaminated soil observed leaching into the creek, installed a geofabric liner in the bed of the creek, and lined the banks with riprap to prevent further erosion.

Between 1991 and 1994, the EPA treated the on-Site stockpile using on-Site biotreatment, but the treated waste failed to reach the land disposal restriction (LDR) standards for wood preserving waste. This partially treated waste was placed within a containment cell on-Site and is referred to as the "waste stockpile" (Figure 2-2). In 1994, Mississippi Department of Environmental Quality (MDEQ) prepared a SI prioritization report using existing sample data and updated targets to include private residential wells and fisheries in Batchelor Creek, Bear Creek, and the Big Black River. In 1997, the Site did not meet the National Priorities List (NPL) threshold and the EPA gave the Site No Further Remedial Action Planned (NFRAP) status. In 2002, the EPA Region 4 NPL coordinator reevaluated the 1998 score and included dioxin contamination and soil exposure pathways in a new score, but the Site still fell below the NPL threshold.

In October 2002, the MDEQ provided the EPA with the results of an investigation of Batchelor Creek, during which polynuclear aromatic hydrocarbons (PAHs) (creosote-component compounds) were detected. On February 26, 2003, in response to the MDEQ concerns, a Site reconnaissance was conducted at the SWP Site by the EPA and the MDEQ. Based on this visit, EPA concluded that the surface water pathway was of concern and agreed that contamination was present in Batchelor Creek. The EPA also concluded that the soil exposure pathway was of some concern; however, because of the low number of targets (population on residential properties), the soil exposure pathway would not significantly add to the overall Site score. As a result, EPA maintained the Site's NFRAP status. In 2006, the MDEQ discovered new historical information when researching the Site at the Mississippi Archives and History facility located in Jackson, MS. An aerial photograph taken in 1965 revealed the approximate location of a PCP treatment area on the east end of the SWP property. MDEQ also found an old legal property description which indicated a larger Site "footprint." With the addition of this new

information and the recent population growth in Canton, the EPA agreed that further investigation of the Site was warranted.

In 2007, EPA SESD personnel advanced soil borings along the northern border of the Site, between the soil stockpile, the former lagoons, and Batchelor Creek to evaluate whether pathways for free-phase creosote to enter Batchelor Creek exist and, if so, where they enter the creek. Visible and odorous impacts (believed to be creosote) to the soil were observed in several of the borings adjacent to and west of the soil stockpile. In addition, free-phase creosote was observed in at least one boring located adjacent to the soil stockpile. SESD concluded that the presence of free-phase creosote in the subsurface soil at the Site indicated a potential for creosote to flow into Batchelor Creek.

Tetra Tech was contracted by the EPA to conduct an ESI in September 2008, to determine if the SWP Site should be added to the NPL. The NPL identifies sites where a release, or threatened release, of a hazardous substance poses enough of a risk to public health or the environment to warrant further investigation.

Tetra Tech collected 13 surface and 15 subsurface soil samples from on-Site locations; seven surface and six subsurface soil samples as well as two sediment samples were collected from residential properties; one groundwater sample was collected from an on-Site location; three ground water samples were collected from nearby municipal wells; five surface water and 10 sediment samples were collected from Batchelor Creek; three surface water and four sediment samples were collected from unnamed tributaries of Batchelor Creek; and one surface water sample was collected from the nearby waste water treatment plant effluent. Tetra Tech collected one background surface soil sample from 0 to 1 ft bls and five background subsurface soil samples from depths ranging between 1 and 20 ft bls to attribute potential contaminants detected in on-Site samples. A background temporary groundwater well was collocated with the background soil sample location. Tetra Tech also collected collocated background surface water and sediment samples from Batchelor Creek.

Surface and subsurface soil samples collected during the ESI from source areas contained benzo(a)anthracene, benzo(a)pyrene (BaP), benzo(b)fluoranthene, benzo(k)fluoranthene, PCP, and others. Analytical results for the ground water sample collected on the Site indicated the presence of benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene,

indeno(1,2,3-cd)pyrene, and others at elevated concentrations. Analytical results for sediment samples collected from Batchelor Creek indicated the presence of benzo-(a)anthracene, BaP, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, and other constituents at elevated concentrations. The results of the ESI are presented along with data collected during the Phase 1 RI in Section 4.0 of this report to help define the nature and extent of Site-related contamination.

In response to the ESI, in August 2009, an EPA Emergency and Rapid Response Services (ERRS) contractor, WRScompass, Inc., removed contaminated soil and sediment from the bottom and south bank of Batchelor Creek, temporarily stockpiling this material on-Site. The material was later transported and disposed of in a landfill. The creek was backfilled and lined with a geotextile liner and riprap. Approximately two to three feet of clay and clean topsoil were placed and graded over much of the Site including the Batchelor Creek Stockpile Area (Figure 2-2) and areas historically used during the wood treating operations.

The ERRS contractor also installed a slurry wall along the south bank of Batchelor Creek between February and March 2010. The wall extends approximately 1500 ft along the creek bank. It is 3-ft wide, and extends to a depth of 30 ft bls (Figure 2-2).

## 2.3 Geologic Setting

The following sections were primarily based on information obtained from the following: MDEQ News, V10, *Geology and Groundwater at the Southeastern Wood Preserving Superfund Site in Canton*, January 2013, observations made during the Phase 1 RI, and personal communication with the MDEQ State Geologist, Dr. David Dockery (personal communication, November 7, 2012).

Madison County lies in two physiographic districts of the Gulf Coastal Plain: North Central Plateau and Jackson Prairie. The North Central Plateau district is located in the northern quarter of the county, with elevations ranging from about 200 to 450 ft above mean sea level (msl). The Jackson Prairie district is located in the remainder of the county and is characterized by gently rolling hills, with elevations that do not exceed 400 ft above msl. The SWP Site is located in the Jackson Prairie district. Land elevation at the SWP Site ranges from 240 ft above msl on the southern portion of the Site and gradually descends to the northwest to 230 ft above msl adjacent to Batchelor Creek.

The SWP Site is located within the outcrop belt of the Jackson Group, which was deposited during the Tertiary period. The Jackson Group is composed of the Yazoo Clay and the underlying Moody's Branch Formation. The Yazoo Clay can be divided into three zones (Stover et al., 1988). Zone A, or the surface zone, generally ranges from 0.5- to 1-ft thick and consists of a highly weathered, brown, silty clay containing roots and organic material. This zone is most affected by chemical and physical weathering processes.

Zone B, the weathered zone, generally ranges from 10- to 30-ft thick. It consists of a light tan to yellowish brown stiff clay containing roots and organics. This zone usually contains numerous desiccation cracks that are often 1- to 2-inches wide (Stover et al., 1988). The Yazoo Clay is composed in large part of expansive or "fat" clay minerals that have the capability to increase in volume (swell) when saturated with water. When this expansive clay dries out or desiccates, irregular fractures or cracks form from the shrinkage of the clay. These desiccation cracks become conduits for secondary mineral growth or as potential pathways for contaminant migration.

Zone C, or the unweathered zone of the Yazoo Clay, consists of very stiff, blue-green to blue-gray, calcareous (limy), fossiliferous clay. This zone is not affected by the weathering process except where exposed in road cuts or excavations. Upon exposure, Zone C quickly assumes the characteristics of Zones A and B (Stover et al., 1988).

The Yazoo Clay gradationally transitions into the underlying Moodys Branch Formation which consists of glauconitic and fossiliferous marl and sand.

The Jackson Group is unconformably underlain by the Cockfield Formation. An unconformity is a non-depositional surface separating two lithologies indicating that deposition was not continuous. The unconformity between the Moodys Branch and Cockfield Formation represents a worldwide change in sea level 38 million years ago, where there was a major change in deposition between the organic-rich deltaic clay of the Cockfield Formation and the fossiliferous marine sand of the Moody's Branch Formation.

The Cockfield Formation is progressively underlain by the following geologic units, with depths estimated in the vicinity of the SWP Site:

- Cook Mountain Formation: clay and glauconitic fossiliferous sandstone and sandy limestone, approximately 435 ft bls and estimated 130-ft thick.
- Sparta Formation, medium-grained sand interbedded with clay and lignite, approximately 565 to 600 ft bls and estimated 400-ft thick.
- Zilpha Clay: dark gray to brown fossiliferous clay deposited during the Eocene Epoch, approximately 920 ft bls and estimated 200-ft thick.

## 2.4 Hydrogeologic Setting

Hydrogeologic units underlying the Site include (in descending order) the Yazoo Clay confining unit, the Cockfield aquifer, the Cook Mountain confining unit, the Sparta aquifer, and the Zilpha confining unit.

The Yazoo Clay acts as a confining layer throughout central and southern Mississippi. The underlying Moody's Branch Formation locally yields small amounts of water to rural wells, but is not recognized as an aquifer. The underlying Cockfield aquifer is the shallowest aquifer in the Canton area. Wells extracting groundwater from this aquifer are reportedly capable of producing up to 650 gallons per minute (gpm) in Madison County (USGS, 1979). Recharge to the aquifer is from rainfall on the outcrop area and from direct communication with streams. The Cockfield aquifer is progressively underlain by the following hydrogeologic units, with depths estimated in the vicinity of the SWP Site:

- The Cook Mountain confining unit consists of the Cook Mountain Formation and acts as the lower confining layer beneath the Cockfield aquifer across the region. This unit is encountered at a depth of approximately 435 ft bls and is 130-ft thick in the vicinity of the SWP Site.
- The Sparta aquifer consists of the Sparta Formation and underlies the Cook Mountain confining unit. This unit is the major source of water for industrial, municipal, and domestic users; it lies at an estimated depth of 565 ft bls. This aquifer is approximately 400-ft thick and produces water which is soft sodium-bicarbonate type commonly high in iron that is acidic in the outcrop belt and the northern quarter of the belt, but alkaline elsewhere. Aquifer recharge is from rainfall on the outcrop area and from direct communication with streams. Yields to water wells in the Sparta aquifer are as high as 1,000 gpm.

## 2.5 Site Specific Geology and Hydrogeology

During previous investigations, soil borings were not advanced beyond visually contaminated zones. The deepest borings were advanced in 2008 and generally were advanced to shallow depths with the deepest boring, P3, extending to 36 ft bls (Tetra Tech, 2009b). During the Phase 1 RI, soil borings were planned to be advanced below the Yazoo Clay into the upper Cockfield aquifer where monitoring wells were to be installed to evaluate potential contamination of this aquifer and characterize the Site lithology.

In November 2012, Black & Veatch advanced soil boring SWP004 (details of this activity are presented in Section 3.0). While advancing soil boring SWP004, it was discovered that the upper sand aquifer that regionally marks the top of the Cockfield Formation does not occur beneath the SWP Site. Boring SWP004 was advanced to a total depth of 180 ft bls. In January 2013, Black & Veatch advanced two additional borings, SWP001 and SWP002, to a total depth of 320 ft bls. Additional details are presented in Section 3.0 and boring logs are presented in Appendix A.

Based on these borings and information obtained in personal communication with Dr. David Dockery (personal communication, November 7, 2012), the Site geology is summarized as follows:

- Yazoo Clay: All three zones of the Yazoo Clay were encountered during RI drilling activities. Zone A generally extends to approximately 5 to 6 ft bls. It is characterized as brown to tan (locally mottled orange) sand, clayey sand, and sandy clay. Zone B is approximately 23 to 33 ft bls. It is characterized as weathered dark orange to red clay. Zone C consists of a stiff moderately plastic gray clay. It is approximately 40 to 50 ft bls.
- Moody Branch Formation: The Moody Branch Formation is characterized by a dark gray to dark green sandy clay or sand that typically contains abundant shell fragments and glauconite-enriched zones. The Moodys Branch Formation was encountered from approximately 40 to 50 ft bls to 67 to 82 bls where it unconformably transitions into the Cockfield Formation.
- Cockfield Formation: The Cockfield Formation was encountered from approximately 67 to 82 bls to the total depth of the borings (180 to 320 ft bls). The upper portion of the organic-rich Cockfield is characterized by its dark brown color, accompanied by occasional layers of lignite, wood debris, and imprints/relicts of leaves typical of the deltaic depositional environment.

In addition, small pockets of microcrystalline drusy pyrite were found indicative of a post-depositional oxygen-poor reducing environment. Frequent laminations were distinguished by alternating brown and dark brown layers with individual thickness of the layers typically less than one millimeter. The plastic clay/silty clay of the upper portion of the Cockfield Formation was stiff to very stiff to hard, most of which was difficult to split apart for the purpose of logging.

A generalize cross-section for the Site is presented in Appendix A. The lower aquifer of the Cockfield Formation was encountered at approximately 280 ft bls at SWP001 and 297.5 ft bls at SWP002. The aquifer consists of wet fine-grained sand with interbedded clay and sandy clay. Monitoring wells were installed within this aquifer as detailed in Section 3.0.

## 2.6 Wood Treating Terminology and Information

Figures, tables, and discussions presented in this report focus on the contaminants known to be associated with the wood treating operations that occurred on the SWP Site, including: coal tar creosote, dioxin, and PCP. Brief descriptions of these wood treatment chemicals or manufacturing by products are provided below:

- Coal tar creosote is a thick, oily liquid that is typically amber to black in color, and is a distillation product of coal tar. Coal tar creosote was the most widely used wood preservative in the United States. Coal tar creosote consists of aromatic hydrocarbons, anthracene, naphthalene, and phenanthrene derivatives. At least 75 percent of the coal tar creosote mixture is PAHs. PAHs are made up of carbon and hydrogen atoms grouped into at least two condensed aromatic ring structures. PAHs are divided into two categories: low molecular weight (LMW) compounds composed of fewer than four rings (e.g., naphthalene, the simplest PAH (a 2-ring compound], and high molecular weight [HMW] compounds of four or more rings [e.g., benzo(a)anthracene, BaP, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)-anthracene, indeno(1,2,3-cd)pyrene). As a general rule, the LMW compounds are less persistent and more mobile in the environment than the HMW compounds (ATSDR, 2002).
- PCP is a chlorinated hydrocarbon insecticide and fungicide. It is primarily used to protect timber from fungal rot and wood-boring insects. PCP is applied to wood as a liquid formulation composed of PCP dissolved in petroleum diluents such as oils, kerosene, or mineral spirits. In soils and

sediments, PCP is metabolized by acclimated microbes or is adsorbed. Adsorption of PCP in soils is pH-dependent. Adsorption decreases in neutral and basic soils and is strongest in acidic soils. Therefore, the compound is most mobile in neutral-to-basic mineral soils and least mobile in acidic organic soils (ATSDR, 2001).

- Dioxins/furans are a group of synthetic organic chemicals that contain 210 structurally related individual chlorinated dibenzo-p-dioxins (CDDs) and chlorinated dibenzofurans (CDFs). Tetra-, hexa- and octochlorodibenzo-p-dioxin are manufacturing byproducts of PCP. Dioxins strongly partition to soils and sediments. Due to their low vapor pressure, low aqueous solubility, and sorption to soil and sediments, dioxins are generally immobile in soils and sediments (ATSDR, 1998).

# 3.0 Sampling Approach and Specifications

Black & Veatch conducted the Phase 1 RI field study between November 6, 2012 and January 24, 2013. These activities included: characterization of sediment and surface water within Batchelor Creek; characterization of surface and subsurface soils from residential properties adjacent to the SWP Site; and characterization of geology/hydrogeology of the Yazoo Clay and Cockfield Formations under the SWP Site through soil borings, and installation and sampling of monitoring wells. Additional field activities were conducted by the EPA's SESD to locate and sample potable wells within the vicinity of the Site. All field activities were completed in accordance with the *Sampling and Analysis Plan (SAP), Volume 1 – Field Sampling Plan (FSP), Southeastern Wood Preserving Site, Canton, Madison County, Mississippi* (Black & Veatch, 2012b) with some deviations based on field conditions that will be discussed in the following sections.

## 3.1 Batchelor Creek Sediment and Surface Water Sampling

Sediment and surface water samples were collected from Batchelor Creek on October 27 and 28, 2012. The objective of the sampling was to confirm the presence, or absence thereof of Site-related contaminants in Batchelor Creek and its floodplain. Samples were to be collected at nine bridge crossings and just upstream of the confluence of Batchelor Creek and Bear Creek. Two additional locations within Bear Creek upstream and downstream of its confluence with Batchelor Creek were also to be collected. Samples were to be screened from four locations at each bridge crossing using an Oil-n-Soil™ field test kit prior to collecting samples for SVOC analysis.

When the field team arrived on-Site on October 25, 2012, they discovered Batchelor Creek is lined with a geotextile liner and up to one foot of riprap material, consisting of a fine gravel layer, large cobbles and boulders. This material extends from upstream of the SWP Site to approximately one-half mile outside the City of Canton city limits. This riprap material created an obstacle to being able to quickly grab samples at the proposed locations and restricted access to some of the proposed sample locations by channeling the water. For this reason, instead of screening four locations at each of the bridge crossings, a sample was collected near the center of the creek upstream of the bridge crossings at four locations (SWP101, SWP102, SWP103 and SWP107) (Table 3-1). At these locations, the field team manually moved a small amount of the riprap material and broke through the liner where it

was present to collect samples of native sediments using a stainless steel hand auger. Surface water samples were collected from the four locations (SWP101, SWP102, SWP103 and SWP107), just upstream of the sediment sampling locations.

In addition to filling the appropriate containers with sediment for SVOC analysis, a sample was collected for screening using the Oil-n-Soil™ test kits. No positive results were obtained from any of the locations. These kits were used during drilling activities (discussed in section 3.3) with soils that contained visual contaminants with no positive results. For this reason, it was concluded that these kits are not an appropriate screening technique under the field conditions encountered at the SWP Site.

At two of the proposed locations (SWP105 and SWP106), a concrete pad was encountered and high water prevented the field crew from being able to move the riprap material at locations farther from the bridge; therefore, no samples were collected. A sample also was not collected at SWP104 because the proposed location was only 500-ft downstream of SWP103..

At SWP108, no riprap lined the creek, but high water was encountered upstream of the road crossing. The field team surveyed the area approximately a tenth of a mile upstream from the road crossing; however, no access point could be found and thick brush prevented further investigation. The field team attempted to use an Ekman sediment sampler borrowed from MDEQ to collect a sediment sample from the roadway; however, debris at the base of the road crossing prevented the use of the sampler. A sample was obtained from SWP108 by combining several lengths of a hand auger. This allowed the team enough leverage to collect a sample from the roadway, reaching outside of the debris area. A surface water sample was collected at SWP108 using a disposable bailer lowered from the road crossing. At SWP109, there was limited access to the creek because of a busy interstate highway and fencing restricting access upstream of the bridge. A sediment and surface water sample were collected near the right bank just downstream of the bridge where access was possible.

A sample was not collected from proposed location SWP110 because access to the location was restricted by heavy vegetation and high water in Batchelor Creek and its tributaries. Proposed location SWP111 was relocated farther downstream of the Batchelor Creek/Bear Creek confluence because heavy vegetation and high water restricted access to the proposed location. The sediment sample was collected from

near the left bank underneath the Old Yazoo City Road Bridge using an extended auger. The surface water sample was collected by lowering a bailer from the bridge near the center of the creek. Proposed location SWP112 was relocated farther upstream of the Batchelor Creek/Bear Creek confluence because heavy vegetation and high water restricted access. Sample SWP112 was collected from near the center of the Heindl Road Bridge using an extended auger for sediment collection and bailer for surface water samples.

Sample location SWP213 was added to the sampling activities during the field investigation. The location corresponds to the end of the geotextile liner/riprap area. Sediment and surface water samples were collected near the center of the creek, just downstream of the end of the riprap to evaluate potential contamination outside of this protected zone. A photolog showing the locations and conditions at each of the Batchelor Creek sampling locations is provided in Appendix C.

A total of nine sediment and nine surface water samples were collected during Phase 1 of the RI field study and submitted to EPA Contract Laboratory Program (CLP) laboratory, KAP Technologies Inc., for SVOC analysis. Sample results will be discussed in Sections 4.1 and 4.2.

## 3.2 Residential Surface and Subsurface Soil Sampling

In order to evaluate if any of the private properties adjacent to the SWP Site are impacted by Site contaminants, surface and subsurface soil samples were collected from 25 locations (SWP201-SWP225) from October 24 to 29, 2012 (Table 3-1). At each location, a five-point composite surface soil sample was collected for chemical analysis from 0 to 6 inches and subsurface samples were to be collected from 6 to 12 inches bls, in an approximate 50 × 50 ft grid. Due to the nature of some of the yards, it was not possible to collect samples in a 50 × 50 ft grid and alternative configurations were used. These alternatives were documented in the field logbook (Appendix B) and in a photolog showing the location and conditions at each of the sample locations in Appendix C. At locations SWP3216 and SWP3219, only four-point composites were collected due to hard soil or the yard configuration. At location SWP3214, the sample was collected as a three-point composite sample from drainage ditch running in front of the house due to access issues and the observation that the yard probably contained fill material due to its apparent high grade.

In response to high dioxin concentration detected during the October 2012 investigation, an additional eleven locations (SWP226-SWP236) were sampled January 23 and 24, 2013 to further delineate the extent of contamination. These samples were also collected as five-point composite samples in an approximate 50 × 50 grid unless modified by the yard configuration. Surface samples (0 to 6 inches) were collected from all eleven locations, and subsurface samples (6 to 12 inches) were collected from three of the locations (SWP226, SWP229, and SWP236).

Surface and subsurface soil samples were submitted to the CLP laboratory KAP Technologies Inc. in October 2012 and the SESD Region 4 laboratory in January 2013 for SVOC analysis. Surface soil samples were submitted to CLP laboratory Cape Fear Analytical in October 2012 and ARI Laboratory in January 2013 for dioxin analysis. The sample results were presented and discussed in Section 4.3.

## 3.3 Onsite Soil Borings

Based on regional information and the CSM, drilling activities were initiated on November 6, 2012 with the assumption that the Yazoo Clay underlying the Site ranged in thickness between 40 to 80 ft bls, and was underlain by a sand aquifer at the top of the underlying Cockfield Formation, a potential source for domestic wells in the vicinity of the Site. The purpose of the drilling activities was to characterize the nature and competency of the Yazoo Clay as a viable confining or semi-confining unit for a potential containment remedy and to determine if Site-related contaminants are impacting the underlying Cockfield aquifer.

Drilling activities were performed using an 8140LS sonic drill rig operated by Groundwater Protection, Inc., a Mississippi-licensed drilling contractor. The drilling was supervised by a Black & Veatch geologist. Sonic drilling involves advancing a 4-inch inside diameter (ID) core barrel in 10-ft segments for soil sample removal. Upon reaching the 10-ft increment, a 6-inch ID core barrel is placed over the 4-inch ID core barrel and advanced to the same depth as the 4-inch ID core barrel. With the 6-inch ID core barrel still in place, the 4-inch core barrel is removed, and the sample is removed and placed into 5-ft or 10-ft long plastic sleeves for examination by the on-Site geologist.

The 8140LS drill rig has the capability of advancing to 157 ft bls, however, the crew was able to advance SWP004 to 180 ft bls without encountering a viable aquifer. Because the limits of the rig were reached, SWP004 was abandoned using Pure

Gold® 30 percent high-solids grout, tremie grouted from the bottom of the boring to the ground surface.

Personal communication with, Dr. David Dockery (personal communication, November 7, 2012) revealed that there are five municipal wells located north, south, east, and west of the SWP Site (Figure D-1, Appendix D), with the City of Canton Water Treatment Plant located approximately one block south of the SWP Site. Dr. Dockery was able to provide Black & Veatch with a number of well records related to these wells, including geophysical well logs (personal communication, November 7, 2012). Table D-1 in Appendix D summarizes the details of these municipal wells.

In addition, electrical logs were provided, to Black & Veatch from Dr. Dockery, (personal communication, November 7, 2012) for four of the nearby production wells, Test Well 1 (N51), WTP 5 (N2), WTP 6 (N3), and WTP 7 (N3). These logs are provided in Appendix D.

The electrical log for WTP 6 was compared to a Water Well Drillers Log (Tetra Tech, 2009a) in order to understand the general hydrogeology underlying the Site. This comparison is presented on Table D-2 in Appendix D. According to Dr. Dockery (personal communication, November 7, 2012), there is usually a producing zone within the Moody's Branch Formation at approximately 100 ft bls; however, this zone is absent from WTP 6 and as discovered at SWP004, also missing beneath the SWP Site.

At WTP 6, the first water bearing zone occurred between approximately 285 and 370 ft bls. The segment of the electrical log showing this is enlarged in Figure D-2, in Appendix D. As interpreted on Table D-2 (Appendix D), the Cockfield aquifer is underlain by the Cook Mountain confining unit, followed by the Sparta aquifer, which is the primary drinking water aquifer in the region.

The electrical log also provides a visual reference to the various confining and water bearing zones at WTP 6. Three potential water bearing zones are identified on the log segregated by confining units, the Moody's Branch Formation, the Cockfield aquifer, and the Sparta aquifer. The slight response for the electrical log for the Moody's Branch Formation from about 80 to 90 ft bls indicates higher moisture in this Site, however, based on observation made during RI Phase 1 drilling activities, this zone will not provide sufficient water to support monitoring well installation. The electrical log response from 285 to 370 bls did appear to have enough

groundwater yield for the purpose of a monitoring well. Even higher responses on the electrical log were recorded in the Sparta aquifer at depth which corresponds with the municipal well screened intervals. As shown on Table D-1, the well screen for municipal production well WTP 6 was between 800 and 900 ft bls. This well has since been decommissioned.

Using this information, two additional soil borings (SWP001 and SWP002) were advanced at the Site on January 8 to 19, 2013. A Diedrich D-120 Truck Mounted sonic drill rig capable of advancing to greater depths than the 8140LS sonic drill rig was employed. The two borings were advanced to a total depth of 320 ft bls. A sand aquifer was encountered between 290 and 300 ft bls in each of the borings. Each was completed as a monitoring well as described in Section 3.4. The boring logs for SWP001 and SWP002 are presented in Appendix A.

A sonic over-ride casing was employed at SWP001 from 0 to 40 ft to seal the boring after NAPL was encountered. The override casing was 8-inches in diameter and advanced over the 6-inch casing in 10-ft intervals. The 4-inch and 6-inch equipment was removed and decontaminated after the 8-inch core barrel was installed and the 8-inch core barrel was pumped out and flushed to prevent pushing contaminants vertically. An over-ride casing was also employed at SWP002. While no contaminant was encountered, the casing served to hold the boring open to prevent the 4 × 6 casings from getting stuck in the tight clay of the Cockfield Formation.

Soils in areas of suspected creosote contamination were field screened with a photoionization detector (PID) and Oil-n-Soil™ test kits. No positive results were shown in the test kits, even in soils with obvious visual creosote staining and product. The soil borings logs (in Appendix A) contain the results of the PID screening. A detailed photolog for SWP004 is presented in Appendix C. Additional photos showing significant features or observations from borings SWP001 and SWP002 are also presented in Appendix C.

Three samples per boring were collected for SVOC analysis, with the sample depths determined by the field geologist based on field observations. SVOC samples were submitted to KAP Technologies Inc. in October 2012 and the EPA SESD Region 4 laboratory in January 2013. In addition, soil samples for dioxins and total metals analyses were collected at each boring from underneath the fill material. The samples were submitted to the CLP laboratory Cape Fear Analytical in October 2012 and ARI Laboratory in January 2013 for dioxin analysis and SESD Region 4

laboratory for metals analysis. The sample results are presented and discussed in Section 4.5.

Soil samples were collected for geotechnical from all three soil borings. Analyses included:

- Unified Soil Classification System (USCS) description per ASTM standard D2487
- Bulk density
- Soil pH determined by EPA Method 9045
- Atterberg limits determined by ASTM D4318
- Moisture content determined by ASTM D2216
- Grain size distribution determined by ASTM D422
- Hydraulic conductivity determined by ASTM D5084.

In addition, total organic carbon (TOC) was tested using the Walkley Black method. Sample intervals were determined based on observations made by the Site geologist in consultation with the project engineer. The samples were submitted to Kemron Environmental Services for analyses. Geotechnical results are presented and discussed in Section 4.5.3.

## 3.4 Monitoring Well Installation

Upon reaching total depth at two borings (SWP001 and SWP002), monitoring wells were installed January 8 to 18, 2013. The purpose of the wells is to evaluate whether or not Site contaminants have penetrated into the Cockfield aquifer. Decontaminated riser pipe and well screen constructed of 2-inch diameter, 403 stainless steel with vee-wire wrapped screens of 0.010-inch continuous openings were assembled and placed in the boreholes. Well screens were 10-ft in length and fitted with a threaded stainless steel bottom plug. The filter pack material consisted of 20/30 washed silica sand. The filter pack was installed to at least 12 inches under the bottom of the well plug and extends up to approximately, but no less than 2 ft above the top of the well screen. Fine grained 30/60 silica sand was placed 2 feet above the sand pack and uncoated bentonite pellets were then placed down the annular space to provide a primary seal 5-ft thick above the sand pack. The remaining annular space was grouted by tremie pipe to within approximately 2 ft of

the surface with a bentonite grout composed of Pure Gold® 30 percent high-solids grout and potable water. After the grout cured, the monitoring wells were sealed to the ground surface with concrete and a minimum 2-ft by 2-ft by 6-inch thick concrete surface pad and an aluminum protective cover. Protective bollards were placed around each well. Well installation diagrams are presented in Appendix A.

## 3.5 Monitoring Well Development

The newly installed groundwater monitoring wells were developed no sooner than 24 hours after completion of the surface pad. Well development involved manual surging using a Wattera™ pump, and pumping to remove fines and stimulate yield. The monitoring wells were developed until well water was free of visible sediment and the pH, temperature, turbidity, and specific conductivity stabilized and a minimum of five well volumes were removed. Monitoring well development records, including recorded parameters, are included in Appendix B.

## 3.6 Monitoring Well Sampling

The two newly installed monitoring wells were sampled January 22, 2013. The wells were purged using a Geotech™ Geosub 12-volt DC stainless steel submersible pump equipped with single-use Teflon® tubing. The pump intake line was placed slightly below the top of the water surface in order to pull water from the entire length of the water column. Field measurements of pH, temperature, turbidity, conductivity, dissolved oxygen (DO), and oxidation-reduction potential (ORP) were collected during groundwater sampling. Groundwater purge logs are included in Appendix B. Samples were submitted for SVOC, volatile organic compound (VOC), total metals and select MNA parameters analysis to the EPA SESD Region 4 laboratory and Black & Veatch's Basic Ordering Agreement (BOA) laboratory, Shealy Environmental. Groundwater sample results are presented and discussed in Section 4.6.

## 3.7 Potable Well Sampling

Potable well sampling was completed by the EPA SESD in January 2013, with the intention to sample wells within a one-mile radius of the Site. Upon arrival, an extensive discussion was conducted between SESD and personnel at Canton Municipal Utilities (CMU) pertaining to the status of planned wells to sample. One industrial well located at International Paper (IP) approximately one-quarter mile west of the Site was the only active well within the CMU service area, and no domestic wells are known to exist in the vicinity of the Site.

The IP well was not available for sampling due to access issues at the time of the investigation. The sampling event became limited to wells in the CMU system. Six municipal wells in the CMU system were sampled including a background well in Camden, MS located approximately 18 miles to the northeast. Three of the wells were within a one-mile radius of the Site. The wells were sampled for dioxins SVOCs, pesticides, polychlorinated biphenyls, VOCs, metals, and cyanide. The complete SESD report is provided in Attachment B.

# 4.0 Sample Results and Discussion

Results from the Phase 1 RI field study conducted between November 6, 2012 and January 24, 2013 will be discussed in the following sections. In addition, data collected from previous Site investigations, including the 2008 ESI, will be included to provide a more complete description of the current Site conditions. A summary of all samples included in this discussion is presented in Table 3-1.

Two data management conventions are being utilized to describe the sample results. For dioxin/furan congeners, collectively referred to as "dioxin-like compounds," a dioxin toxicity equivalent (TEQ) value was calculated for each sample. The TEQ normalizes the toxicity of the detected dioxins and dioxin-like compounds to the toxicity of 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD), the most widely studied and most toxic of the dioxins. Each dioxin-like compound is assigned a toxicity equivalence factor (TEF) and the TEQ is the sum of the concentrations of the dioxin-like compounds multiplied by their respective TEFs. The EPA Region 4 has adopted TEFs based on the work of van den Burg et al. in 1998 (Van den Burg, 1998) and recommended by the World Health Organization (WHO). The resultant TEQs were referred to as TEQ-WHO98. In 2005, the WHO reevaluated the TEFs for dioxin-like compounds and made changes that affect the calculation of the TEQ. The current TEQs are referred to as WHO TEQ-2005.

Second, to simplify the discussion of PAH contamination, a TEF methodology analogous to the method used to evaluate dioxins and furans was adopted for carcinogenic polycyclic aromatic hydrocarbons (cPAHs). These TEFs, shown below, are based on the relative potency of each compound to that of BaP as recommended in the EPA's *Provisional Guidance for Quantitative Assessment of Polycyclic Aromatic Hydrocarbons* (EPA, 1993). The resulting value is referred to as a BaP TEQ. Non-detects were treated as zero.

| TEFs for cPAH Compound | TEF |
|---|---|
| Benzo(a)pyrene | 1.0 |
| Benzo(a)anthracene | 0.1 |
| Benzo(b)fluoranthene | 0.1 |
| Benzo(k)fluoranthene | 0.01 |
| Chrysene | 0.001 |

| | |
|---|---|
| Dibenzo(a,h)anthracene | 1.0 |
| Indeno(1,2,3-c,d)pyrene | 0.1 |

For all contaminants, except for dioxin, tables presented in the DER include EPA's Regional Screening Levels (RSLs), equivalent to preliminary remediation goals (PRGs), for comparison purposes (EPA, 2012). RSLs are risk-based concentrations, derived from standardized equations that combine exposure assumptions with EPA toxicity data. If the exposure assumptions that form the basis of the RSL calculation are the same as the Site conditions, they are considered by EPA to be protective for humans (including sensitive groups), over a lifetime. Exceeding a RSL suggests that further evaluation of the potential risks that may be posed by Site contaminants is appropriate. For dioxin, the draft recommended interim PRG for residential soil of 50 nanograms per kilogram (ng/kg) is listed (EPA, 2009). Since the terms are equivalent and interchangeable, and since the EPA 2009 dioxin document uses the term PRG, PRG is used in tables, figures, and text.

The comparison of the Site data to the PRG is intended to provide a reference point to gauge the relative magnitude of contaminant concentrations. Presentation of the data in this way is not intended to eliminate contaminants from consideration or to evaluate the risk of any contaminant. Exceeding the PRG suggests that further evaluation of the potential risk is necessary. That evaluation will be presented in the Baseline Risk Assessment, a part of the RI process and will be included in the RI report.

## 4.1 Batchelor Creek Sediment

Sediment samples were collected from nine locations within Batchelor Creek during Phase 1 RI and the 18 locations within Batchelor Creek and its tributaries during the 2008 ESI (Figure 4-1). During the 2008 ESI, seven locations were sampled for dioxin analysis, and dioxin was detected at two of these locations SWP-SD-01 and SWP-SD-02 with concentrations of 30 and 16 ng/kg (i.e., parts per trillion, ppt) respectively. These concentrations are below the residential soil PRG of 50 ng/kg which was used as the screening value for dioxin TEQ. Location SWP-SD-02 was excavated during the ERA that occurred in Batchelor Creek in 2009. None of the Batchelor Creek sediment samples collected during the 2012 RI Phase 1 sampling event were analyzed for dioxin. A summary of the dioxin laboratory analytical data for the sediment samples collected from Batchelor Creek is presented in Table 4-1. Three locations sampled during the 2008 ESI (SWP-SD-01, SWPBC04, and SWPT03) are not shown on Figure 4-1 because these locations were within the area of Batchelor

Creek that was excavated during the 2009 ERA (Tetra Tech, 2011). However, the sample results are provided on Table 4-1.

During the 2008 ESI, 19 locations were sampled for SVOCs. Except one location (SWPRSD01), all exceeded the residential soil PRG of 15 micrograms per kilogram (µg/kg) for BaP TEQ, which is used as the screening value. During the 2012 sampling event, nine locations were sampled for SVOCs. Four of these locations (SWP101, SWP102, SWP103, and SWP107) exceeded the residential soil PRG of 15 µg/kg for BaP TEQ. A summary of the SVOC laboratory analytical data for the sediment samples collected from Batchelor Creek is presented in Table 4-2.

At several of the sample locations, there was an overlap between the data collected during the 2008 ESI and the Phase 1 RI samples. At these locations, concentrations of BaP TEQ were significantly decreased. For example, in 2008 a BaP TEQ of 1316 µg/kg was detected at SWPBC05; however, during the 2012 Phase 1 RI, a sample was collected in the same vicinity at SWP101 and had a BaP TEQ concentration of 469 µg/kg. Similarly during the 2008 ESI, a BaP TEQ of 968 µg/kg was detected at SWPBC06 and in 2012 a sample from SWP102 showed a detection of 19 µg/kg; and in 2008 a BaP TEQ was detected at a concentration of 4974 µg/kg at SWPBC08 and the 2012 sample from SWP103 showed a detection of 336 µg/kg.

These decreases can be attributed to several factors including the ERA of Batchelor Creek sediments adjacent to the SWP Site and the installation of the slurry wall in 2009/2010 (Tetra Tech, 2011). Additionally, during high water stages, Batchelor Creek becomes a fast moving stream which aids in the dispersion and attenuation of contaminated sediments. For these reasons, the 2012 data provide a better representation of the current relevant extent of contaminants within the Batchelor Creek sediments. Samples collected in 2012 downstream of the riprap area did not contain detectable concentrations of BaP TEQ.

## 4.2 Batchelor Creek Surface Water

Surface water samples were collected from nine locations in Batchelor Creek during Phase 1 of the RI and eight locations in Batchelor Creek and its tributaries during the 2008 ESI (Figure 4-2). All samples were analyzed for SVOCs and the data were screened against the National Recommended Water Quality Criteria (NRWQC) (Table 4-3).

A few SVOCs were detections in the 2008 ESI data, but not at significant levels. During the 2012 investigation, only bis (2-ethylhexly)phalatate was detected above its NRWQC. It was detected at 11 micrograms per liter (µg/L) in a duplicate sample from location SWP113. This is above the NRWQC screening level of 1.2 µg/L. Because Batchelor Creek is a perennial creek that responds to rain events with a high flow volume, the 2012 data better represent current surface water conditions. In addition, just upstream of the soil stockpile, the City of Canton dispenses treated waste water to the creek on a regular basis. This all aids in the dispersion and attenuation any contaminants that may enter the creek.

## 4.3 Residential Surface Soil

Residential surface soil samples (0 to 0.5 ft bls) were collected from 36 locations between October 24, 2012 and January 24, 2013 as part of the Phase 1 RI (Table 3-1), and at six locations (0 to 1 ft bls) during the 2008 ESI. Figure 4-3 illustrates the BaP TEQ, dioxin TEQ, and PCP results obtained from these sampling events. Locations where one or more of these analytes exceeded its PRG (15 µg/kg BaP TEQ, 50 ng/kg dioxin TEQ, and 890 µg/kg PCP) are indicated in red. Locations where all analytes were less than the PRGs are shown in green. Summaries of the dioxin and SVOC laboratory analytical data for the residential surface soil samples are presented in Tables 4-4 and 4-5.

With a few exceptions, the locations that had one or more exceedances of a PRG are defined by Covington Dr. to the north, Barfield St. on the east and south, and Miller St. on the west. Sample SWP235, collected at 535 Barfield St., had the highest concentrations of BaP TEQ (5491 µg/kg) and dioxin TEQ (1000 ng/kg). In most cases, BaP TEQ is collocated with dioxin. Interestingly, there are two locations that were non-detect for BaP TEQ but had high concentrations of dioxin. These are SWP008 (600 ng/kg dioxin) located near the intersection of Barfield and Miller Sts. and SWP223 (820 ng/kg dioxin) located near the intersection of Covington Dr. and Miller St. In most cases, PCP was non-detect and in no sample location was it found at a concentration greater than its PRG (890 µg/kg).

## 4.4 Residential Subsurface Soil

Residential subsurface soil samples (0.5 to 1 ft bls) were collected from 28 locations between October 24, 2012 and January 24, 2013 as part of the Phase 1 RI (Table 3-1), and at six locations during the 2008 ESI. Figure 4-4 illustrates the BaP TEQ, dioxin TEQ, and PCP results obtained from these sampling events. During the 2012

Phase 1 RI, subsurface residential soil samples were sampled for SVOCs only. Locations where one or more of these analytes exceeded its PRG (15 µg/kg BaP TEQ, 50 ng/kg dioxin TEQ, and 890 µg/kg PCP) are indicated in red. Locations where all analytes were less than the PRGs are shown in green. Summaries of the dioxin and SVOC laboratory analytical data for the residential subsurface soil samples are presented in Tables 4-6 and 4-7.

Similar to the residential surface soil samples, the subsurface samples that exceeded one or more PRGs are defined by Covington Dr. on the north, Barfield St. on the east and south, and Miller St. to the west. Sample SWP226, collected at a property adjacent to Covington Drive, had the highest concentrations of BaP TEQ (2392 µg/kg); this location corresponds with SWPR04 that was sampled in 2008 with a BaP TEQ concentration of 29 µg/kg. It should be noted that the sample method during the 2008 investigation was completed by grab sampling, while the Phase 1 RI sampling was completed in a 50 × 50 ft composite grid as discussed in Section 3.2.

## 4.5 Onsite Soil Borings

Three on-Site soil boring were advanced on the SWP Site between October 24, 2012 and January 24, 2013 as part of the RI Phase 1 investigation, and at thirteen locations during the 2008 ESI (Table 3-1). During the Phase 1 RI, subsurface soil and geotechnical samples were collected from the three borings in addition to characterization of the subsurface geology and visible contamination. During the 2008 ESI, 13 surface and 15 subsurface soil samples were collected and 29 boreholes were advanced to characterize sediment and evaluate the nature of free product on the Site (Tetra Tech, 2009b).

### *4.5.1 Onsite Surface Soil*

Sample results for the surface soil samples collected during the 2008 ESI are presented on Figure 4-5. Summaries of the dioxin and SVOC laboratory analytical data for the on-Site surface soil samples are presented in Tables 4-4 and 4-5. Locations where one or more of these analytes exceeded the residential PRG (15 µg/kg BaP TEQ, 50 ng/kg dioxin TEQ, and 890 µg/kg PCP) are again indicated in red. All of the on-Site surface soil samples exceeded the residential BaP TEQ with the highest concentration found at SWP09 at a concentration of 27,670 µg/kg. This sample was collected from a depth of 0 to 1 ft bls. The dioxin TEQ only exceeded the residential PRG at two location. At SWP02, it was discovered at 3,000 ng/kg and at SWP11 it was found at a concentration of 77 ng/kg. Concentrations of PCP were detected at 12 of the 13 sample locations, with three exceeding the residential PRG.

The highest concentration of PCP (7500 µg/kg) was detected at SWP04. Visible creosote or other indications of contamination were observed in many of the borings.

All of the PCP samples that exceeded the PRG are located in the eastern portion of the Site. The PCP treatment system may have been located in this area during the wood treating operations. The fact that the high dioxin detection is in this area is consistent with the fact that dioxin is known to be associated with PCP.

### *4.5.2 Onsite Subsurface Soil*

During the Phase 1 RI, a total of nine subsurface samples were collected from three on-Site locations ranging in depth between 5 to 300 ft bls. During the 2008 ESI, 14 subsurface samples were collected from 13 locations at depths of 1 to 20 ft bls (Table 3-1).

Four dioxin samples were collected from on-Site locations during the ESI from depths of 1 to 2 ft bls. During the Phase 1 RI, three additional dioxin samples were collected from depths between 5 to 12 ft bls. (This depth was interpreted as being just below fill material). Dioxins were detected in all of the on-Site subsurface soils; however, none exceeded the residential PRG. The highest concentration was detected at SWP001 (23 ng/kg) at a depth of 9 to 10 ft bls. A summary of dioxins detected in on-Site subsurface soil is presented as Table 4-6.

SVOC samples were collected from 14 locations during the 2008 ESI, and nine samples were collected from three locations during the Phase 1 RI. A summary of the SVOC laboratory analytical data for the on-Site subsurface soil samples is presented in Table 4-6. Onsite subsurface soils were screened against industrial PRGs consistent with EPA Region 4 policy. Figure 4-6 illustrates the BaP TEQ and PCP results obtained from these sampling events. Those samples exceeding industrial PRGs (210 µg/kg BaP TEQ and 2700 µg/kg PCP) shown in red. The sample results indicate that subsurface soils that exceed PRGs are widely distributed across the central portion of the Site; however, they were only detected vertically to a depth of approximately 20 ft bls. The highest BaP TEQ was detected in subsurface soil at SWP11 (68,920 µg/kg) from a depth of 16 to 20 ft bls. PCP was detected in many of the on-Site subsurface borings; however, it only exceeded its PRG at SWP09 (80,000 µg/kg). During the 2008 ESI, three samples were collected from within the soil stockpile (Figure 4-6). These samples exceeded the PRGs for

dioxin and BaP TEQ. Summaries of dioxins and SVOCs detected in the on-Site soil pile are presented on Tables 4-8 and 4-9.

Figure 4-6 also depicts visual observations made in soil boring investigation subsequent to the 2008 ESI (Tetra Tech, 2009b). Soils that were described as stained are shown in yellow. Stained soils are discolored with either no or slight odor that suggest SVOCs have moved through the soil or with a strong odor that might suggest residual NAPL is still present in the soils. Borings where soils were encountered containing NAPL either as residual or free flowing product are shown in purple. Observations made for each boring during the 2008 ESI and the 2008 soil boring investigation are presented in the reports provided in Attachment A (Tetra Tech, 2009a, and 2009b).

During the 2012/2013 Phase 1 RI, NAPL or evidence of NAPL was observed to exist to a depth of about 30 ft bls in SWP001 and SWP004. This depth is consistent with the 2008 soil boring investigation (Tetra Tech, 2009b).

In soil boring SWP001, the stiff Yazoo Clay transitions from a mottled orange/gray/brown color to a greenish gray color around 32.5 ft bls. This color change is believed to represent a transition between a weathered (Zone B) and unweathered (Zone C) Yazoo Clay. The occurrence of the orange/gray/brown colors is the result of oxidation, indicating exposure to air.

As discussed in section 2.3, Zone B of the Yazoo Clay typically contains a number of dessication fractures (Stover et al., 1988). These fractures act as conduits allowing for the migration of NAPL through the clay. In contrast, the unweathered portion, Zone C, below approximately 30 ft bls, is more coherent and competent, and is serving as a confining unit that prevents vertical contaminant migration. Detailed descriptions of these soil borings are presented on the boring logs in Appendix A and photologs are presented in Appendix C.

During the 2012/2013 RI Phase 1 investigations, subsurface samples were collected for metals from depths between 5 to 12 ft bls, a depth that was interpreted as being just below fill material. A summary of subsurface soil sample results for metals is presented on Table 4-10. Results were screened against industrial soil PRG. Arsenic was the only constituent that exceeded its PRG of 1.6 milligrams per kilogram (mg/kg). The highest concentration was detected from 6 to 12 ft bls at SWP002 with a concentration of 8.4 mg/kg.

### *4.5.3 Geotechnical Samples*

A summary of the geotechnical sample results is presented in Table 4-11, with the complete laboratory report presented in Appendix E. The grain size distribution of sand, silt-, and clay-sized particles in the nine samples analyzed is highly variable from one sample to the next and displays characteristics of variable depositional environments (e.g., marine and deltaic) as expected based on regional geology and field observations made at the Site. A trace of gravel was found at SWP004 (68 to 69 ft bls) and most likely represents a shell fragment from the Moody's Branch Formation.

USCS descriptions were completed for each soil sample per ASTM standard D2487. The comparison of boring logs to the USCS description is shown in Table 4-11. Field soil descriptions were in close agreement with the results of the grain sieve tests and UCSC classification with only SWP001 (17.5 to 18 ft bls) and SWP002 (117.5 to 118 ft bls) in variance. Table 4-11 includes a breakdown of sand grain into coarse-medium-fine percentages. The majority of sand falls under the fine-grained size classification.

Soil moisture tests were completed for each soil sample per ASTM standard D2216. The values ranged from 29.1 (coarse sand) to 52.9 (stiff clay). The moisture content is indicative of the soil type and indicates interstitial water. For SWP001 at 17.5 to 18.5 ft bls, this pore water was contaminated and/or partially displaced with creosote. The limited moisture analyses (four samples) ranged from 27- to 53-percent. Interpretation of samples collected near the top of each 20-ft core run is potentially compromised because the driller activated water to force the core out of the collection barrel. Dry bulk density ranged from 116.7 to 119.9 pounds per cubic feet.

Atterberg limits were completed for each soil sample per ASTM standard D4318. The comparison of boring logs to the test results is shown on Table 4-11 along with the test interpretation. Atterberg limits can be used to distinguish between different types of silt and clay. As illustrated in Figure E-1 in Appendix E, the four samples are all clay, and plot in the field qualified as either a fat clay (CH) or an organic clay (OH); the 'H' denotes high plasticity in all samples. All the clay soil tested had very high plasticity (plasticity index > 40). Based on the high organic fraction in the dark-colored sediment from the Cockfield Formation, the clay should be classified as OH whereas the green sediment from the Yazoo Clay would fall under the CH classification.

Soil pH from two samples SWP001 (30 to 31 ft bls) and SWP004 (20 to 21 ft bls) ranged from 7.65 to 8.40. Four samples of clay were also tested for hydraulic conductivity (Table 4-11). As indicated, the results were very low in all four samples ranging from 1.40E-08 to 8.40E-09 centimeters per second.

There were 10 samples tested for organic carbon. Soil organic content is used for equilibrium partitioning calculations and is proportional to the degree of contamination that will adsorb to soil. Soil organic content ranged from 300 to 12,100 mg/kg with an average of 3,000 mg/kg. These levels are generally moderate. The highest value, 12,100 mg/kg from SWP002, represents the brown silty clay of the Cockfield Formation. The log for SWP002 indicates higher organic content immediately below this sample, namely an 'organic rich zone' from 118 to 120 ft bls.

## 4.6 Groundwater Samples

Two monitoring wells were sampled as part of the RI Phase 1 investigation for SVOCs, VOCs, metals and select MNA parameters. Sample results are summarized in Table 4-12. Groundwater results were compared to tap water PRG. Trace SVOC constituents were detected in MW001, and VOC constituents above PRGs were detected in MW002. It is believed that the SVOCs may have been introduced into the screened interval through the drilling process. Surface casings were used in both borings that should have prevented this from occurring but a good seal might not have occurred due to the nature of the Site lithology. If future drilling occurs at the Site a permanent surface casing may need to be installed to prevent this from occurring. Trace VOCs are likely laboratory contaminants. Figure 4-7 displays the total SVOCs detected in the monitoring wells.

Potable well sample results are presented in Attachment B. Low levels of dioxin were detected in one Canton well at levels comparable to those found in the background well. A single sample from a potable well located approximately ¼-mile from the Site contained naphthalene at a level of 0.11 µg/l, slightly below the RSL of 0.14 µg/l. Other than metals at non-harmful levels, no other analytes were detected.

## 4.7 Data Usability

This section provides information on the usability of sample analytical data and field data generated during 2012/2013 RI Phase 1 investigations. The data usability evaluates the quality of the data and the implication of a qualifier applied to the

sample result. The EPA Region 4 SESD applies qualifiers to the sample results in accordance with the criteria and parameters listed in the EPA CLP National Functional Guidelines for Inorganic Data Review (EPA, 2004), and the EPA Region 4 SESD Office of Quality Assurance Data Validation Standard Operating Procedures for CLP Routine Analytical Services, Revision 2.1 (EPA, 1999).

## 4.8 Analytical Data Qualifiers and Sample Identification

The analytical results presented in tables presented in this report show concentrations of constituents that may have been assigned a lab qualifier. Qualifiers are defined as:

J Result is an approximate value
U Analyte not detected
O Other (non-standard qualifier)

The sample results from were validated by SESD and were reviewed for usability by Black & Veatch; the usability reports are provided in Appendix E. Duplicate samples are identified on the summary tables presented in Section 4.0. The parent samples were compared to the duplicates in order to ensure that the data obtained were consistent and usable for the intended purposes. Laboratory data are presented in Appendix F.

### *4.8.1 Field Data*

The temperature, pH, conductivity, ORP, DO and turbidity data are considered to be of sufficient quality and have been deemed acceptable for their intended use. The instrumentation was properly calibrated before and after the groundwater sampling event in accordance with the SESD Standard Operating Procedures. Field data collected during groundwater sampling are included on Table 4-12, and on purge forms in Appendix B.

# 5.0 Summary and Recommendations

Black & Veatch conducted Phase 1 of the RI between November 6, 2012 and January 24, 2013. Phase 1 included characterization of sediment and surface water within Batchelor Creek; characterization of surface and subsurface soils from residential properties adjacent to the SWP Site; and characterization of geology/hydrogeology of the Yazoo Clay and Cockfield formations under the SWP Site through soil borings, and installation and sampling of monitoring wells. These investigations were undertaken to address these specific data gaps:

1. The concentrations of contaminants in surface soil/sediment and surface water in the creek and in areas linked to overflows of Batchelor Creek.
2. The concentrations of contaminants in surface and subsurface soil samples from residential properties adjacent to the SWP Site.
3. The concentrations of contaminants in the domestic supply wells in the vicinity of the Site.
4. The nature of the Site's geology/hydrogeology including Yazoo Clay and Cockfield Formation, including geochemical analyses in anticipation of bioremediation or MNA remedies.

With respect to Data Gap No. 1, sediment and surface water samples from within Batchelor Creek showed a decrease in overall concentrations of BaP TEQ compared to the 2008 ESI findings. These decreases are believed to be a result of prior remedial activities including excavation of sediment in the creek and installation of a slurry wall on the northern portion of the Site. Additionally, discharge of treated wastewater and high flow conditions have aided in the dispersion and attenuation of Site-related contaminants that may have entered the creek. The data collected in Phase 1 are sufficient to conduct a screening-level ecological risk assessment (SLERA). The conclusions drawn in the SLERA will dictate whether the ecological characterization (Phase 3) is warranted.

With respect to Data Gap No. 2, sampling in the residential neighborhood south of the Site showed several locations that exceeded the residential PRGs for BaP TEQ and dioxin in both surface and subsurface soils. Most of the locations were defined by Covington Dr. on the north, Barfield St. on the east and south, and Miller St. to the west. Sample results are pending for nine additional properties. Depending in part on these results, additional characterization may be warranted.

With respect to Data Gap No. 3, EPA's SESD was tasked with sampling wells within a one-mile radius of the Site. Upon arrival, an extensive discussion was conducted with personnel at Canton Municipal Utilities pertaining to the status of planned wells to sample. Other than an industrial well at an International Paper facility approximately one-quarter mile west of the Site, they knew of no active wells within their service area. Therefore there are no receptors at risk due to contamination of their domestic water supply.

With respect to Data Gap No. 4, the Phase 1 findings alter the previous understanding of the geology/hydrogeology significantly. Based on data available prior to the investigation, the Yazoo Clay was understood to range in thickness between 40 to 80 ft bls. The Cockfield Formation, a source of water for domestic supply wells in the Site vicinity, was expected to be encountered at 40 to 80 ft bls. In order to characterize the nature and competency of the Yazoo Clay, soil borings were planned at four locations with penetrations of 20 ft into the Cockfield Formation, or total depths of 60 to 100 ft bls. Further, monitoring wells were to be installed in the borings to evaluate if contaminants had penetrated the Yazoo Clay and impacted the underlying Cockfield Aquifer.

As described in Section 2.5, while advancing soil boring SWP004, it was discovered that the upper sand aquifer that regionally marks the top of the Cockfield Formation does not occur beneath the SWP Site. Instead it was found that the three distinct zones of the Yazoo Clay extend to a depth of approximately 40 to 50 ft bls. Underneath the Yazoo Clay is the Moodys Branch Formation which extends to approximately 82 ft bls where it unconformably transitions into the Cockfield Formation.

The scope of work for monitoring well installation was subsequently changed from four wells to maximum depths of 100 ft bls to two monitoring wells to about 300 ft bls. The findings of the soil boring investigation indicate that the NAPL and adsorbed phase contamination is largely confined to the zone from ground surface to about 30 ft bls. Borings SWP001 and SWP004 showed NAPL or evidence of NAPL to about 30 ft bls contained within the B zone of the Yazoo Clay, similar to what was found in the 2008 soil boring investigation where NAPL was discovered to depths of about 30 ft bls (Tetra Tech, 2009b). No phreatic or perched water was noted in the borings completed in the Phase 1 investigation although some of the soils were deemed moist to wet. Thus, the Site conceptual model appears to be limited to NAPL and adsorbed phase contamination.

Groundwater collected from monitoring wells MW001 and MW002 indicates that the groundwater is not impacted by Site-related contaminants. (The trace detection of phenanthrene in MW001 is likely attributable to drag down during well construction). Thus, the clay layer at the Site appears to be functioning as an effective barrier to vertical contaminant migration. Groundwater beneath the Site has not been impacted by Site-related contamination and the Cockfield Formation aquifer is not at risk from contamination in the future despite the existence of high levels of contamination trapped in the upper 30 ft of soil.

## 5.1 Recommendations

1. *Batchelor Creek and its tributaries*. Further investigations under Phase 2 of the RI may need to be completed to characterize sediment and surface water conditions within Batchelor Creek upstream of the SWP Site because contamination detected during the 2008 ESI suggests there may be another source of contamination upstream of the Site. If the SLERA concludes that the Phase 3 ecological characterization is warranted, additional characterization of sediment quality downstream of the Site can be conducted at that time.

2. *Residential properties adjacent to the SWP Site*. An additional nine locations were sampled in the residential neighborhood south of the Site in March/April 2013 to better define areas where high concentrations of dioxin and BaP TEQ were found; the results of this sampling are pending. Additional residential sampling during Phase 2 may be warranted.

3. *Former facility*. The unexpected findings of the soil boring investigation fundamentally change a key element of our CSM for the Site. Instead of the Cockfield Formation aquifer being impacted or at risk, it is neither. Potential remedies such as *in situ* chemical oxidation, *in situ* bioremediation, or solidification/stabilization that may have been considered were this not the case, are no longer potentially viable. The likely remedy is consolidation and containment/isolation of contaminated soil. That said, additional characterization is needed on the eastern and western sides of the Site so that quantities can be determined and the ultimate height of the containment cell can be approximated. The most economical approach to gather this data will be either DPT or a small sonic rig such as was used in the initial mobilization. Dakota Technology's Tar-specific Green Optical Screening Tool or TarGOST®, a valuable but expensive tool to delineate contaminant mass, is not needed. The reason for this is the distribution of the contaminant mass

is not expected to be as important a factor in remedy selection as it would be were an *in situ* technology such as those cited above be considered. A systematic investigation to depths of 12 ft bls spaced 100 ft apart as depicted in Figure 5-1 is proposed. This depth is based on the assumption that future use of the Site may result in excavations for building foundations, but the excavations would not exceed 12 ft bls.

4. *North of Site*. There are no soil data from north of Batchelor Creek. The former King's Lumber operations area has never been investigated. A modest DPT or sonic drilling investigation is proposed as shown in Figure 5-1. Should significant contamination be discovered, the investigation could be expanded in real time or in a separate mobilization.

# 6.0 References

ATSDR, 1998. Agency for Toxic Substances and Disease Registry, Toxicological Profile for ChlorinatedDibenzo-p-dioxins (CDDs), http://www.atsdr.cdc.gov/toxprofiles/tp.asp?id=366&tid=63. December, 1998.

ATSDR, 2001. Agency for Toxic Substances and Disease Registry, Toxicological Profile for Pentachlorophenol, http://www.atsdr.cdc.gov/toxprofiles/tp.asp?id=402&tid=70, September, 2001.

ATSDR, 2002. Agency for Toxic Substances and Disease Registry, Toxicological Profile for Creosote, http://www.atsdr.cdc.gov/toxprofiles/tp.asp?id=66&tid=18. September, 2002.

Black & Veatch, 2012a. Sampling and Analysis Plan, Volume 2-Quality Assurance Project Plan (QAPP), Revision 1.0. Southeastern Wood Preserving, Canton, Madison County, Mississippi. October 2012.

Black & Veatch, 2012b. Sampling and Analysis Plan, Volume 1-Field Sampling Plan (FSP), Revision 1.0. Southeastern Wood Preserving, Canton, Madison County, Mississippi. October 2012.

EPA, 1993. U.S. Environmental Protection Agency, Provisional Guidance for Quantitative Assessment of Polycyclic Aromatic Hydrocarbons, EPA/600/R-93/089, 1993.

EPA, 1999. U.S. Environmental Protection Agency Region 4. Science and Ecosystem Support Division Office of Quality Assurance Data Validation Standard Operating Procedures for Contract Laboratory Program Routine Analytical Services, Revision 2.1. July 1999.

EPA, 2004. USEPA Contract Laboratory Program Statement of Work for Inorganic Analysis, Multi-Media, Multi-Concentration, ILM05.3, March 2004.

EPA, 2009. U.S. Environmental Protection Agency Draft Recommended Interim Preliminary Remediation Goals for Dioxin in Soil At CERCLA and RCRA Sites. Office of Superfund Remediation Technology Innovation, OSWER 9200.3-56, December 2009.

EPA, 2012. U.S. Environmental Protection Agency, Regional Screening Levels for Chemical Contaminants at Superfund Sites, at http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm, November 2012.

MDEQ, 2013. Mississippi Department of Environmental Quality (MDEQ) News, V10, Geology and Groundwater at the Southeastern Wood Preserving Superfund Site in Canton, January 2013.

Stover, C.W., Ross, D.W, and Peel, C.O. 1988. Yazoo Clay: Engineering Aspects and Environmental Geology of Expansive Clays. Mississippi Department of Natural Resources Bureau of Geology, Circlular 1. 1988.

Tetra Tech, 2009a. Final Expanded Site Inspection (ESI) Report, Revision 1.0. Southeastern Wood Preserving, Canton, Madison County, Mississippi. July 2009.

Tetra Tech, 2009b. Borehole Logs. Southeastern Wood Preserving, Canton, Madison County, Mississippi. Technical Memorandum. February 2009.

Tetra Tech, 2011. Final Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Removal Action Report, Revision 0.0. March, 2011.

Van den Berg, M. et al. 1998. "Toxicity equivalence factors for PCBs, PCDDs, PCDFs, for humans and wildlife." Environment Health Perspectives 106(12):775-792, 1998.

U.S. Geological Survey (USGS) and the Mississippi Research and Development Center. Water for Municipal and Industrial Development in Hinds, Madison, and Rankin Counties, Mississippi. 1979.

# TABLES

**Table 3-1**
**Summary of Sample Types and Locations-2008, 2012, and 2013**
**Southeastern Wood Preserving Site**
**Canton, Madison County, Mississippi**

| Station ID | Sample ID | Depth (ft bls) | Date Collected | Sample Type | Sample Location |
|---|---|---|---|---|---|
| **Soil Samples** | | | | | |
| SWPB01 | SWP-SS-01A1 | 0-1 | 9/22/2008 | Grab | Background sample collected off site, north of the former SWP property |
| | SWP-SB-01A2 | 1-4 | | | |
| | SWP-SB-01B | 4-8 | | | |
| | SWP-SB-01C | 8-12 | | | |
| | SWP-SB-01D | 12-16 | | | |
| | SWP-SB-01E | 16-20 | | | |
| SWP02 | SWP-SS-02A1 | 0-1 | 9/25/2008 | Grab | On site, eastern portion of the former SWP property |
| | SWP-SB-02B | 4-8 | | | |
| SWP03 | SWP-SS-03A1 | 0-1 | 9/25/2008 | Grab | On site, central portion of the former SWP property, east of waste stockpile |
| | SWP-SB-03B | 4-8 | | | |
| SWP04 | SWP-SS-04A1 | 0-1 | 9/25/2008 | Grab | On site, in area of former PCP wood treating operations |
| | SWP-SB-04C | 8-12 | | | |
| | SWP-SB-04C-DUP | | | | |
| SWP05 | SWP-SS-05A1 | 0-1 | 9/24/2008 | Grab | On site, north of Covington Dr, southeast of waste stockpile |
| | SWP-SB-05D | 12-16 | | | |
| SWP06 | SWP-SS-06A1 | 0-1 | 9/24/2008 | Grab | Southeastern corner of on-site waste stockpile |
| | SWP-SB-06B | 4-8 | | | |
| SWP07 | SWP-SS-07A1 | 0-1 | 9/23/2008 | Grab | Northeastern corner of on-site waste stockpile |
| | SWP-SB-07A2 | 1-4 | | | |
| | SWP-SB-07A2-DUP | | | | |
| SWP08 | SWP-SS-08A1 | 0-1 | 9/24/2008 | Grab | Southwestern corner of on-site waste stockpile |
| | SWP-SB-08C | 8-12 | | | |

**Table 3-1**
**Summary of Sample Types and Locations-2008, 2012, and 2013**
**Southeastern Wood Preserving Site**
**Canton, Madison County, Mississippi**

| Station ID | Sample ID | Depth (ft bls) | Date Collected | Sample Type | Sample Location |
|---|---|---|---|---|---|
| **Soil Samples** | | | | | |
| SWP09 | SWP-SS-09A1 | 0-1 | 9/24/2008 | Grab | Northwestern corner of on-site waste stockpile |
| | SWP-SB-09C | 8-12 | | | |
| SWP10 | SWP-SS-10A1 | 0-1 | 9/25/2008 | Grab | On site, between waste stockpile and Batchelor Creek |
| | SWP-SB-10B | 4-8 | | | |
| SWP11 | SWP-SS-11A1 | 0-1 | 9/24/2008 | Grab | On site, west of waste stockpile and south of Batchelor Creek |
| | SWP-SB-11E | 16-20 | | | |
| SWP12 | SWP-SS-12A1 | 0-1 | 9/23/2008 | Grab | On site, north of Covington Dr, south of waste stockpile |
| | SWP-SB-12C | 8-12 | | | |
| SWP13 | SWP-SS-13A1 | 0-1 | 9/22/2008 | Grab | On site, north of Covington Dr, southwest of waste stockpile |
| | SWP-SB-13B | 4-8 | | | |
| SWP14 | SWP-SS-14A1 | 0-1 | 9/24/2008 | Grab | On site, western portion of the former SWP property |
| | SWP-SB-14D | 2-4 | | | |
| SWPR01 | SWP-RSS-01 | 0-0.5 | 9/24/2008 | Grab | Residential property located at 459 Barfield St |
| | SWP-RSB-01 | 1-2 | | | |
| SWPR02 | SWP-RSS-02 | 0-0.5 | 9/24/2008 | Grab | Residential property located at 464 Covington Dr |
| | SWP-RSB-02 | 1-2 | | | |
| SWPR03 | SWP-RSS-03 | 0-0.5 | 9/25/2008 | Grab | Residential property located at 364 Miller St |
| | SWP-RSS-03-DUP | | | | |
| | SWP-RSB-03 | 1-2 | | | |

**Table 3-1**
**Summary of Sample Types and Locations-2008, 2012, and 2013**
**Southeastern Wood Preserving Site**
**Canton, Madison County, Mississippi**

| Station ID | Sample ID | Depth (ft bls) | Date Collected | Sample Type | Sample Location |
|---|---|---|---|---|---|
| **Soil Samples** | | | | | |
| SWPR04 | SWP-RSS-04 | 0-0.5 | 9/24/2008 | Grab | Residential property located at 543 Barfield St |
| | SWP-RSB-04 | 1-2 | | | |
| SWPR05 | SWP-RSS-05 | 0-0.5 | 9/24/2008 | Grab | Residential property located at 605 Barfield St |
| | SWP-RSB-05 | 1-2 | | | |
| SWPR06 | SWP-RSS-06 | 0-0.5 | 9/24/2008 | Grab | Residential property located at 359 Miller St |
| | SWP-RSB-06 | 1-2 | | | |
| SWP201 | SWP201_0.5 | 0-0.5 | 10/24/2012 | Composite | Residential property located at 364 Miller St (Parcel #093D-19A-245/00.00) |
| | SWP201_1.0 | 0.5-1 | | | |
| | SWP9201_1.0 (dup) | 0.5-1 | | | |
| SWP202 | SWP202_0.5 | 0-0.5 | 10/29/2012 | Composite | Property located at 464 Covington St (Parcel #093D-19A-266/00.00) |
| | SWP202_1.0 | 0.5-1 | | | |
| | SWP9202_1.0 (dup) | 0.5-1 | | | |
| SWP203 | SWP203_0.5 | 0-0.5 | 10/29/2012 | Composite | Property located at 464 Covington St (Parcel #093D-19A-279/01.00) |
| | SWP9203_0.5 (dup) | 0-0.5 | | | |
| | SWP203_1.0 | 0.5-1 | | | |
| SWP204 | SWP204_0.5 | 0-0.5 | 10/26/2012 | Composite | Property located southside of Covington Dr (Parcel #093D-19A-279/02.00) |
| | SWP204_1.0 | 0.5-1 | | | |
| SWP205 | SWP205_1.0 | 0.5-1 | 10/25/2012 | Composite | Property located southside of Covington Dr (Parcel #093D-20B-235/00.00) |
| | SWP205_1.5 | 1-1.5 | | | |
| SWP206 | SWP206_0.5 | 0-0.5 | 10/25/2012 | Composite | Property located southside of Covington Dr (Parcel #093D-20B-229/00.00) |
| | SWP206_1.0 | 0.5-1 | | | |

**Table 3-1**
**Summary of Sample Types and Locations-2008, 2012, and 2013**
**Southeastern Wood Preserving Site**
**Canton, Madison County, Mississippi**

| Station ID | Sample ID | Depth (ft bls) | Date Collected | Sample Type | Sample Location |
|---|---|---|---|---|---|
| **Soil Samples** | | | | | |
| SWP207 | SWP207_0.5 | 0-0.5 | 10/25/2012 | Composite | Property located southside of Covington Dr (Parcel #093D-20B-127/00.00) |
| | SWP9207_0.5 (dup) | 0-0.5 | | | |
| | SWP207_1.0 | 0.5-1 | | | |
| SWP208 | SWP208_0.5 | 0-0.5 | 10/26/2012 | Composite | Residential property located at 340 Miller St (Parcel #093D-19A-241/00.00) |
| | SWP208_1.0 | 0.5-1 | | | |
| SWP209 | SWP209_0.5 | 0-0.5 | 10/24/2012 | Composite | Residential property located at 435 Barfield Ave (Parcel #093D-19A-249/00.00) |
| | SWP209_1.0 | 0.5-1 | | | |
| SWP210 | SWP210_0.5 | 0-0.5 | 10/24/2012 | Composite | Residential property located at 465 Barfield Ave (Parcel #093D-19A-250/00.00) |
| | SWP9210_0.5 (dup) | 0-0.5 | | | |
| | SWP210_1.0 | 0.5-1 | | | |
| SWP211 | SWP211_0.5 | 0-0.5 | 10/24/2012 | Composite | Residential property located at 543 Barfield St (Parcel #093D-19A-256/00.00) |
| | SWP211_1.0 | 0.5-1 | | | |
| SWP212 | SWP212_0.5 | 0-0.5 | 10/26/2012 | Composite | Residential property located at 563 Barfield St (Parcel #093D-20B-227/00.00) |
| | SWP212_1.0 | 0.5-1 | | | |
| | SWP9212_1.0 (dup) | 0.5-1 | | | |
| SWP213 | SWP213_0.5 | 0-0.5 | 10/24/2012 | Composite | Property located at 605 Barfield St (Parcel #093D-20B-240/03.00) |
| | SWP213_1.0 | 0.5-1 | | | |

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**Southeastern Wood Preserving Site**
**Canton, Madison County, Mississippi**

| Station ID | Sample ID | Depth (ft bls) | Date Collected | Sample Type | Sample Location |
|---|---|---|---|---|---|
| **Soil Samples** | | | | | |
| SWP214 | SWP214_0.5 | 0-0.5 | 10/29/2012 | Composite | Property located at 562 Barfield St (Parcel #093D-20B-221/00.00) |
| | SWP214_1.0 | 0.5-1 | | | |
| SWP215 | SWP215_0.5 | 0-0.5 | 10/24/2012 | Composite | Residential property located at 522 Barfield St (Parcel #093D-19A-212/00.00) |
| | SWP215_1.0 | 0.5-1 | | | |
| SWP216 | SWP216_0.5 | 0-0.5 | 10/24/2012 | Composite | Residential property located at 456 Barfield St (Parcel #093D-19A-218/00.00) |
| | SWP216_1.0 | 0.5-1 | | | |
| SWP217 | SWP217_0.5 | 0-0.5 | 10/24/2012 | Composite | Residential property located at 328 Miller St (Parcel #093D-19A-219/00.00) |
| | SWP217_1.0 | 0.5-1 | | | |
| SWP218 | SWP218_0.5 | 0-0.5 | 10/24/2012 | Composite | Residential property located at 362 North St E (Parcel #093D-19A-187/01.00) |
| | SWP218_1.0 | 0.5-1 | | | |
| SWP219 | SWP219_0.5 | 0-0.5 | 10/24/2012 | Composite | Residential property located at 335 Miller St (Parcel #093D-19A-239/00.00) |
| | SWP219_1.0 | 0.5-1 | | | |
| SWP220 | SWP220_0.5 | 0-0.5 | 10/24/2012 | Composite | Residential property located at 353 Miller St (Parcel #093D-19A-236/00.00) |
| | SWP220_1.0 | 0.5-1 | | | |
| SWP221 | SWP221_0.5 | 0-0.5 | 10/26/2012 | Composite | Residential property located at 367 Miller St (Parcel #093D-19A-227/00.00) |
| | SWP221_1.0 | 0.5-1 | | | |
| SWP222 | SWP222_0.5 | 0-0.5 | 10/27/2012 | Composite | Property located at 381 Miller St (Parcel #093D-19A-266/00.00) |
| | SWP222_1.0 | 0.5-1 | | | |

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**Summary of Sample Types and Locations-2008, 2012, and 2013**
**Southeastern Wood Preserving Site**
**Canton, Madison County, Mississippi**

| Station ID | Sample ID | Depth (ft bls) | Date Collected | Sample Type | Sample Location |
|---|---|---|---|---|---|
| **Soil Samples** | | | | | |
| SWP223 | SWP223_0.5 | 0-0.5 | 10/25/2012 | Composite | Property located at 388 Miller St (Parcel #093D-19A-229/00.00) |
| | SWP223_1.0 | 0.5-1 | | | |
| SWP224 | SWP224_0.5 | 0-0.5 | 10/25/2012 | Composite | International Paper Industrial Property (Parcel #093D-19A-224/00.00) |
| | SWP224_1.0 | 0.5-1 | | | |
| | SWP9224_1.0 (dup) | 0.5-1 | | | |
| SWP225 | SWP225_0.5 | 0-0.5 | 10/25/2012 | Composite | Property at 329 East North St. (Parcel #093D-19A-222/02.00) |
| | SWP225_1.0 | 0.5-1 | | | |
| SWP226 | SWP226_0.5 | 0-0.5 | 1/23/2013 | Composite | Property located southside of Covington Dr (Parcel #093D-19A-263/00.00) |
| | SWP226_1.0 | 0.5-1 | | | |
| SWP227 | SWP227_0.5 | 0-0.5 | 1/23/2013 | Composite | Property located at 548 Covington Dr (Parcel #093D-19A-262/00.00) |
| | SWP9227_0.5 (dup) | 0-0.5 | | | |
| SWP228 | SWP228_0.5 | 0-0.5 | 1/23/2013 | Composite | Residential property located southside of Covington Dr (Parcel #093D-20B-236/00.00) |
| SWP229 | SWP229_0.5 | 0-0.5 | 1/23/2013 | Composite | Residential property located at 605 Barfield St (Parcel #093D-20B-226/00.00) |
| | SWP229_1.0 | 0.5-1 | | | |
| SWP230 | SWP230_0.5 | 0-0.5 | 1/23/2013 | Composite | Property located at 464 Covington Dr (Parcel #093D-19A-265/02.00) |
| SWP231 | SWP231_0.5 | 0-0.5 | 1/23/2013 | Composite | Residential Property located at 435 Barfield St (Parcel #093D-19A-249/00.00) |
| SWP232 | SWP232_0.5 | 0-0.5 | 1/23/2013 | Composite | Residential property located at 340 Miller St (Parcel #093D-19A-242/00.00) |
| SWP233 | SWP233_0.5 | 0-0.5 | 1/23/2013 | Composite | Residential property located at 525 Barfield (Parcel #093D-19A-253/00.00) |

**Table 3-1**
**Summary of Sample Types and Locations-2008, 2012, and 2013**
**Southeastern Wood Preserving Site**
**Canton, Madison County, Mississippi**

| Station ID | Sample ID | Depth (ft bls) | Date Collected | Sample Type | Sample Location |
|---|---|---|---|---|---|
| **Soil Samples** | | | | | |
| SWP234 | SWP234_0.5 | 0-0.5 | 1/24/2013 | Composite | Residential property located at 519 Barfield St (Parcel # 093D-19A-252/00.00) |
| SWP235 | SWP235_0.5 | 0-0.5 | 1/24/2013 | Composite | Residential property located at 535 Barfield St (Parcel # 093D-19A-255/00.00) |
| SWP236 | SWP236_0.5 | 0-0.5 | 1/24/2013 | Composite | Property located at 605 Barfield St (Parcel # 093D-20B-228/00.00 ) |
| | SWP236_1.0 | 0.5-1 | | | |
| SWP001 | SWP001_19 | 18-19 | 1/8/2013 | Grab | Onsite near northwest edge of stockpile; soil boring became monitoring well MW001 |
| | SWP001_69 | 68-69 | | | |
| | SWP9001_69 (dup) | 68-69 | | | |
| | SWP001_296 | 295-296 | 1/10/2013 | Grab | |
| SWP002 | SWP002_12 | 6-12 | 1/12/2013 | Grab | Onsite, southeastern portion of site near scale house and silo; soil boring became monitoring well MW002 |
| | SWP002_67.5 | 66.5-67.5 | | | |
| | SWP002_300 | 298-300 | 1/15/2013 | Grab | |
| SWP004 | SWP004_15 | 15-15.5 | 11/6/2012 | Grab | Onsite, northwest portion of site near Batchelor Creek; soil boring abandoned |
| | SWP004_60 | 60-60.5 | | Grab | |
| | SWP004_70 | 70-70.5 | | Grab | |
| **Contaminated Soil Stockpile Samples** | | | | | |
| SWP-WS-01 | SWP-WS-01 | 3 | 2/28/2008 | Composite | Contaminated Soil Stockpile |
| SWP-WS-02 | SWP-WS-02 | 0.5-2 | | | |
| | SWP-WS-02D (dup) | 0.5-2 | | | |
| SWP-WS-03 | SWP-WS-03 | 1.7-2 | | | |
| **Surface Water Samples** | | | | | |
| SWPBC01 | SWP-SW-01 | | 9/23/2008 | Grab | Batchelor Creek, upstream of SWP site |
| SWPBC05 | SWP-SW-05 | | 9/23/2008 | Grab | Batchelor Creek, at the confluence of the ditch located southwest of the historical SWP property boundary |
| | SWP-SW-05-DUP | | | | |

**Table 3-1**
**Summary of Sample Types and Locations-2008, 2012, and 2013**
**Southeastern Wood Preserving Site**
**Canton, Madison County, Mississippi**

| Station ID | Sample ID | Depth (ft bls) | Date Collected | Sample Type | Sample Location |
|---|---|---|---|---|---|
| **Surface Water Samples** | | | | | |
| SWPBC06 | SWP-SW-06 | | 9/23/2008 | Grab | Batchelor Creek, downstream of SWP property and east of U.S. Highway 51 |
| SWPBC08 | SWP-SW-08 | | 9/22/2008 | Grab | Batchelor Creek, downstream of SWP property, and the park located near Union Street |
| SWPT01 | SWP-SW-12 | | 9/24/2008 | Grab | Tributary 1 of Batchelor Creek, northeast of SWP |
| SWPT03 | SWP-SW-14 | | 9/23/2008 | Grab | Tributary 3 of Batchelor Creek, north of SWP |
| SWPT04 | SWP-SW-15 | | 9/23/2008 | Grab | Tributary 4 of Batchelor Creek, northwest of SWP |
| SWPBC12 | SWP-PIPE-01 | | 9/24/2008 | Grab | Outfall from pipe leading from the water treatment facility directly south of SWP |
| SWP101 | SWP101SW | | 10/27/2012 | Grab | Batchelor Creek at the Miller Street Bridge; Downstream of SWP Site (Parcel # 093D-19A-266/00.00) |
| SWP102 | SWP102SW | | 10/28/2012 | Grab | Batchelor Creek at the Dobson Avenue Bridge; Downstream of the SWP Site (Parcel # 093D-19B-317/00.00) |
| SWP103 | SWP103SW | | 10/27/2012 | Grab | Batchelor Creek at the Liberty Avenue Bridge; Downstream of the SWP Site (Parcel # 093D-19B-295/00.00) |
| SWP107 | SWP107SW | | 10/28/2012 | Grab | Batchelor Creek at the Martin Luther King Street Bridge; Downstream of the SWP Site (Parcel # 092F-13D-158/00.00) |
| SWP108 | SWP108SW | | 10/27/2012 | Grab | Batchelor Creek at the Kings Ranch Road Crossing; Downstream of the SWP Site (Parcel # 092A-12-004/01.00 (sampled from road/city right-of-way, parcel is closest to sample point)) |
| SWP109 | SWP109SW | | 10/28/2012 | Grab | Batchelor Creek at the I-55 Road Crossing; Downstream of the SWP Site (Parcel # 092A-11-004/01.00) |
| SWP111 | SWP111SW | | 10/28/2012 | Grab | Bear Creek at the Old Yazoo City Road Bridge; Downstream of confluence with Batchelor Creek (Parcel #102H-34-001/00.00 (sampled from bridge/city right-of-way, parcel is closest to sample point) |

**Table 3-1**
**Summary of Sample Types and Locations-2008, 2012, and 2013**
**Southeastern Wood Preserving Site**
**Canton, Madison County, Mississippi**

| Station ID | Sample ID | Depth (ft bls) | Date Collected | Sample Type | Sample Location |
|---|---|---|---|---|---|
| **Surface Water Samples** | | | | | |
| SWP112 | SWP112SW | | 10/28/2012 | Grab | Bear Creek at the Heindl Road Bridge; Upstream of confluence with Batchelor Creek (Parcel # 092B-01-008/00.00 (sampled from bridge/city right-of-way, parcel is closest to sample point)) |
| SWP113 | SWP113SW | | 10/27/2012 | Grab | Batchelor Creek; At the edge of the edge of the riprap lining; Downstream of the SWP Site (Parcel #092F-13B-001/01.00 (cross property to access creek, sampled within City of Canton right-of way)) |
| | SWP9113SW (dup) | | 10/27/2012 | | |
| **Sediment Samples** | | | | | |
| SWP-SD-01 | SWP-SD-01 | 0-0.5 | 2/28/2008 | Grab | Batchelor Creek, near the western edge of the on-site waste stockpile (Location excavated in 2009) |
| SWP-SD-02 | SWP-SD-02 | 0-0.5 | 2/28/2008 | Grab | Batchelor Creek, downstream of the on-site waste stockpile and east of the intersection of Miller Street and Batchelor Creek |
| SWPBC01 | SWP-SD-01 | 0-0.25 | 9/23/2008 | Grab | Batchelor Creek, upstream of SWP site |
| SWPBC02 | SWP-SD-02 | 0-0.25 | 9/23/2008 | Grab | Batchelor Creek, adjacent eastern portion of the SWP property |
| SWPBC03 | SWP-SD-03 | 0-0.25 | 9/23/2008 | Grab | Batchelor Creek, adjacent to central portion of the SWP property |
| SWPBC04 | SWP-SD-04 | 0-0.33 | 9/23/2008 | Grab | Batchelor Creek, immediately west of the SWP property (Location excavated in 2009) |
| SWPBC05 | SWP-SD-05 | 0-0.5 | 9/23/2008 | Grab | Batchelor Creek, at the confluence of the ditch located southwest of the historical SWP property boundary |
| SWPBC06 | SWP-SD-06 | 0-0.25 | 9/23/2008 | Grab | Batchelor Creek, downstream of SWP property and east of U.S. Highway 51 |
| SWPBC07 | SWP-SD-07 | 0-0.25 | 9/23/2008 | Grab | Batchelor Creek, downstream of SWP property, immediately upstream of U.S. Highway 51 |
| SWPBC08 | SWP-SD-08 | 1-1.2 | 9/22/2008 | Grab | Batchelor Creek, downstream of SWP property, and the park located near Union Street |
| SWPBC09 | SWP-SD-09 | 0-0.25 | 9/22/2008 | Grab | Batchelor Creek, downstream of SWP property, immediately upstream of the railroad |
| SWPBC10 | SWP-SD-10 | 0-0.25 | 9/22/2008 | Grab | Batchelor Creek, downstream of SWP property |
| SWPBC11 | SWP-SD-11 | 0-0.25 | 9/22/2008 | Grab | Batchelor Creek, downstream of SWP property |
| SWPRSD01 | SWP-RSD-01 | 0-0.25 | 9/24/2008 | Grab | Ditch, south of SWP, within a residential area |
| SWPRSD02 | SWP-RSD-02 | 0-0.25 | 9/24/2008 | Grab | Ditch, south of SWP, within a residential area |

**Table 3-1**
**Summary of Sample Types and Locations-2008, 2012, and 2013**
**Southeastern Wood Preserving Site**
**Canton, Madison County, Mississippi**

| Station ID | Sample ID | Depth (ft bls) | Date Collected | Sample Type | Sample Location |
|---|---|---|---|---|---|
| **Sediment Samples** | | | | | |
| SWPT01 | SWP-SD-12 | 0-0.25 | 9/24/2008 | Grab | Unnamed tributary of Batchelor Creek, northeast of SWP |
| SWPT03 | SWP-SD-14 | 0-0.25 | 9/23/2008 | Grab | Unnamed tributary of Batchelor Creek, north of SWP |
| | SWP-SD-14-DUP | 0-0.25 | | | |
| SWPT04 | SWP-SD-15 | 0-0.33 | 9/23/2008 | Grab | Unnamed tributary of Batchelor Creek, northwest of SWP |
| SWP101 | SWP101 | 0-0.5 | 10/27/2012 | Grab | Batchelor Creek at the Miller Street Bridge; Downstream of SWP Site (Parcel # 093D-19A-266/00.00) |
| SWP102 | SWP102 | 0-0.5 | 10/28/2012 | Grab | Batchelor Creek at the Dobson Avenue Bridge; Downstream of the SWP Site (Parcel # 093D-19B-317/00.00) |
| SWP103 | SWP103 | 0-0.5 | 10/27/2012 | Grab | Batchelor Creek at the Liberty Avenue Bridge; Downstream of the SWP Site (Parcel # 093D-19B-295/00.00) |
| SWP107 | SWP107 | 0-0.5 | 10/28/2012 | Grab | Batchelor Creek at the Martin Luther King Street Bridge; Downstream of the SWP Site (Parcel # 092F-13D-158/00.00) |
| SWP108 | SWP108 | 0-0.5 | 10/27/2012 | Grab | Batchelor Creek at the Kings Ranch Road Crossing; Downstream of the SWP Site (Parcel # 092A-12-004/01.00 (sampled from road/city right-of-way, parcel is closest to sample point)) |
| SWP109 | SWP109 | 0-0.5 | 10/28/2012 | Grab | Batchelor Creek at the I-55 Road Crossing; Downstream of the SWP Site (Parcel # 092A-11-004/01.00) |
| SWP111 | SWP111 | 0-0.5 | 10/28/2012 | Grab | Bear Creek at the Old Yazoo City Road Bridge; Downstream of confluence with Batchelor Creek (Parcel #102H-34-001/00.00 (sampled from bridge/city right-of-way, parcel is closest to sample point) |
| SWP112 | SWP112 | 0-0.5 | 10/28/2012 | Grab | Bear Creek at the Heindl Road Bridge; Upstream of confluence with Batchelor Creek (Parcel # 092B-01-008/00.00 (sampled from bridge/city right-of-way, parcel is closest to sample point)) |
| | SWP9112 (dup) | 0-0.5 | 10/28/2012 | | |

**Table 3-1**
**Summary of Sample Types and Locations-2008, 2012, and 2013**
**Southeastern Wood Preserving Site**
**Canton, Madison County, Mississippi**

| Station ID | Sample ID | Depth (ft bls) | Date Collected | Sample Type | Sample Location |
|---|---|---|---|---|---|
| **Sediment Samples** | | | | | |
| SWP113 | SWP113 | 0-0.5 | 10/27/2012 | Grab | Batchelor Creek; At the edge of the edge of the riprap lining; Downstream of the SWP Site (Parcel #092F-13B-001/01.00 (cross property to access creek, sampled within City of Canton right-of way)) |
| **Groundwater Samples** | | | | | |
| MW001 | MW001 | 290-300 | 1/22/2013 | Grab | Onsite monitoring well near northwest edge of stockpile |
| MW002 | MW002 | 300-310 | 1/22/2013 | Grab | Onsite monitoring well in southeastern portion of site near scale house and silo |

Notes
Data collected in 2012/2013 RI phase one by Black & Veatch and 2008 ESI by TetraTech
During the 2012/2013 investigation residential soils, surface water, and sediment sample locations were identified by parcel number

**Abbreviations:**

| | |
|---|---|
| bls | Below land surface |
| dup | Duplicate |
| SWP | Southeastern Wood Preserving site |

# Table 4-1
## Dioxin in Batchelor Creek Sediment - 2008
## Southeastern Wood Preserving Site
## Canton, Madison County, Mississippi

| Chemical Name | CAS Number | Residential Soil PRG | Sample ID | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | SWP-SD-01 (excavated) | SWP-SD-02 | SWPBC01 | SWPBC02 | SWPBC03 | SWPBC04 (excavated) | SWPBC05 |
| | | | Sample Date | | | | | | |
| | | | 2/28/2008 | 2/28/2008 | 9/23/2008 | 9/23/2008 | 9/23/2008 | 9/23/2008 | 9/23/2008 |
| **Dioxins (ng/kg)** | | | | | | | | | |
| 1,2,3,4,6,7,8-Heptachlorodibenzodioxin | 35822-46-9 | -- | 650 | 350 | 71000 J,O | 12 | 5 U,J,O | 5 U,J,O | 5 U,J,O |
| 1,2,3,4,6,7,8-Heptachlorodibenzofuran | 67562-39-4 | -- | 380 | 200 | 890 J,O | 5 U | 5 U | 5 U | 5 U |
| 1,2,3,4,7,8,9-Heptachlorodibenzofuran | 55673-89-7 | -- | 14 | 8 | 50 U,J,O | 5 U | 5 U | 5 U | 5 U |
| 1,2,3,4,7,8-Hexachlorodibenzodioxin | 39227-28-6 | -- | 2.8 J | 2.2 J | 50 U,J,O | 5 U | 5 U | 5 U | 5 U |
| 1,2,3,4,7,8-Hexachlorodibenzofuran | 70648-26-9 | -- | 5.3 O | 3.7 O | 50 U,J,O | 5 U | 5 U,J,O | 5 U,J,O | 5 U,J,O |
| 1,2,3,6,7,8-Hexachlorodibenzodioxin | 57653-85-7 | -- | 25 | 11 | 50 U,J,O | 5 U | 5 U | 5 U | 5 U |
| 1,2,3,6,7,8-Hexachlorodibenzofuran | 57117-44-9 | -- | 4.7 | 3.1 | 50 U,J,O | 5 U | 5 U,J,O | 5 U,J,O | 5 U,J,O |
| 1,2,3,7,8,9-Hexachlorodibenzodioxin | 19408-74-3 | -- | 7.4 | 4.5 | 7300 J,O | 1.1 J,O | 5 U | 5 U | 5 U |
| 1,2,3,7,8,9-Hexachlorodibenzofuran | 72918-21-9 | -- | 1.7 J | 1.2 J | 100 U,J,O | 10 U,J,O | 10 U,J,O | 10 U,J,O | 10 U,J,O |
| 1,2,3,7,8-Pentachlorodibenzodioxin | 40321-76-4 | -- | 1.6 J | 1.2 J | 50 U,J,O | 5 U | 5 U | 5 U | 5 U |
| 1,2,3,7,8-Pentachlorodibenzofuran | 57117-41-6 | -- | 1.3 J | 0.58 O | 50 U,J,O | 5 U | 5 U | 5 U | 5 U |
| 2,3,4,6,7,8-Hexachlorodibenzofuran | 60851-34-5 | -- | 5.7 | 4.6 | 50 U,J,O | 5 U | 5 U | 5 U | 5 U |
| 2,3,4,7,8-Pentachlorodibenzofuran | 57117-31-4 | -- | 6.3 | 2.8 J | 50 U,J,O | 5 U | 5 U | 5 U | 5 U |
| 2,3,7,8-Tetrachlorodibenzodioxin | 1746-01-6 | -- | 0.99 U | 0.41 U | 100 U,J,O | 10 U,J,O | 10 U,J,O | 10 U,J,O | 10 U,J,O |
| 2,3,7,8-Tetrachlorodibenzofuran | 51207-31-9 | -- | 0.8 U | 1.3 | 5100 J,O | 1.6 | 0.1 U | 0.1 U | 0.1 U |
| Heptachlorodibenzodioxin (Total) | 37871-00-4 | -- | 2200 | 1200 | 24000 J,O | 4.9 J,O | 5 U | 5 U | 5 U |
| Heptachlorodibenzofuran (Total) | 38998-75-3 | -- | 1300 | 660 | 100 U,J,O | 10 U | 10 U,J,O | 10 U,J,O | 10 U,J,O |
| Hexachlorodibenzodioxin (Total) | 34465-46-8 | -- | 180 | 98 | 50 U,J,O | 5 U | 5 U | 5 U | 5 U |
| Hexachlorodibenzofuran (Total) | 55684-94-1 | -- | 280 | 150 | 50 U,J,O | 5 U | 5 U | 5 U | 5 U |
| Octachlorodibenzodioxin | 3268-87-9 | -- | 10000 | 5600 | 100 U,J,O | 10 U | 10 U,J,O | 10 U,J,O | 10 U,J,O |
| Octachlorodibenzofuran | 39001-02-0 | -- | 1100 | 510 | 50 U,J,O | 5 U | 5 U | 5 U | 5 U |
| Pentachlorodibenzodioxin (Total) | 36088-22-9 | -- | 15 | 10 | 50 U,J,O | 5 U | 5 U | 5 U | 5 U |
| Pentachlorodibenzofuran (Total) | 30402-15-4 | -- | 48 | 31 | 50 U,J,O | 5 U | 5 U,J,O | 5 U,J,O | 5 U,J,O |
| TEQ89 - mammalian | R4-8000953 | 50 | 30 | 16 | 50 U,J,O | 5 U | 5 U | 5 U | 5 U |
| Tetrachlorodibenzodioxin (Total) | 41903-57-5 | -- | 3.4 | 15 | 100 U,J,O | 10 U | 10 U,J,O | 10 U,J,O | 10 U,J,O |
| Tetrachlorodibenzofuran (Total) | 30402-14-3 | -- | 6.9 | 6.3 | 100 U,J,O | 10 U | 10 U | 10 U | 10 U,J,O |

**Notes:**

Value exceeds Residential Soil PRG

CAS - Chemical Abstract Service

PRG - preliminary remedial goals

ng/kg - nanograms per kilogram

TEQ - Toxic Equivalents

U - The analyte was not detected at or above the reporting limit

J - Estimated Value

O - Other qualifiers, provided from the laboratory to explain qualifier

(excavated) - Location excavated in 2009 during the CERCLA Remedial Action

# Table 4-2
## Detected Semi-Volatile Organic Compounds in Batchelor Creek Sediment - 2008, 2012
## Southeastern Wood Preserving Site
## Canton, Madison County, Mississippi

| Chemical Name | CAS Number | Residential Soil PRG | Sample ID | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | SWP-SD-01 (excavated) | SWP-SD-02 | SWPBC01 | SWPBC02 | SWPBC03 | SWPBC04 (excavated) | SWPBC05 |
| | | | Sample Date | | | | | | |
| | | | 2/28/2008 | 2/28/2008 | 9/23/2008 | 9/23/2008 | 9/23/2008 | 9/23/2008 | 9/23/2008 |
| **Semi-Volatile Organic Compound (SVOC) (µg/kg)** | | | | | | | | | |
| (3-and/or 4-)Methylphenol | 1319-77-3 | -- | 13300 U | 5040 U | 240 U | 3600 U | 3200 U | 4300 U | 3100 U |
| 1,1-Biphenyl | 92-52-4 | -- | 6660 U | 2520 U | 240 U | 3600 U | 3200 U | 2900 J,O | 3100 U |
| 2-Methylnaphthalene | 91-57-6 | -- | 15600 | 2520 U | 4.6 U | 140 U | 130 U | 5900 U,J,O | 400 U,J,O |
| Acenaphthene | 83-32-9 | 3400000 | 14000 | 3030 | 4.6 U | 140 U | 130 U | 20000 | 2000 J,O |
| Acenaphthylene | 208-96-8 | -- | 6660 U | 2520 U | 3.3 J,O | 140 U | 130 U | 310 | 120 J,O |
| Anthracene | 120-12-7 | 17000000 | 4410 J | 1610 J | 6.3 | 140 U | 130 U | 11000 | 1300 J,O |
| Benzo(a)anthracene | 56-55-3 | 150 | 3580 J | 1910 J | 40 | 120 J,O | 130 U | 8000 | 2500 |
| Benzo(a)pyrene | 50-32-8 | 15 | 1200 J | 706 J | 32 | 77 J,O | 110 J,O | 1500 | 810 |
| Benzo(b)fluoranthene | 205-99-2 | 150 | 3000 J | 1540 J | 40 | 85 J,O | 120 J,O | 1700 | 900 |
| Benzo(g,h,i)perylene | 191-24-2 | -- | 6660 U | 2520 U | 44 | 140 U | 120 J,O | 440 | 330 |
| Benzo(k)fluoranthene | 207-08-9 | 1500 | 6660 U | 499 J | 33 | 140 U | 110 J,O | 1700 | 850 |
| Benzyl butyl phthalate | 85-68-7 | -- | 6660 U | 2520 U | 240 U | 3600 U | 3200 U | 4300 U | 3100 U |
| Carbazole | 86-74-8 | -- | 1580 J | 2520 U | 240 U | 3600 U | 3200 U | 1600 J,O | 3100 U |
| Chrysene | 218-01-9 | 15000 | 3720 J | 1860 J | 60 | 140 U | 99 J,O | 7400 | 1400 J,O |
| Dibenzo(a,h)anthracene | 53-70-3 | 15 | 6660 U | 2520 U | 8.5 J,O | 140 U | 130 U | 170 U | 110 J,O |
| Dibenzofuran | 132-64-9 | -- | 13100 | 1230 J | 240 U | 3600 U | 3200 U | 16000 | 1300 J,O |
| Fluoranthene | 206-44-0 | 2300000 | 19400 | 9410 | 160 | 120 J,O | 120 J,O | 46000 | 14000 |
| Fluorene | 86-73-7 | 2300000 | 11300 | 3050 | 4.6 U | 140 U | 130 U | 19000 | 1600 J,O |
| Indeno (1,2,3-cd) pyrene | 193-39-5 | 150 | 6660 U | 2520 U | 30 | 84 J,O | 150 | 740 | 460 |
| Naphthalene | 91-20-3 | 3600 | 35000 | 2520 U | 2.6 J,O | 140 U | 130 U | 6400 | 420 |
| Pentachlorophenol | 87-86-5 | 890 | 6660 U | 2520 U | 9.3 U,J,O | 290 U | 260 U | 350 U | 250 U |
| Phenanthrene | 85-01-8 | -- | 39100 | 14100 | 19 | 140 U | 130 U | 79000 | 10000 |
| Pyrene | 129-00-0 | 1700000 | 12200 | 6350 | 150 | 130 J,O | 140 | 36000 | 7000 |
| Benzo(a)pyrene TEQ | NA | 15 | 1862 | 1058 | 52 | 106 | 138 | 2568 | 1316 |

**Notes:**

Value exceeds residential Soil PRG

-- - Not established

CAS - Chemical Abstract Service

ft bls - feet below land surface

µg/kg - micrograms per kilogram

NA - Not Applicable

PRG - preliminary remedial goal

TEQ - Toxic Equivalents

U - The analyte was not detected at or above the reporting limit

J - Estimated Value

O - Other qualifiers, provided from the laboratory to explain qualifier

(excavated) - Location excavated in 2009 during the CERCLA Remedial Action

# Table 4-2
## Detected Semi-Volatile Organic Compounds in Batchelor Creek Sediment - 2008, 2012
## Southeastern Wood Preserving Site
## Canton, Madison County, Mississippi

| Chemical Name | CAS Number | Residential Soil PRG | Sample ID | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | SWPBC06 | SWPBC07 | SWPBC08 | SWPBC09 | SWPBC10 | SWPBC11 | SWPRSD01 |
| | | | Sample Date | | | | | | |
| | | | 9/23/2008 | 9/23/2008 | 9/22/2008 | 9/22/2008 | 9/22/2008 | 9/22/2008 | 9/24/2008 |
| **Semi-Volatile Organic Compound (SVOC) (µg/kg)** | | | | | | | | | |
| (3-and/or 4-)Methylphenol | 1319-77-3 | -- | 5600 U | 5300 U | 3400 U | 3800 U | 3900 U | 4600 U | 3100 U,J,O |
| 1,1-Biphenyl | 92-52-4 | -- | 5600 U | 5300 U | 3400 U | 3800 U | 3900 U | 4600 U | 3100 U |
| 2-Methylnaphthalene | 91-57-6 | -- | 220 U | 210 U | 140 U | 150 U | 150 U | 180 U | 120 U |
| Acenaphthene | 83-32-9 | 3400000 | 180 J,O | 210 U | 140 U | 150 U | 150 U | 180 U | 120 U |
| Acenaphthylene | 208-96-8 | -- | 190 J,O | 210 U | 780 | 86 J,O | 97 J,O | 200 | 120 U |
| Anthracene | 120-12-7 | 17000000 | 1100 | 440 | 1100 | 200 | 230 | 650 | 120 U |
| Benzo(a)anthracene | 56-55-3 | 150 | 1400 | 1500 | 3500 | 530 | 730 | 2700 | 120 U |
| Benzo(a)pyrene | 50-32-8 | 15 | 690 | 810 | 3700 | 370 | 460 | 960 | 120 U |
| Benzo(b)fluoranthene | 205-99-2 | 150 | 810 | 1100 | 7400 | 420 | 500 | 1100 | 120 U |
| Benzo(g,h,i)perylene | 191-24-2 | -- | 340 | 360 | 1300 | 210 | 240 | 350 | 86 J,O |
| Benzo(k)fluoranthene | 207-08-9 | 1500 | 700 | 820 | 3800 | 340 | 430 | 950 | 120 U |
| Benzyl butyl phthalate | 85-68-7 | -- | 5600 U | 5300 U | 3400 U | 3800 U | 3900 U | 4600 U | 3100 U |
| Carbazole | 86-74-8 | -- | 5600 U | 5300 U | 3400 U | 3800 U | 3900 U | 4600 U | 3100 U |
| Chrysene | 218-01-9 | 15000 | 2100 | 2000 | 5600 | 740 | 1100 | 1200 | 120 U |
| Dibenzo(a,h)anthracene | 53-70-3 | 15 | 220 U | 210 U | 140 | 150 U | 150 U | 180 U | 120 U |
| Dibenzofuran | 132-64-9 | -- | 5600 U | 5300 U | 3400 U | 3800 U | 3900 U | 4600 U | 3100 U |
| Fluoranthene | 206-44-0 | 2300000 | 1700 | 1300 | 2700 | 550 | 620 | 4200 J,O | 64 J,O |
| Fluorene | 86-73-7 | 2300000 | 260 | 140 J,O | 320 | 150 U | 150 U | 160 J,O | 120 U |
| Indeno (1,2,3-cd) pyrene | 193-39-5 | 150 | 480 | 530 | 140 U | 290 | 330 | 530 | 76 J,O |
| Naphthalene | 91-20-3 | 3600 | 130 J,O | 210 U | 140 U | 150 U | 150 U | 6300 | 150 |
| Pentachlorophenol | 87-86-5 | 890 | 450 U | 420 U | 100 J,O | 300 U | 310 U | 370 U | 250 U |
| Phenanthrene | 85-01-8 | -- | 960 | 540 | 460 | 160 | 200 | 380 | 120 U |
| Pyrene | 129-00-0 | 1700000 | 1900 | 1400 | 3300 | 610 | 680 | 2200 | 99 J,O |
| Benzo(a)pyrene TEQ | NA | 15 | 968 | 1133 | 4974 | 498 | 621 | 1404 | 8 |

**Notes:**

Value exceeds residential Soil PRG

-- - Not established

CAS - Chemical Abstract Service

ft bls - feet below land surface

µg/kg - micrograms per kilogram

NA - Not Applicable

PRG - preliminary remedial goal

TEQ - Toxic Equivalents

U - The analyte was not detected at or above the reporting limit

J - Estimated Value

O - Other qualifiers, provided from the laboratory to explain quali

(excavated) - Location excavated in 2009 during the CERCLA Rem

# Table 4-2
## Detected Semi-Volatile Organic Compounds in Batchelor Creek Sediment - 2008, 2012
## Southeastern Wood Preserving Site
## Canton, Madison County, Mississippi

| Chemical Name | CAS Number | Residential Soil PRG | Sample ID | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | SWPRSD02 | SWPT01 | SWPT03 (excavated) | SWPT03 (dup, excavated) | SWPT04 | SWP101 | SWP102 | SWP103 |
| | | | Sample Date | | | | | | | |
| | | | 9/24/2008 | 9/24/2008 | 9/23/2008 | 9/23/2008 | 9/23/2008 | 10/27/2012 | 10/28/2012 | 10/27/2012 |
| **Semi-Volatile Organic Compound (SVOC) (µg/kg)** | | | | | | | | | | |
| (3-and/or 4-)Methylphenol | 1319-77-3 | -- | 220 U | 3300 U,J,O | 2500 U | 3300 U | 3300 U | 210 U | 230 U | 730 |
| 1,1-Biphenyl | 92-52-4 | -- | 220 U | 3300 U | 2500 U | 3300 U | 3300 U | 210 U | 230 U | 250 U |
| 2-Methylnaphthalene | 91-57-6 | -- | 4.2 U | 130 U | 99 U | 130 U | 130 U | 210 U | 230 U | 250 U |
| Acenaphthene | 83-32-9 | 3400000 | 4.2 U | 130 U | 99 U | 130 U | 130 U | 210 U | 230 U | 250 U |
| Acenaphthylene | 208-96-8 | -- | 3.7 J,O | 130 U | 99 U | 100 J,O | 130 U | 210 U | 230 U | 250 U |
| Anthracene | 120-12-7 | 17000000 | 4.9 | 130 U | 99 U | 190 | 130 U | 210 U | 230 U,J,O | 1400 J,O |
| Benzo(a)anthracene | 56-55-3 | 150 | 16 | 130 U | 460 | 1500 | 110 U | 500 | 190 J,O | 700 |
| Benzo(a)pyrene | 50-32-8 | 15 | 21 | 160 | 330 | 800 | 92 U | 350 | 230 U | 240 J,O |
| Benzo(b)fluoranthene | 205-99-2 | 150 | 24 | 190 | 430 | 1100 | 120 U | 470 | 230 U | 230 J,O |
| Benzo(g,h,i)perylene | 191-24-2 | -- | 20 | 66 J,O | 150 | 500 | 130 U | 180 J,O | 230 U | 250 U |
| Benzo(k)fluoranthene | 207-08-9 | 1500 | 20 J,O | 190 | 410 | 1100 | 89 U | 390 | 230 U | 250 |
| Benzyl butyl phthalate | 85-68-7 | -- | 220 U | 3300 U | 2500 U | 3300 U | 3300 U | 210 U | 390 | 250 U |
| Carbazole | 86-74-8 | -- | 220 U | 3300 U | 2500 U | 3300 U | 3300 U | 210 U | 230 U | 250 U |
| Chrysene | 218-01-9 | 15000 | 23 | 70 J,O | 430 | 1500 | 160 | 590 | 160 J,O | 840 |
| Dibenzo(a,h)anthracene | 53-70-3 | 15 | 4.2 J,O | 130 U | 71 J,O | 200 | 130 U | 210 U | 230 U | 250 U |
| Dibenzofuran | 132-64-9 | -- | 220 U | 3300 U | 2500 U | 3300 U | 3300 U | 210 U | 230 U | 250 U |
| Fluoranthene | 206-44-0 | 2300000 | 38 | 100 J,O | 370 | 650 | 140 | 990 | 710 J,O | 2100 J,O |
| Fluorene | 86-73-7 | 2300000 | 4.2 U | 130 U | 99 U | 130 U | 130 U | 210 U | 230 U | 140 J,O |
| Indeno (1,2,3-cd) pyrene | 193-39-5 | 150 | 22 J,O | 96 J,O | 230 | 880 | 84 J,O | 180 J,O | 230 U | 250 U |
| Naphthalene | 91-20-3 | 3600 | 3.6 J,O | 150 | 57 J,O | 88 J,O | 130 U | 230 | 230 U | 250 U |
| Pentachlorophenol | 87-86-5 | 890 | 4.1 J,O | 260 U,J,O | 200 U | 270 U,J,O | 260 U | 410 U | 440 U | 490 U |
| Phenanthrene | 85-01-8 | -- | 11 | 150 | 99 U | 120 J,O | 130 U | 260 | 92 J,O | 1000 |
| Pyrene | 129-00-0 | 1700000 | 40 | 110 J,O | 490 | 690 | 140 | 680 | 490 J,O | 1300 J,O |
| Benzo(a)pyrene TEQ | NA | 15 | 32 | 191 | 518 | 1361 | 124 | 469 | 19 | 336 |

**Notes:**

Value exceeds residential Soil PRG

-- - Not established

CAS - Chemical Abstract Service

ft bls - feet below land surface

µg/kg - micrograms per kilogram

NA - Not Applicable

PRG - preliminary remedial goal

TEQ - Toxic Equivalents

U - The analyte was not detected at or above the reporting limit

J - Estimated Value

O - Other qualifiers, provided from the laboratory to explain quali

(excavated) - Location excavated in 2009 during the CERCLA Rem

# Table 4-2
## Detected Semi-Volatile Organic Compounds in Batchelor Creek Sediment - 2008, 2012
## Southeastern Wood Preserving Site
## Canton, Madison County, Mississippi

| Chemical Name | CAS Number | Residential Soil PRG | Sample ID | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | SWP107 | SWP108 | SWP109 | SWP111 | SWP112 | SWP112 (dup) | SWP113 |
| | | | Sample Date | | | | | | |
| | | | 10/28/2012 | 10/27/2012 | 10/28/2012 | 10/28/2012 | 10/28/2012 | 10/28/2012 | 10/27/2012 |
| **Semi-Volatile Organic Compound (SVOC) (µg/kg)** | | | | | | | | | |
| (3-and/or 4-)Methylphenol | 1319-77-3 | -- | 300 U | 240 U | 220 U | 200 U | 230 U | 180 U | 210 U |
| 1,1-Biphenyl | 92-52-4 | -- | 300 U | 240 U | 220 U | 200 U | 230 U | 180 U | 210 U |
| 2-Methylnaphthalene | 91-57-6 | -- | 300 U | 240 U | 220 U | 200 U | 230 U | 180 U | 210 U |
| Acenaphthene | 83-32-9 | 3400000 | 300 U | 240 U | 220 U | 200 U | 230 U | 180 U | 210 U |
| Acenaphthylene | 208-96-8 | -- | 300 U | 240 U | 220 U | 200 U | 230 U | 180 U | 210 U |
| Anthracene | 120-12-7 | 17000000 | 270 J,O | 240 U | 220 U | 200 U | 230 U,J,O | 180 U | 210 U |
| Benzo(a)anthracene | 56-55-3 | 150 | 730 | 240 U | 220 U | 200 U | 230 U | 180 U | 210 U |
| Benzo(a)pyrene | 50-32-8 | 15 | 430 | 240 U | 220 U | 200 U | 230 U | 180 U | 210 U |
| Benzo(b)fluoranthene | 205-99-2 | 150 | 580 | 240 U | 220 U | 200 U | 230 U | 180 U | 210 U |
| Benzo(g,h,i)perylene | 191-24-2 | -- | 300 U | 240 U | 220 U | 200 U | 230 U | 180 U | 210 U |
| Benzo(k)fluoranthene | 207-08-9 | 1500 | 550 | 240 U | 220 U | 200 U | 230 U | 180 U | 210 U |
| Benzyl butyl phthalate | 85-68-7 | -- | 300 U | 240 U | 220 U | 200 U | 230 U | 180 U | 210 U |
| Carbazole | 86-74-8 | -- | 300 U | 240 U | 220 U | 200 U | 230 U | 180 U | 210 U |
| Chrysene | 218-01-9 | 15000 | 1000 | 240 U | 220 U | 200 U | 230 U | 180 U | 210 U |
| Dibenzo(a,h)anthracene | 53-70-3 | 15 | 300 U | 240 U | 220 U | 200 U | 230 U | 180 U | 210 U |
| Dibenzofuran | 132-64-9 | -- | 300 U | 240 U | 220 U | 200 U | 230 U | 180 U | 210 U |
| Fluoranthene | 206-44-0 | 2300000 | 1300 | 240 U | 220 U | 200 U | 230 U,J,O | 180 U | 210 U |
| Fluorene | 86-73-7 | 2300000 | 300 U | 240 U | 220 U | 200 U | 230 U | 180 U | 210 U |
| Indeno (1,2,3-cd) pyrene | 193-39-5 | 150 | 300 U | 240 U | 220 U | 200 U | 230 U | 180 U | 210 U |
| Naphthalene | 91-20-3 | 3600 | 300 U | 240 U | 220 U | 200 U | 230 U | 180 U | 210 U |
| Pentachlorophenol | 87-86-5 | 890 | 580 U | 470 U | 430 U | 390 U | 440 U | 350 U | 410 U |
| Phenanthrene | 85-01-8 | -- | 270 J,O | 240 U | 220 U | 200 U | 230 U | 180 U | 210 U |
| Pyrene | 129-00-0 | 1700000 | 870 | 240 U | 220 U | 200 U | 230 U,J,O | 180 U | 210 U |
| Benzo(a)pyrene TEQ | NA | 15 | 568 | ND | ND | ND | ND | ND | ND |

**Notes:**

Value exceeds residential Soil PRG

-- - Not established

CAS - Chemical Abstract Service

ft bls - feet below land surface

µg/kg - micrograms per kilogram

NA - Not Applicable

PRG - preliminary remedial goal

TEQ - Toxic Equivalents

U - The analyte was not detected at or above the reporting limit

J - Estimated Value

O - Other qualifiers, provided from the laboratory to explain quali

(excavated) - Location excavated in 2009 during the CERCLA Rem

# Table 4-3
# Detected Semi-Volatile Organic Compounds in Surface Water - 2008, 2012
# Southeastern Wood Preserving Site
# Canton, Madison County, Mississippi

| Chemical Name | CAS Number | NRWQC (ug/L) | Sample ID | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | SWPBC01 (Background) | SWPBC03 | SWPBC05 | SWPBC05 (dup) | SWPBC06 | SWPBC08 | SWPBC12 |
| | | | Sample Date | | | | | | |
| | | | 9/23/2008 | 9/23/2008 | 9/23/2008 | 9/23/2008 | 9/23/2008 | 9/22/2008 | 9/24/2008 |
| **Semi-Volatile Organic Compound (SVOC) (µg/L)** | | | | | | | | | |
| 2-Methylnaphthalene | 91-57-6 | -- | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 1.4 |
| Acenaphthene | 83-32-9 | 670 | 0.1 U | 0.1 U | 0.081 J,O | 0.089 J,O | 0.12 U | 0.12 | 0.1 U |
| Benzo(a)pyrene | 50-32-8 | 0.0038 | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.15 |
| Benzo(b)fluoranthene | 205-99-2 | 0.0038 | 0.1 U | 0.1 U | 0.1 U | 0.052 J,O | 0.1 U | 0.1 U | 0.1 U |
| Bis(2-ethylhexyl) phthalate | 117-81-7 | 1.2 | 5 U | 5 U | 5 U | 5 U | 5 U,J,O | 5 U,J,O | 5 U,J,O |
| Caprolactam | 105-60-2 | -- | 5 U,J,O | 5 U,J,O | 5 U,J,O | 5 U,J,O | 5 U,J,O | 5 U,J,O | 5 U |
| Chrysene | 218-01-9 | 0.0038 | 0.1 U | 0.1 U | 0.08 J,O | 0.08 J,O | 0.1 U | 0.1 U | 0.1 U |
| Fluoranthene | 206-44-0 | 130 | 0.1 U | 0.1 U | 0.37 U | 0.4 U | 0.079 J,O | 0.11 | 0.1 U |
| Fluorene | 86-73-7 | 1100 | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.062 J,O | 0.059 J,O | 0.1 U |
| Naphthalene | 91-20-3 | -- | 0.15 U,J,O | 0.11 U | 0.11 U | 0.13 U | 0.13 U | 0.12 | 0.43 |
| Pentachlorophenol | 87-86-5 | 0.27 | 0.2 U,J,O | 0.073 J,O | 0.061 J,O | 0.075 J,O | 0.065 J,O | 0.2 U,J,O | 0.2 U,J,O |
| Phenanthrene | 85-01-8 | -- | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.07 J,O | 0.1 U | 0.052 J,O |
| Pyrene | 129-00-0 | 830 | 0.1 U | 0.1 U | 0.46 U | 0.51 U | 0.1 U | 0.1 U | 0.09 J,O |
| Total SVOCs | NA | NA | ND | 0.073 | 0.141 | 0.296 | 0.276 | 0.289 | 2.122 |

**Notes:**

Value exceeds NRWQC

-- - Not established

CAS - Chemical Abstract Service

dup - duplicate sample

µg/L - micrograms per liter

NA - Not Applicable

ND - Not Detected

NRWQC - National Recommended Water Quality Criteria for human health (consumption of water and organisms)

U - The analyte was not detected at or above the reporting limit

J - Estimated Value

O - Other qualifiers, provided from the laboratory to explain qualifier

# Table 4-3
# Detected Semi-Volatile Organic Compounds in Surface Water - 2008, 2012
# Southeastern Wood Preserving Site
# Canton, Madison County, Mississippi

| Chemical Name | CAS Number | NRWQC (ug/L) | Sample ID | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | SWPT01 | SWPT03 | SWPT04 | SWP101 | SWP102 | SWP103 | SWP107 |
| | | | Sample Date | | | | | | |
| | | | 9/24/2008 | 9/23/2008 | 9/23/2008 | 10/27/2012 | 10/28/2012 | 10/27/2012 | 10/28/2012 |
| **Semi-Volatile Organic Compound (SVOC) (µg/L)** | | | | | | | | | |
| 2-Methylnaphthalene | 91-57-6 | -- | 0.1 U | 0.1 U | 0.1 U | 0.32 | 0.12 | 0.12 | 0.13 |
| Acenaphthene | 83-32-9 | 670 | 0.1 U | 0.1 U | 0.1 U | 0.063 J,O | 0.12 | 0.1 U | 0.1 U |
| Benzo(a)pyrene | 50-32-8 | 0.0038 | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U |
| Benzo(b)fluoranthene | 205-99-2 | 0.0038 | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U |
| Bis(2-ethylhexyl) phthalate | 117-81-7 | 1.2 | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U | 5 U |
| Caprolactam | 105-60-2 | -- | 5 U,J,O | 5 U,J,O | 5 U,J,O | 5 U | 5 U | 5 U | 5 U |
| Chrysene | 218-01-9 | 0.0038 | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U |
| Fluoranthene | 206-44-0 | 130 | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 | 0.11 | 0.1 U |
| Fluorene | 86-73-7 | 1100 | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U |
| Naphthalene | 91-20-3 | -- | 0.17 | 0.089 J,O | 0.1 | 0.33 | 0.094 J,O | 0.09 J,O | 0.099 J,O |
| Pentachlorophenol | 87-86-5 | 0.27 | 0.2 U,J,O | 0.14 J,O | 0.08 J,O | 0.2 U | 0.2 U | 0.2 U | 0.2 U,J,O |
| Phenanthrene | 85-01-8 | -- | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.13 | 0.1 U |
| Pyrene | 129-00-0 | 830 | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U |
| Total SVOCs | NA | NA | 0.17 | 0.229 | 0.18 | 0.713 | 0.434 | 0.45 | 0.229 |

**Notes:**

Value exceeds NRWQC

-- - Not established

CAS - Chemical Abstract Service

dup - duplicate sample

µg/L - micrograms per liter

NA - Not Applicable

ND - Not Detected

NRWQC - National Recommended Water Quality Criteri

U - The analyte was not detected at or above the report

J - Estimated Value

O - Other qualifiers, provided from the laboratory to exp

# Table 4-3
# Detected Semi-Volatile Organic Compounds in Surface Water - 2008, 2012
# Southeastern Wood Preserving Site
# Canton, Madison County, Mississippi

| Chemical Name | CAS Number | NRWQC (ug/L) | Sample ID | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | SWP108 | SWP109 | SWP111 | SWP112 | SWP113 | SWP113 (dup) |
| | | | Sample Date | | | | | |
| | | | 10/27/2012 | 10/28/2012 | 10/28/2012 | 10/28/2012 | 10/27/2012 | 10/27/2012 |
| **Semi-Volatile Organic Compound (SVOC) (µg/L)** | | | | | | | | |
| 2-Methylnaphthalene | 91-57-6 | -- | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.11 | 0.12 |
| Acenaphthene | 83-32-9 | 670 | 0.1 U | 0.1 U | 0.21 | 0.1 U | 0.1 U | 0.1 U |
| Benzo(a)pyrene | 50-32-8 | 0.0038 | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U |
| Benzo(b)fluoranthene | 205-99-2 | 0.0038 | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U |
| Bis(2-ethylhexyl) phthalate | 117-81-7 | 1.2 | 5 U | 5 U | 5 U | 5 U | 5 U | 11 |
| Caprolactam | 105-60-2 | -- | 5 U | 5 U | 5 U | 5.1 | 5 U | 5 U |
| Chrysene | 218-01-9 | 0.0038 | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U |
| Fluoranthene | 206-44-0 | 130 | 0.1 | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U |
| Fluorene | 86-73-7 | 1100 | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U |
| Naphthalene | 91-20-3 | -- | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U |
| Pentachlorophenol | 87-86-5 | 0.27 | 0.2 U,J,O | 0.2 U,J,O | 0.2 U,J,O | 0.2 U,J,O | 0.2 U,J,O | 0.2 U,J,O |
| Phenanthrene | 85-01-8 | -- | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U |
| Pyrene | 129-00-0 | 830 | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U | 0.1 U |
| Total SVOCs | NA | NA | 0.1 | ND | 0.21 | 5.1 | 0.11 | 11.12 |

**Notes:**

Value exceeds NRWQC

-- - Not established

CAS - Chemical Abstract Service

dup - duplicate sample

µg/L - micrograms per liter

NA - Not Applicable

ND - Not Detected

NRWQC - National Recommended Water Quality Criteri

U - The analyte was not detected at or above the report

J - Estimated Value

O - Other qualifiers, provided from the laboratory to exp

# Table 4-4
## Detected Semi-Volatile Organic Compounds in Surface Soil - 2008, 2012, 2013
## Southeastern Wood Preserving Site
## Canton, Madison County, Mississippi

| Chemical Name | CAS Number | Residential Soil PRG | Sample ID | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SWPB01 (Background) | SWP02 | SWP03 | SWP04 | SWP05 | SWP06 | SWP07 | SWP08 | SWP09 |
| | | | Sample Date | | | | | | | | |
| | | | 9/22/2008 | 9/25/2008 | 9/25/2008 | 9/25/2008 | 9/24/2008 | 9/24/2008 | 9/23/2008 | 9/24/2008 | 9/24/2008 |
| | | | Depth Interval (ft bls) | | | | | | | | |
| | | | 0-1 | 0-1 | 0-1 | 0-1 | 0-1 | 0-1 | 0-1 | 0-1 | 0-1 |
| **Semi-Volatile Organic Compound (SVOC) (µg/kg)** | | | | | | | | | | | |
| 1,1-Biphenyl | 92-52-4 | -- | 200 U | 4500 U | 3000 U | 2600 U | 2800 U | 2600 U | 2900 U | 850 J,O | 2600 U |
| 2-Methylnaphthalene | 91-57-6 | -- | 3.9 U | 170 J,O | 460 | 560 U | 160 U | 650 U | 80 J,O | 2800 J,O | 430 |
| Acenaphthene | 83-32-9 | 3400000 | 3.9 U | 94 J,O | 470 U | 390 U | 85 J,O | 6400 U | 260 | 5900 | 500 |
| Acenaphthylene | 208-96-8 | -- | 3.9 U | 320 J,O | 320 J,O | 3800 U,J,O | 280 U,J,O | 950 U,J,O | 2600 | 310 | 5000 |
| Anthracene | 120-12-7 | 17000000 | 2.1 J,O | 760 J,O | 3800 | 7400 | 1700 J,O | 34000 J,O | 5100 | 4300 | 6600 |
| Benzaldehyde | 100-52-7 | -- | 200 U | 4500 U | 3000 U | 2600 U | 2800 U,J,O | 2600 U,J,O | 2900 U | 2300 U | 2600 U |
| Benzo(a)anthracene | 56-55-3 | 150 | 11 | 220 U,J,O | 3200 U | 19000 U | 2000 U | 14000 U | 10000 | 1400 | 22000 |
| Benzo(a)pyrene | 50-32-8 | 15 | 12 | 360 U,J,O | 2200 J,O | 27000 U,J,O | 1800 U,J,O | 7900 J,O | 13000 | 610 | 17000 |
| Benzo(b)fluoranthene | 205-99-2 | 150 | 12 | 710 J,O | 2600 | 40000 U | 2500 U | 20000 U | 20000 | 850 | 26000 |
| Benzo(g,h,i)perylene | 191-24-2 | -- | 5.7 | 980 J,O | 900 | 24000 U | 1200 U | 5400 U | 5700 | 690 | 8900 |
| Benzo(k)fluoranthene | 207-08-9 | 1500 | 11 J,O | 520 J,O | 2500 | 30000 U | 2200 U | 9900 U | 13000 | 690 | 24000 |
| Chrysene | 218-01-9 | 15000 | 13 | 390 | 4500 | 23000 | 3300 | 19000 | 15000 | 1900 | 30000 |
| Dibenzo(a,h)anthracene | 53-70-3 | 15 | 3.9 U,J,O | 140 J,O | 270 | 8100 | 360 | 1500 | 3100 | 140 | 4400 |
| Dibenzofuran | 132-64-9 | -- | 200 U | 4500 U | 1300 J,O | 750 J,O | 2800 U | 3300 | 2900 U | 4100 | 2600 U |
| Diethyl phthalate | 84-66-2 | -- | 200 U | 4500 U | 3000 U | 2600 U | 2800 U | 2600 U | 2900 U | 2300 U | 2600 U |
| Fluoranthene | 206-44-0 | 2300000 | 21 | 560 | 11000 | 22000 | 7300 | 79000 | 6200 | 9000 | 14000 |
| Fluorene | 86-73-7 | 2300000 | 3.9 U | 170 J,O | 890 | 420 | 120 | 6800 | 940 | 5300 | 3400 |
| Indeno (1,2,3-cd) pyrene | 193-39-5 | 150 | 7.3 J,O | 870 | 1800 | 24000 | 1500 | 5400 | 7800 | 780 | 12000 |
| Naphthalene | 91-20-3 | 3600 | 3.1 J,O | 210 | 680 | 990 | 210 | 690 | 300 | 5200 | 1500 |
| Pentachlorophenol | 87-86-5 | 890 | 7.9 U,J,O | 370 | 250 U | 7500 J,O | 370 J,O | 900 J,O | 910 J,O | 340 | 820 J,O |
| Phenanthrene | 85-01-8 | -- | 6.8 | 460 | 7400 | 3100 | 790 | 33000 | 1700 J,O | 17000 | 6600 |
| Pyrene | 129-00-0 | 1700000 | 23 | 670 | 7900 | 27000 | 5000 | 69000 | 10000 | 6800 | 14000 |
| Benzo(a)pyrene TEQ | NA | 15 | 15 | 304 | 2940 | 10523 | 513 | 9959 | 20025 | 1062 | 27670 |

**Notes:**

Value exceeds residential soil PRG

-- - Not established

CAS - Chemical Abstract Service

dup - duplicate sample

ft bls - feet below land surface

µg/kg - micrograms per kilogram

NA - Not Applicable

ND - Not Detected

PRG - preliminary remedial goal

TEQ - Toxic Equivalents

U - The analyte was not detected at or above the reporting limit

J - Estimated Value

O - Other qualifiers, provided from the laboratory to explain qualifier

# Table 4-4
## Detected Semi-Volatile Organic Compounds in Surface Soil - 2008, 2012, 2013
## Southeastern Wood Preserving Site
## Canton, Madison County, Mississippi

| Chemical Name | CAS Number | Residential Soil PRG | Sample ID | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SWP10 | SWP11 | SWP12 | SWP13 | SWP14 | SWPR01 | SWPR02 | SWPR03 | SWPR03 (dup) |
| | | | Sample Date | | | | | | | | |
| | | | 9/25/2008 | 9/24/2008 | 9/23/2008 | 9/22/2008 | 9/24/2008 | 9/24/2008 | 9/24/2008 | 9/25/2008 | 9/25/2008 |
| | | | Depth Interval (ft bls) | | | | | | | | |
| | | | 0-1 | 0-1 | 0-1 | 0-1 | 0-1 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 |
| **Semi-Volatile Organic Compound (SVOC) (µg/kg)** | | | | | | | | | | | |
| 1,1-Biphenyl | 92-52-4 | -- | 25000 J,O | 2300 U | 2200 U | 2900 U | 3200 U | 190 U | 190 U | 220 U | 110 U |
| 2-Methylnaphthalene | 91-57-6 | -- | 49000 | 830 | 89 U | 120 U | 130 U | 3.8 U | 3.6 U | 3.4 J,O | 80 J,O |
| Acenaphthene | 83-32-9 | 3400000 | 46000 | 1200 | 89 U | 120 U | 130 U | 3.8 U | 3.6 U | 4.3 U | 180 |
| Acenaphthylene | 208-96-8 | -- | 2500 | 1400 | 89 U | 220 | 85 J,O | 3.8 U | 7.4 | 14 | 99 J,O |
| Anthracene | 120-12-7 | 17000000 | 70000 | 3100 | 80 J,O | 650 | 200 | 3.8 U | 12 | 19 | 220 |
| Benzaldehyde | 100-52-7 | -- | 2300 U | 2300 U | 2200 U | 2900 U | 3200 U,J,O | 190 U | 190 U | 220 U | 110 U |
| Benzo(a)anthracene | 56-55-3 | 150 | 35000 | 7100 | 120 | 700 | 360 | 2.2 J,O | 18 | 19 | 320 |
| Benzo(a)pyrene | 50-32-8 | 15 | 9500 | 6900 | 100 | 510 | 560 | 3.9 | 33 | 43 | 290 |
| Benzo(b)fluoranthene | 205-99-2 | 150 | 23000 | 12000 | 220 | 1100 | 910 | 4.8 | 23 | 59 J,O | 400 |
| Benzo(g,h,i)perylene | 191-24-2 | -- | 3300 | 5800 | 97 | 580 | 300 | 4 | 27 | 29 | 180 |
| Benzo(k)fluoranthene | 207-08-9 | 1500 | 11000 | 7500 | 160 | 780 | 690 | 4 | 36 J,O | 43 J,O | 330 |
| Chrysene | 218-01-9 | 15000 | 33000 | 9600 | 290 | 1400 | 620 | 3.5 J,O | 32 | 43 | 430 |
| Dibenzo(a,h)anthracene | 53-70-3 | 15 | 1100 | 2800 | 89 U | 130 | 100 J,O | 2 J,O | 6.7 J,O | 7.8 J,O | 110 U |
| Dibenzofuran | 132-64-9 | -- | 64000 | 940 J,O | 2200 U | 2900 U | 3200 U | 190 U | 190 U | 220 U | 110 U |
| Diethyl phthalate | 84-66-2 | -- | 2300 U,R,O | 2300 U | 2200 U | 2900 U | 3200 U | 190 U | 190 U | 220 U | 110 U |
| Fluoranthene | 206-44-0 | 2300000 | 120000 | 16000 | 340 | 1400 | 450 | 3.6 J,O | 41 | 110 J,O | 660 |
| Fluorene | 86-73-7 | 2300000 | 54000 | 1800 | 89 U | 120 U | 130 U | 3.8 U | 3.6 U | 4.3 U | 84 J,O |
| Indeno (1,2,3-cd) pyrene | 193-39-5 | 150 | 4300 | 5800 | 140 | 730 | 460 | 4.7 | 37 J,O | 39 J,O | 250 |
| Naphthalene | 91-20-3 | 3600 | 65000 | 2300 | 89 J,O | 110 J,O | 180 | 5 | 4.6 | 7.3 | 250 |
| Pentachlorophenol | 87-86-5 | 890 | 740 J,O | 640 | 79 J,O | 550 | 150 J,O | 7.7 U | 7 J,O | 8.2 J,O | 280 |
| Phenanthrene | 85-01-8 | -- | 210000 | 8000 | 190 | 290 | 180 | 2.3 J,O | 19 | 80 J,O | 320 |
| Pyrene | 129-00-0 | 1700000 | 82000 | 13000 | 300 | 1500 | 590 | 4.4 | 46 | 2.8 J,O | 930 |
| Benzo(a)pyrene TEQ | NA | 15 | 16973 | 12275 | 150 | 902 | 841 | 7 | 48 | 63 | 391 |

**Notes:**

Value exceeds residential soil PRG

-- - Not established

CAS - Chemical Abstract Service

dup - duplicate sample

ft bls - feet below land surface

µg/kg - micrograms per kilogram

NA - Not Applicable

ND - Not Detected

PRG - preliminary remedial goal

TEQ - Toxic Equivalents

U - The analyte was not detected at or above the reporting li

J - Estimated Value

O - Other qualifiers, provided from the laboratory to explain

# Table 4-4
## Detected Semi-Volatile Organic Compounds in Surface Soil - 2008, 2012, 2013
## Southeastern Wood Preserving Site
## Canton, Madison County, Mississippi

| Chemical Name | CAS Number | Residential Soil PRG | Sample ID | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SWPR04 | SWPR05 | SWPR06 | SWP201 | SWP202 | SWP203 | SWP203 (dup) | SWP204 | SWP205 |
| | | | Sample Date | | | | | | | | |
| | | | 9/24/2008 | 9/24/2008 | 9/24/2008 | 10/24/2012 | 10/29/2012 | 10/29/2012 | 10/29/2012 | 10/26/2012 | 10/25/2012 |
| | | | Depth Interval (ft bls) | | | | | | | | |
| | | | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0.5-1 |
| **Semi-Volatile Organic Compound (SVOC) (µg/kg)** | | | | | | | | | | | |
| 1,1-Biphenyl | 92-52-4 | -- | 220 U | 200 U | 210 U | 200 U | 190 U | 210 U | 200 U | 230 U | 190 U |
| 2-Methylnaphthalene | 91-57-6 | -- | 3.1 J,O | 2 J,O | 4.2 U | 200 U | 190 U | 210 U | 200 U | 230 U | 190 U |
| Acenaphthene | 83-32-9 | 3400000 | 11 | 3.9 U | 4.2 U | 200 U | 190 U | 210 U | 200 U | 230 U | 190 U |
| Acenaphthylene | 208-96-8 | -- | 230 | 22 | 5.6 | 200 U | 190 U | 210 U | 200 U | 95 J,O | 190 U |
| Anthracene | 120-12-7 | 17000000 | 410 | 24 | 6.7 | 200 U,J,O | 190 U,J,O | 160 J,O | 230 | 200 J,O | 190 U,J,O |
| Benzaldehyde | 100-52-7 | -- | 220 U | 200 U | 210 U | 200 U,J,O | 190 U | 210 U | 200 U | 230 U,J,O | 190 U,J,O |
| Benzo(a)anthracene | 56-55-3 | 150 | 1400 | 60 | 8 | 200 U | 190 U | 370 | 570 | 640 | 190 U |
| Benzo(a)pyrene | 50-32-8 | 15 | 1300 | 68 | 14 | 200 U | 190 U | 410 | 560 | 690 | 97 J,O |
| Benzo(b)fluoranthene | 205-99-2 | 150 | 2500 | 130 | 19 | 200 U | 190 U | 800 | 1200 | 1200 | 180 J,O |
| Benzo(g,h,i)perylene | 191-24-2 | -- | 860 | 48 | 13 | 200 U | 190 U | 220 | 400 | 560 | 81 J,O |
| Benzo(k)fluoranthene | 207-08-9 | 1500 | 2000 | 97 | 13 J,O | 200 U | 190 U | 610 | 760 | 1100 | 120 J,O |
| Chrysene | 218-01-9 | 15000 | 2800 | 140 | 12 | 200 U | 190 U | 840 | 1100 | 1200 | 160 J,O |
| Dibenzo(a,h)anthracene | 53-70-3 | 15 | 300 J,O | 20 | 3.4 J,O | 200 U | 190 U | 110 J,O | 200 | 270 | 190 U |
| Dibenzofuran | 132-64-9 | -- | 220 U | 200 U | 210 U | 200 U | 190 U | 210 U | 200 U | 230 U | 190 U |
| Diethyl phthalate | 84-66-2 | -- | 220 U | 200 U | 210 U | 200 U | 190 U | 210 U | 200 U | 230 U | 190 U |
| Fluoranthene | 206-44-0 | 2300000 | 3400 | 110 | 12 | 83 J,O | 190 U,J,O | 960 J,O | 930 | 910 J,O | 210 J,O |
| Fluorene | 86-73-7 | 2300000 | 12 | 4 | 4.2 U | 200 U | 190 U | 210 U | 200 U | 230 U | 190 U |
| Indeno (1,2,3-cd) pyrene | 193-39-5 | 150 | 1300 | 68 | 17 J,O | 200 U | 190 U | 230 | 420 | 590 | 190 U |
| Naphthalene | 91-20-3 | 3600 | 13 | 5.4 | 3.6 J,O | 200 U | 190 U | 210 U | 200 U | 230 U | 190 U |
| Pentachlorophenol | 87-86-5 | 890 | 340 J,O | 21 J,O | 3.5 J,O | 390 U | 370 U | 400 U | 390 U | 440 U | 380 U |
| Phenanthrene | 85-01-8 | -- | 300 J,O | 12 | 3.9 J,O | 200 U | 190 U | 140 J,O | 200 U | 230 U | 190 U |
| Pyrene | 129-00-0 | 1700000 | 2800 | 140 | 15 | 200 U,J,O | 190 U,J,O | 900 J,O | 890 | 870 J,O | 180 J,O |
| Benzo(a)pyrene TEQ | NA | 15 | 2143 | 115 | 22 | ND | ND | 667 | 988 | 1215 | 116 |

**Notes:**

Value exceeds residential soil PRG

-- - Not established

CAS - Chemical Abstract Service

dup - duplicate sample

ft bls - feet below land surface

µg/kg - micrograms per kilogram

NA - Not Applicable

ND - Not Detected

PRG - preliminary remedial goal

TEQ - Toxic Equivalents

U - The analyte was not detected at or above the reporting li

J - Estimated Value

O - Other qualifiers, provided from the laboratory to explain

# Table 4-4
## Detected Semi-Volatile Organic Compounds in Surface Soil - 2008, 2012, 2013
## Southeastern Wood Preserving Site
## Canton, Madison County, Mississippi

| Chemical Name | CAS Number | Residential Soil PRG | Sample ID | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SWP206 | SWP207 | SWP207 (dup) | SWP208 | SWP209 | SWP210 | SWP210 (dup) | SWP211 | SWP212 |
| | | | Sample Date | | | | | | | | |
| | | | 10/25/2012 | 10/25/2012 | 10/25/2012 | 10/26/2012 | 10/24/2012 | 10/24/2012 | 10/24/2012 | 10/24/2012 | 10/26/2012 |
| | | | Depth Interval (ft bls) | | | | | | | | |
| | | | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 |
| **Semi-Volatile Organic Compound (SVOC) (µg/kg)** | | | | | | | | | | | |
| 1,1-Biphenyl | 92-52-4 | -- | 190 U | 210 U | 210 U | 190 U | 190 U | 190 U | 190 U | 210 U | 220 U |
| 2-Methylnaphthalene | 91-57-6 | -- | 190 U | 210 U | 210 U | 190 U | 190 U | 190 U | 190 U | 210 U | 220 U |
| Acenaphthene | 83-32-9 | 3400000 | 380 | 210 U | 210 U | 190 U | 190 U | 190 U | 190 U | 210 U | 220 U |
| Acenaphthylene | 208-96-8 | -- | 190 U | 210 U | 210 U | 190 U | 190 U | 190 U | 190 U | 210 U | 220 U |
| Anthracene | 120-12-7 | 17000000 | 660 | 210 U | 210 U,J,O | 190 U | 190 U | 190 U,J,O | 190 U,J,O | 170 J,O | 220 U |
| Benzaldehyde | 100-52-7 | -- | 190 U | 210 U | 210 U | 190 U | 190 U | 190 U | 190 U | 210 U | 220 U |
| Benzo(a)anthracene | 56-55-3 | 150 | 2500 | 210 U | 210 U | 190 U | 190 U | 190 U | 190 U | 300 | 220 U |
| Benzo(a)pyrene | 50-32-8 | 15 | 2100 | 210 U | 210 U | 190 U | 190 U | 190 U | 190 U | 350 | 220 U |
| Benzo(b)fluoranthene | 205-99-2 | 150 | 2800 | 210 U | 210 U | 190 U | 190 U | 190 U | 190 U | 730 | 230 |
| Benzo(g,h,i)perylene | 191-24-2 | -- | 1700 | 210 U | 210 U | 190 U | 190 U | 190 U | 190 U | 240 | 220 U |
| Benzo(k)fluoranthene | 207-08-9 | 1500 | 1400 | 210 U | 210 U | 190 U | 190 U | 190 U | 190 U | 480 | 220 U |
| Chrysene | 218-01-9 | 15000 | 2600 | 210 U | 210 U | 190 U | 190 U | 190 U | 190 U | 620 | 220 U |
| Dibenzo(a,h)anthracene | 53-70-3 | 15 | 570 | 210 U | 210 U | 190 U | 190 U | 190 U | 190 U | 91 J,O | 220 U |
| Dibenzofuran | 132-64-9 | -- | 150 J,O | 210 U | 210 U | 190 U | 190 U | 190 U | 190 U | 210 U | 220 U |
| Diethyl phthalate | 84-66-2 | -- | 190 U | 210 U | 210 U | 190 U | 190 U | 190 U | 190 U | 210 U | 220 U |
| Fluoranthene | 206-44-0 | 2300000 | 5900 | 210 U | 210 U,J,O | 190 U | 190 U | 190 U,J,O | 190 U,J,O | 510 | 220 U |
| Fluorene | 86-73-7 | 2300000 | 250 | 210 U | 210 U | 190 U | 190 U | 190 U | 190 U | 210 U | 220 U |
| Indeno (1,2,3-cd) pyrene | 193-39-5 | 150 | 1600 | 210 U | 210 U | 190 U | 190 U | 190 U | 190 U | 260 | 220 U |
| Naphthalene | 91-20-3 | 3600 | 90 J,O | 210 U | 210 U | 190 U | 190 U | 190 U | 190 U | 210 U | 220 U |
| Pentachlorophenol | 87-86-5 | 890 | 370 U,J,O | 410 U,J,O | 410 U | 370 U,J,O | 380 U | 370 U | 370 U | 410 U,J,O | 420 U,J,O |
| Phenanthrene | 85-01-8 | -- | 2700 | 210 U | 210 U | 190 U | 190 U | 190 U | 190 U | 210 U | 220 U |
| Pyrene | 129-00-0 | 1700000 | 4000 | 210 U | 210 U,J,O | 190 U | 190 U | 190 U,J,O | 190 U,J,O | 500 | 220 U |
| Benzo(a)pyrene TEQ | NA | 15 | 3377 | ND | ND | ND | ND | ND | ND | 575 | 23 |

**Notes:**

Value exceeds residential soil PRG

-- - Not established

CAS - Chemical Abstract Service

dup - duplicate sample

ft bls - feet below land surface

µg/kg - micrograms per kilogram

NA - Not Applicable

ND - Not Detected

PRG - preliminary remedial goal

TEQ - Toxic Equivalents

U - The analyte was not detected at or above the reporting li

J - Estimated Value

O - Other qualifiers, provided from the laboratory to explain

# Table 4-4
## Detected Semi-Volatile Organic Compounds in Surface Soil - 2008, 2012, 2013
## Southeastern Wood Preserving Site
## Canton, Madison County, Mississippi

| Chemical Name | CAS Number | Residential Soil PRG | Sample ID | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SWP213 | SWP214 | SWP215 | SWP216 | SWP217 | SWP218 | SWP219 | SWP220 | SWP221 |
| | | | Sample Date | | | | | | | | |
| | | | 10/24/2012 | 10/29/2012 | 10/24/2012 | 10/24/2012 | 10/24/2012 | 10/24/2012 | 10/24/2012 | 10/24/2012 | 10/26/2012 |
| | | | Depth Interval (ft bls) | | | | | | | | |
| | | | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 |
| **Semi-Volatile Organic Compound (SVOC) (µg/kg)** | | | | | | | | | | | |
| 1,1-Biphenyl | 92-52-4 | -- | 210 U | 210 U | 220 U | 190 U | 220 U | 220 U | 200 U | 200 U | 200 U |
| 2-Methylnaphthalene | 91-57-6 | -- | 210 U | 210 U | 220 U | 190 U | 220 U | 220 U | 200 U | 200 U | 200 U |
| Acenaphthene | 83-32-9 | 3400000 | 210 U | 210 U | 220 U | 190 U | 220 U | 220 U | 200 U | 200 U | 200 U |
| Acenaphthylene | 208-96-8 | -- | 210 U | 210 U | 220 U | 190 U | 220 U | 220 U | 200 U | 200 U | 200 U |
| Anthracene | 120-12-7 | 17000000 | 210 U | 210 U | 220 U,J,O | 190 U,J,O | 220 U,J,O | 220 U | 200 U,J,O | 200 U,J,O | 200 U |
| Benzaldehyde | 100-52-7 | -- | 210 U | 210 U | 220 U | 190 U,J,O | 220 U,J,O | 220 U | 200 U,J,O | 200 U,J,O | 200 U |
| Benzo(a)anthracene | 56-55-3 | 150 | 210 U | 210 U | 220 U | 190 U | 220 U | 220 U | 200 U | 200 U | 200 U |
| Benzo(a)pyrene | 50-32-8 | 15 | 210 U | 210 U | 220 U | 190 U | 220 U | 220 U | 200 U | 200 U | 200 U |
| Benzo(b)fluoranthene | 205-99-2 | 150 | 210 U | 210 U | 220 U | 190 U | 220 U | 220 U | 200 U | 200 U | 200 U |
| Benzo(g,h,i)perylene | 191-24-2 | -- | 210 U | 210 U | 220 U | 190 U | 220 U | 220 U | 200 U | 200 U | 200 U |
| Benzo(k)fluoranthene | 207-08-9 | 1500 | 210 U | 210 U | 220 U | 190 U | 220 U | 220 U | 200 U | 200 U | 200 U |
| Chrysene | 218-01-9 | 15000 | 210 U | 210 U | 220 U | 190 U | 220 U | 220 U | 200 U | 200 U | 200 U |
| Dibenzo(a,h)anthracene | 53-70-3 | 15 | 210 U | 210 U | 220 U | 190 U | 220 U | 220 U | 200 U | 200 U | 200 U |
| Dibenzofuran | 132-64-9 | -- | 210 U | 210 U | 220 U | 190 U | 220 U | 220 U | 200 U | 200 U | 200 U |
| Diethyl phthalate | 84-66-2 | -- | 210 U | 210 U | 220 U | 190 U | 220 U | 220 U | 200 U | 200 U | 200 U |
| Fluoranthene | 206-44-0 | 2300000 | 210 U | 210 U | 220 U,J,O | 190 U,J,O | 220 U,J,O | 220 U | 200 U,J,O | 200 U,J,O | 200 U |
| Fluorene | 86-73-7 | 2300000 | 210 U | 210 U | 220 U | 190 U | 220 U | 220 U | 200 U | 200 U | 200 U |
| Indeno (1,2,3-cd) pyrene | 193-39-5 | 150 | 210 U | 210 U | 220 U | 190 U | 220 U | 220 U | 200 U | 200 U | 200 U |
| Naphthalene | 91-20-3 | 3600 | 210 U | 210 U | 220 U | 190 U | 220 U | 220 U | 200 U | 200 U | 200 U |
| Pentachlorophenol | 87-86-5 | 890 | 400 U,J,O | 410 U | 420 U | 370 U | 420 U | 420 U | 380 U | 390 U | 390 U,J,O |
| Phenanthrene | 85-01-8 | -- | 210 U | 210 U | 220 U | 190 U | 220 U | 220 U | 200 U | 200 U | 200 U |
| Pyrene | 129-00-0 | 1700000 | 210 U | 210 U | 220 U,J,O | 190 U,J,O | 220 U,J,O | 220 U | 200 U,J,O | 200 U,J,O | 200 U |
| Benzo(a)pyrene TEQ | NA | 15 | ND | ND | ND | ND | ND | ND | ND | ND | ND |

**Notes:**

Value exceeds residential soil PRG

-- - Not established

CAS - Chemical Abstract Service

dup - duplicate sample

ft bls - feet below land surface

µg/kg - micrograms per kilogram

NA - Not Applicable

ND - Not Detected

PRG - preliminary remedial goal

TEQ - Toxic Equivalents

U - The analyte was not detected at or above the reporting li

J - Estimated Value

O - Other qualifiers, provided from the laboratory to explain

# Table 4-4
## Detected Semi-Volatile Organic Compounds in Surface Soil - 2008, 2012, 2013
## Southeastern Wood Preserving Site
## Canton, Madison County, Mississippi

| Chemical Name | CAS Number | Residential Soil PRG | Sample ID | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SWP222 | SWP223 | SWP224 | SWP225 | SWP226 | SWP227 | SWP227 (dup) | SWP228 | SWP229 |
| | | | Sample Date | | | | | | | | |
| | | | 10/27/2012 | 10/25/2012 | 10/25/2012 | 10/25/2012 | 1/23/2013 | 1/23/2013 | 1/23/2013 | 1/23/2013 | 1/23/2013 |
| | | | Depth Interval (ft bls) | | | | | | | | |
| | | | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 |
| **Semi-Volatile Organic Compound (SVOC) (µg/kg)** | | | | | | | | | | | |
| 1,1-Biphenyl | 92-52-4 | -- | 230 U | 190 U,J,O | 200 U | 190 U | 45 U | 41 U | 41 U | 46 U | 45 U |
| 2-Methylnaphthalene | 91-57-6 | -- | 230 U | 190 U | 200 U | 190 U | 45 U | 87 | 41 U | 46 U | 45 U |
| Acenaphthene | 83-32-9 | 3400000 | 230 U | 190 U | 200 U | 190 U | 45 U | 41 U | 41 U | 46 U | 45 U |
| Acenaphthylene | 208-96-8 | -- | 230 U | 190 U | 200 U | 190 U | 85 | 94 | 41 U | 46 U | 45 U |
| Anthracene | 120-12-7 | 17000000 | 230 U | 190 U | 200 U | 190 U | 200 | 230 | 85 | 75 | 47 |
| Benzaldehyde | 100-52-7 | -- | 230 U | 190 U | 200 U | 190 U | 450 U | 410 U | 410 U | 460 U | 58 J,O |
| Benzo(a)anthracene | 56-55-3 | 150 | 230 U | 190 U,J,O | 200 U | 190 U | 1300 | 1100 | 480 | 430 | 250 |
| Benzo(a)pyrene | 50-32-8 | 15 | 230 U | 190 U | 200 U | 190 U | 1500 | 1300 | 550 | 490 | 410 |
| Benzo(b)fluoranthene | 205-99-2 | 150 | 220 J,O | 190 U | 200 U | 190 U | 3700 | 3400 | 1400 | 1100 J,O | 880 |
| Benzo(g,h,i)perylene | 191-24-2 | -- | 230 U | 190 U | 200 U | 190 U | 730 | 890 | 280 | 210 | 220 |
| Benzo(k)fluoranthene | 207-08-9 | 1500 | 200 J,O | 190 U | 200 U | 190 U | 2800 | 2400 | 1000 | 820 | 640 |
| Chrysene | 218-01-9 | 15000 | 230 U | 190 U,J,O | 200 U | 190 U | 2600 | 2400 | 1000 | 900 | 600 |
| Dibenzo(a,h)anthracene | 53-70-3 | 15 | 230 U | 190 U | 200 U | 190 U | 230 | 220 | 73 | 81 | 68 |
| Dibenzofuran | 132-64-9 | -- | 230 U | 190 U | 200 U | 190 U | 68 | 93 | 41 U | 46 U | 45 U |
| Diethyl phthalate | 84-66-2 | -- | 230 U | 190 U,J,O | 230 | 190 U | 450 U | 410 U | 410 U | 460 U | 450 U |
| Fluoranthene | 206-44-0 | 2300000 | 230 U | 190 U,J,O | 200 U | 190 U | 2300 | 1700 | 720 | 790 | 540 |
| Fluorene | 86-73-7 | 2300000 | 230 U | 190 U | 200 U | 190 U | 45 U | 42 | 41 U | 46 U | 45 U |
| Indeno (1,2,3-cd) pyrene | 193-39-5 | 150 | 230 U | 190 U | 200 U | 190 U | 820 | 890 | 280 | 240 | 230 |
| Naphthalene | 91-20-3 | 3600 | 230 U | 190 U | 200 U | 190 U | 100 | 130 | 44 | 46 U | 45 U |
| Pentachlorophenol | 87-86-5 | 890 | 440 U | 370 U,J,O | 390 U,J,O | 370 U,J,O | 120 J | 140 J,O | 58 J,O | 67 J,O | 73 J,O |
| Phenanthrene | 85-01-8 | -- | 230 U | 190 U | 200 U | 190 U | 330 | 340 | 110 | 95 | 130 |
| Pyrene | 129-00-0 | 1700000 | 230 U | 190 U,J,O | 200 U | 190 U | 2200 | 1800 | 720 | 770 | 560 |
| Benzo(a)pyrene TEQ | NA | 15 | 24 | ND | ND | ND | 2343 | 2085 | 850 | 757 | 621 |

**Notes:**

Value exceeds residential soil PRG

-- - Not established

CAS - Chemical Abstract Service

dup - duplicate sample

ft bls - feet below land surface

µg/kg - micrograms per kilogram

NA - Not Applicable

ND - Not Detected

PRG - preliminary remedial goal

TEQ - Toxic Equivalents

U - The analyte was not detected at or above the reporting li

J - Estimated Value

O - Other qualifiers, provided from the laboratory to explain

# Table 4-4
## Detected Semi-Volatile Organic Compounds in Surface Soil - 2008, 2012, 2013
## Southeastern Wood Preserving Site
## Canton, Madison County, Mississippi

| Chemical Name | CAS Number | Residential Soil PRG | Sample ID | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | SWP230 | SWP231 | SWP232 | SWP233 | SWP234 | SWP235 | SWP236 |
| | | | Sample Date | | | | | | |
| | | | 1/23/2013 | 1/23/2013 | 1/23/2013 | 1/23/2013 | 1/24/2013 | 1/24/2013 | 1/24/2013 |
| | | | Depth Interval (ft bls) | | | | | | |
| | | | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 |
| **Semi-Volatile Organic Compound (SVOC) (µg/kg)** | | | | | | | | | |
| 1,1-Biphenyl | 92-52-4 | -- | 46 U | 45 U | 44 U | 46 U | 43 U | 92 U | 40 U |
| 2-Methylnaphthalene | 91-57-6 | -- | 53 | 45 U | 44 U | 53 | 43 U | 92 U | 40 U |
| Acenaphthene | 83-32-9 | 3400000 | 46 U | 45 U | 44 U | 46 U | 43 U | 92 U | 40 U |
| Acenaphthylene | 208-96-8 | -- | 94 | 45 U | 44 U | 46 U | 43 U | 180 | 40 U |
| Anthracene | 120-12-7 | 17000000 | 310 | 45 U | 79 | 110 | 43 U | 700 | 40 U |
| Benzaldehyde | 100-52-7 | -- | 460 U | 250 J,O | 52 J,O | 460 U | 430 U | 920 U | 400 U |
| Benzo(a)anthracene | 56-55-3 | 150 | 1800 | 45 U | 170 | 400 | 46 | 4500 | 40 U |
| Benzo(a)pyrene | 50-32-8 | 15 | 1800 | 45 U | 180 | 550 | 62 | 3800 | 40 U |
| Benzo(b)fluoranthene | 205-99-2 | 150 | 4800 | 45 U | 200 | 1300 | 120 | 10000 | 40 U |
| Benzo(g,h,i)perylene | 191-24-2 | -- | 730 | 45 U | 81 | 250 | 43 U | 92 U | 40 U |
| Benzo(k)fluoranthene | 207-08-9 | 1500 | 3500 | 45 U | 160 | 970 | 91 | 6300 | 40 U |
| Chrysene | 218-01-9 | 15000 | 3700 | 45 U | 200 | 910 | 96 | 8200 | 40 U |
| Dibenzo(a,h)anthracene | 53-70-3 | 15 | 250 | 45 U | 44 U | 91 | 43 U | 92 U | 40 U |
| Dibenzofuran | 132-64-9 | -- | 83 | 45 U | 44 U | 69 | 43 U | 120 | 40 U |
| Diethyl phthalate | 84-66-2 | -- | 460 U | 450 U | 440 U | 460 U | 430 U | 920 U | 400 U |
| Fluoranthene | 206-44-0 | 2300000 | 3200 | 45 U | 440 | 650 | 88 | 8800 | 40 U |
| Fluorene | 86-73-7 | 2300000 | 46 U | 45 U | 44 U | 46 U | 43 U | 92 U | 40 U |
| Indeno (1,2,3-cd) pyrene | 193-39-5 | 150 | 850 | 45 U | 81 | 290 | 43 U | 1700 | 40 U |
| Naphthalene | 91-20-3 | 3600 | 130 | 45 U | 44 U | 160 | 43 U | 190 | 40 U |
| Pentachlorophenol | 87-86-5 | 890 | 180 J,O | 450 U | 440 U | 120 J | 430 U | 500 J,O | 400 U |
| Phenanthrene | 85-01-8 | -- | 460 | 45 U | 360 | 220 | 43 U | 890 | 40 U |
| Pyrene | 129-00-0 | 1700000 | 3400 | 45 U | 360 | 680 | 72 | 6800 | 40 U |
| Benzo(a)pyrene TEQ | NA | 15 | 2834 | ND | 227 | 851 | 80 | 5491 | ND |

**Notes:**

Value exceeds residential soil PRG

-- - Not established

CAS - Chemical Abstract Service

dup - duplicate sample

ft bls - feet below land surface

µg/kg - micrograms per kilogram

NA - Not Applicable

ND - Not Detected

PRG - preliminary remedial goal

TEQ - Toxic Equivalents

U - The analyte was not detected at or above the reporting li

J - Estimated Value

O - Other qualifiers, provided from the laboratory to explain

# Table 4-5
# Dioxin in Surface Soil - 2008, 2012, 2013
# Southeastern Wood Preserving Site
# Canton, Madison County Mississippi

| Chemical Name | CAS Number | Residential Soil PRG | Sample ID | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SWPB01 (Background) | SWP02 | SWP03 | SWP04 | SWP05 | SWP06 | SWP11 | SWP13 | SWPR01 |
| | | | Sample Date | | | | | | | | |
| | | | 9/22/2008 | 9/25/2008 | 9/25/2008 | 9/25/2008 | 9/24/2008 | 9/24/2008 | 9/24/2008 | 9/22/2008 | 9/24/2008 |
| | | | Depth Interval (ft bls) | | | | | | | | |
| | | | 0-1 | 0-1 | 0-1 | 0-1 | 0-1 | 0-1 | 0-1 | 0-1 | 0-0.5 |
| **Dioxins (ng/kg)** | | | | | | | | | | | |
| % Moisture | E1644012 | -- | 18 | 71000 J,O | 12 | 14 U,J,O | 5 U,J,O | 5 U,J,O | 13 | 14 | 14 |
| 1,2,3,4,6,7,8-Heptachlorodibenzodioxin | 35822-46-9 | -- | 81 | 890 J,O | 5 U | 9500 U | 5 U | 5 U | 2600 | 6600 | 79 |
| 1,2,3,4,6,7,8-Heptachlorodibenzofuran | 67562-39-4 | -- | 170 | 50 U,J,O | 5 U | 14000 U | 5 U | 5 U | 1500 | 4500 | 69 |
| 1,2,3,4,7,8,9-Heptachlorodibenzofuran | 55673-89-7 | -- | 2.4 J,O | 50 U,J,O | 5 U | 510 U | 5 U | 5 U | 56 | 240 | 1.2 J,O |
| 1,2,3,4,7,8-Hexachlorodibenzodioxin | 39227-28-6 | -- | 1.2 J,O | 50 U,J,O | 5 U | 59 U,J,O | 5 U,J,O | 5 U,J,O | 8.5 | 38 | 0.76 J,O |
| 1,2,3,4,7,8-Hexachlorodibenzofuran | 70648-26-9 | -- | 6.8 | 50 U,J,O | 5 U | 240 U | 5 U | 5 U | 33 | 170 | 1.9 J,O |
| 1,2,3,6,7,8-Hexachlorodibenzodioxin | 57653-85-7 | -- | 7 | 50 U,J,O | 5 U | 650 U,J,O | 5 U,J,O | 5 U,J,O | 94 | 250 | 2.8 J,O |
| 1,2,3,6,7,8-Hexachlorodibenzofuran | 57117-44-9 | -- | 2.9 J,O | 7300 J,O | 1.1 J,O | 62 U | 5 U | 5 U | 7.7 | 69 | 1.2 J,O |
| 1,2,3,7,8,9-Hexachlorodibenzodioxin | 19408-74-3 | -- | 3.1 J,O | 100 U,J,O | 10 U,J,O | 140 U,J,O | 10 U,J,O | 10 U,J,O | 19 | 80 | 2 J,O |
| 1,2,3,7,8,9-Hexachlorodibenzofuran | 72918-21-9 | -- | 0.94 J,O | 50 U,J,O | 5 U | 30 J,O | 5 U | 5 U | 4.9 | 22 | 0.28 J,O |
| 1,2,3,7,8-Pentachlorodibenzodioxin | 40321-76-4 | -- | 0.63 J,O | 50 U,J,O | 5 U | 12 J,O | 5 U | 5 U | 3.6 J,O | 20 J,O | 0.56 J,O |
| 1,2,3,7,8-Pentachlorodibenzofuran | 57117-41-6 | -- | 0.55 U,O | 50 U,J,O | 5 U | 6.1 J,O | 5 U | 5 U | 1.2 J,O | 4.2 J,O | 0.27 J,O |
| 2,3,4,6,7,8-Hexachlorodibenzofuran | 60851-34-5 | -- | 3.4 J,O | 50 U,J,O | 5 U | 120 U | 5 U | 5 U | 14 | 100 | 1.6 J,O |
| 2,3,4,7,8-Pentachlorodibenzofuran | 57117-31-4 | -- | 5.4 | 100 U,J,O | 10 U,J,O | 27 J,O | 10 U,J,O | 10 U,J,O | 7.8 J,O | 35 J,O | 1.1 J,O |
| 2,3,7,8-Tetrachlorodibenzodioxin | 1746-01-6 | -- | 0.28 J,O | 5100 J,O | 1.6 | 1.5 U,J,O | 0.1 U | 0.1 U | 0.27 U,J,O | 0.85 J,O | 0.1 U |
| 2,3,7,8-Tetrachlorodibenzofuran | 51207-31-9 | -- | 0.5 U | 24000 J,O | 4.9 J,O | 3.2 U,J,O | 5 U | 5 U | 0.64 U,J,O | 1.6 U,O | 0.34 U |
| Heptachlorodibenzodioxin (Total) | 37871-00-4 | -- | 140 J,O | 100 U,J,O | 10 U | 24000 J,O | 10 U,J,O | 10 U,J,O | 7400 J,O | 15000 J,O | 150 J,O |
| Heptachlorodibenzofuran (Total) | 38998-75-3 | -- | 280 J,O | 50 U,J,O | 5 U | 51000 J,O | 5 U | 5 U | 6200 J,O | 15000 J,O | 130 J,O |
| Hexachlorodibenzodioxin (Total) | 34465-46-8 | -- | 34 J,O | 50 U,J,O | 5 U | 2700 J,O | 5 U | 5 U | 470 J,O | 1100 J,O | 22 J,O |
| Hexachlorodibenzofuran (Total) | 55684-94-1 | -- | 160 J,O | 100 U,J,O | 10 U | 9700 J,O | 10 U,J,O | 10 U,J,O | 1200 J,O | 4600 J,O | 45 J,O |
| Octachlorodibenzodioxin | 3268-87-9 | -- | 600 | 50 U,J,O | 5 U | 100000 U | 5 U | 5 U | 32000 J,O | 65000 J,O | 1200 |
| Octachlorodibenzofuran | 39001-02-0 | -- | 54 | 50 U,J,O | 5 U | 20000 U | 5 U | 5 U | 3400 | 14000 | 82 |
| Pentachlorodibenzodioxin (Total) | 36088-22-9 | -- | 6.5 J,O | 50 U,J,O | 5 U | 160 J,O | 5 U,J,O | 5 U,J,O | 26 J,O | 94 J,O | 3.2 J,O |
| Pentachlorodibenzofuran (Total) | 30402-15-4 | -- | 37 J,O | 50 U,J,O | 5 U | 120 J,O | 5 U | 5 U | 34 J,O | 210 J,O | 12 J,O |
| TEQ (Avian Toxic. Equiv. Value, WHO TEQ-98) | R4-0428 | -- | 11 J,O | 100 U,J,O | 10 U | 280 U,J,O | 10 U,J,O | 10 U,J,O | 44 J,O | 170 | 3.8 J,O |
| TEQ (Fish Toxic. Equiv. Value, WHO TEQ-98) | R4-0429 | -- | 7.7 J,O | 100 U,J,O | 10 U | 280 U | 10 U | 10 U,J,O | 41 J,O | 160 | 3.1 J,O |
| TEQ (Mammalian Toxic. Equiv. Value, WHO TEQ-2005) | R4-0430 | 50 | 7.9 J,O | 3000 J,O | 1 | 430 U | 0.1 U | 0.1 U | 77 J,O | 240 | 4 J,O |
| Tetrachlorodibenzodioxin (Total) | 41903-57-5 | -- | 0.95 J,O | 67 J,O | 0.1 U,J,O | 25 J,O | 0.1 U | 0.1 U | 6.7 J,O | 20 J,O | 0.76 J,O |
| Tetrachlorodibenzofuran (Total) | 30402-14-3 | -- | 1.4 J,O | 50 U,J,O | 5 U | 22 J,O | 5 U | 5 U | 7.2 J,O | 32 J,O | 3.4 J,O |

**Notes:**

Value exceeds residential soil PRG

-- - Not established

CAS - Chemical Abstract Service

dup - duplicate sample

ft bls - feet below land surface

ng/kg - nanograms per kilogram

NA - Not Applicable

PRG - preliminary remedial goal

TEQ - Toxic Equivalents

U - The analyte was not detected at or above the reporting limit

J - Estimated Value

O - Other qualifiers, provided from the laboratory to explain qualifier

# Table 4-5
# Dioxin in Surface Soil - 2008, 2012, 2013
# Southeastern Wood Preserving Site
# Canton, Madison County Mississippi

| Chemical Name | CAS Number | Residential Soil PRG | Sample ID | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SWPR02 | SWPR03 | SWPR04 | SWPR05 | SWPR06 | SWP201 | SWP202 | SWP203 | SWP203 (dup) |
| | | | Sample Date | | | | | | | | |
| | | | 9/24/2008 | 9/25/2008 | 9/24/2008 | 9/24/2008 | 9/24/2008 | 10/24/2012 | 10/29/2012 | 10/29/2012 | 10/29/2012 |
| | | | Depth Interval (ft bls) | | | | | | | | |
| | | | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 |
| **Dioxins (ng/kg)** | | | | | | | | | | | |
| % Moisture | E1644012 | -- | 10 | 23 | 20 | 17 | 20 | 18 | 9.8 | 17 | NA |
| 1,2,3,4,6,7,8-Heptachlorodibenzodioxin | 35822-46-9 | -- | 580 | 1400 | 8800 | 1600 | 600 | 1300 | 820 | 13000 | NA |
| 1,2,3,4,6,7,8-Heptachlorodibenzofuran | 67562-39-4 | -- | 220 | 470 | 5500 | 1400 | 640 | 650 | 380 | 8700 J,O | NA |
| 1,2,3,4,7,8,9-Heptachlorodibenzofuran | 55673-89-7 | -- | 8.7 | 21 | 280 | 44 | 14 | 22 | 13 | 280 | NA |
| 1,2,3,4,7,8-Hexachlorodibenzodioxin | 39227-28-6 | -- | 4 J,O | 14 | 81 J,O | 9 | 8 | 13 | 7 | 50 J,O | NA |
| 1,2,3,4,7,8-Hexachlorodibenzofuran | 70648-26-9 | -- | 4 J,O | 12 | 94 J,O | 17 | 25 | 17 | 7.8 | 100 | NA |
| 1,2,3,6,7,8-Hexachlorodibenzodioxin | 57653-85-7 | -- | 16 | 44 | 390 J,O | 65 | 24 | 38 | 25 | 380 J,O | NA |
| 1,2,3,6,7,8-Hexachlorodibenzofuran | 57117-44-9 | -- | 2.4 J,O | 11 | 35 J,O | 7.4 | 11 | 13 | 5.4 | 51 J,O | NA |
| 1,2,3,7,8,9-Hexachlorodibenzodioxin | 19408-74-3 | -- | 9 | 30 | 87 J,O | 16 | 12 | 27 | 14 | 110 J,O | NA |
| 1,2,3,7,8,9-Hexachlorodibenzofuran | 72918-21-9 | -- | 0.61 U,O | 2.1 U | 15 J,O | 2.4 J,O | 2.5 J,O | 3.7 J,O | 1.4 J,O | 25 J,O | NA |
| 1,2,3,7,8-Pentachlorodibenzodioxin | 40321-76-4 | -- | 1.4 J,O | 5.4 | 11 | 2.1 J,O | 2.3 J,O | 4.4 J,O | 2.5 J,O | 6.4 | NA |
| 1,2,3,7,8-Pentachlorodibenzofuran | 57117-41-6 | -- | 0.28 J,O | 0.89 J,O | 1.6 J,O | 0.45 J,O | 1.2 J,O | 1.6 U | 0.6 J,O | 2.8 J,O | NA |
| 2,3,4,6,7,8-Hexachlorodibenzofuran | 60851-34-5 | -- | 4.7 J,O | 16 | 82 J,O | 17 | 13 | 21 | 9.7 | 110 J,O | NA |
| 2,3,4,7,8-Pentachlorodibenzofuran | 57117-31-4 | -- | 1.1 J,O | 5.2 | 11 | 1.7 J,O | 13 | 9.7 | 3.2 J,O | 8.7 J,O | NA |
| 2,3,7,8-Tetrachlorodibenzodioxin | 1746-01-6 | -- | 0.11 U | 1.5 | 0.14 U,J,O | 0.11 U | 0.28 U,O | 0.33 U | 0.32 J,O | 0.24 J,O | NA |
| 2,3,7,8-Tetrachlorodibenzofuran | 51207-31-9 | -- | 0.2 U,O | 0.51 U | 0.31 U,J,O | 0.27 U,O | 0.81 J,O | 0.68 J,O | 0.41 U | 0.39 U | NA |
| Heptachlorodibenzodioxin (Total) | 37871-00-4 | -- | 1200 J,O | 2500 J,O | 25000 J,O | 4400 J,O | 1600 J,O | 2500 J,O | 1700 J,O | 36000 J,O | NA |
| Heptachlorodibenzofuran (Total) | 38998-75-3 | -- | 700 J,O | 1200 J,O | 22000 J,O | 5300 J,O | 1400 J,O | 1800 J,O | 1000 J,O | 31000 J,O | NA |
| Hexachlorodibenzodioxin (Total) | 34465-46-8 | -- | 110 J,O | 290 J,O | 2700 J,O | 410 J,O | 260 J,O | 270 J,O | 180 J,O | 2800 J,O | NA |
| Hexachlorodibenzofuran (Total) | 55684-94-1 | -- | 150 J,O | 380 J,O | 5500 J,O | 900 J,O | 480 J,O | 620 J,O | 280 J,O | 6200 J,O | NA |
| Octachlorodibenzodioxin | 3268-87-9 | -- | 6600 J,O | 12000 J,O | 74000 J,O | 13000 | 5100 J,O | 12000 J,O | 8100 J,O | 110000 J,O | NA |
| Octachlorodibenzofuran | 39001-02-0 | -- | 740 | 1000 | 23000 | 4300 | 890 | 1300 | 1000 | 38000 | NA |
| Pentachlorodibenzodioxin (Total) | 36088-22-9 | -- | 7.6 J,O | 30 J,O | 100 J,O | 19 J,O | 34 J,O | 29 J,O | 18 J,O | 100 J,O | NA |
| Pentachlorodibenzofuran (Total) | 30402-15-4 | -- | 18 J,O | 81 J,O | 240 J,O | 50 J,O | 120 J,O | 110 J,O | 40 J,O | 58 J,O | NA |
| TEQ (Avian Toxic. Equiv. Value, WHO TEQ-98) | R4-0428 | -- | 8.9 J,O | 29 | 140 J,O | 30 | 31 J,O | 34 J,O | 16 J,O | 180 J,O | NA |
| TEQ (Fish Toxic. Equiv. Value, WHO TEQ-98) | R4-0429 | -- | 9.2 J,O | 29 | 160 J,O | 31 | 26 J,O | 32 J,O | 16 J,O | 190 J,O | NA |
| TEQ (Mammalian Toxic. Equiv. Value, WHO TEQ-2005) | R4-0430 | 50 | 16 J,O | 45 | 270 J,O | 53 | 30 J,O | 44 J,O | 26 J,O | 360 J,O | NA |
| Tetrachlorodibenzodioxin (Total) | 41903-57-5 | -- | 0.29 J,O | 5.2 J,O | 19 J,O | 2.4 J,O | 5.4 J,O | 3.9 J,O | 2.5 J,O | 13 J,O | NA |
| Tetrachlorodibenzofuran (Total) | 30402-14-3 | -- | 2.2 J,O | 10 J,O | 28 J,O | 4.2 J,O | 20 J,O | 19 J,O | 7.1 J,O | 30 J,O | NA |

**Notes:**

Value exceeds residential soil PRG

-- - Not established

CAS - Chemical Abstract Service

dup - duplicate sample

ft bls - feet below land surface

ng/kg - nanograms per kilogram

NA - Not Applicable

PRG - preliminary remedial goal

TEQ - Toxic Equivalents

U - The analyte was not detected at or above the reporting limit

J - Estimated Value

O - Other qualifiers, provided from the laboratory to explain qualifier

# Table 4-5
# Dioxin in Surface Soil - 2008, 2012, 2013
# Southeastern Wood Preserving Site
# Canton, Madison County Mississippi

| Chemical Name | CAS Number | Residential Soil PRG | Sample ID | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SWP204 | SWP205 | SWP206 | SWP207 | SWP207 (dup) | SWP208 | SWP209 | SWP210 | SWP210 (dup) |
| | | | Sample Date | | | | | | | | |
| | | | 10/26/2012 | 10/25/2012 | 10/25/2012 | 10/25/2012 | 10/25/2012 | 10/26/2012 | 10/24/2012 | 10/24/2012 | 10/24/2012 |
| | | | Depth Interval (ft bls) | | | | | | | | |
| | | | 0-0.5 | 0.5-1 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 |
| **Dioxins (ng/kg)** | | | | | | | | | | | |
| % Moisture | E1644012 | -- | 25 | 18 | 15 | 19 | 19 | 12 | 14 | 14 | 13 |
| 1,2,3,4,6,7,8-Heptachlorodibenzodioxin | 35822-46-9 | -- | 18000 | 820 | 820 | 120 | 110 J,O | 1400 | 360 | 240 | 230 |
| 1,2,3,4,6,7,8-Heptachlorodibenzofuran | 67562-39-4 | -- | 11000 | 520 | 580 | 30 | 21 | 30000 | 340 | 200 | 230 |
| 1,2,3,4,7,8,9-Heptachlorodibenzofuran | 55673-89-7 | -- | 300 | 17 | 17 J,O | 1.5 J,O | 1.1 U,O | 320 | 13 | 5.8 | 6.6 |
| 1,2,3,4,7,8-Hexachlorodibenzodioxin | 39227-28-6 | -- | 41 J,O | 3.1 U,O | 7.2 J,O | 0.94 U | 1.1 J,O | 44 | 2.4 J,O | 1.7 J,O | 1.9 J,O |
| 1,2,3,4,7,8-Hexachlorodibenzofuran | 70648-26-9 | -- | 120 J,O | 6.7 | 17 J,O | 1 U,O | 0.93 J,O | 760 | 17 | 5.3 | 6.8 |
| 1,2,3,6,7,8-Hexachlorodibenzodioxin | 57653-85-7 | -- | 410 | 21 | 24 J,O | 2.9 J,O | 2.9 J,O | 230 | 13 | 8.2 | 8.8 |
| 1,2,3,6,7,8-Hexachlorodibenzofuran | 57117-44-9 | -- | 36 J,O | 2.3 J,O | 10 J,O | 0.58 U,O | 0.58 J,O | 360 | 8.3 | 3.1 J,O | 3.5 J,O |
| 1,2,3,7,8,9-Hexachlorodibenzodioxin | 19408-74-3 | -- | 110 | 6.6 | 4.4 J,O | 2 J,O | 1.7 J,O | 60 | 6.6 | 4.4 J,O | 4.9 J |
| 1,2,3,7,8,9-Hexachlorodibenzofuran | 72918-21-9 | -- | 41 J,O | 1.2 J,O | 4.3 J,O | 0.56 U | 0.26 U | 87 | 2.5 J,O | 0.76 U | 0.9 J,O |
| 1,2,3,7,8-Pentachlorodibenzodioxin | 40321-76-4 | -- | 19 | 0.84 J,O | 3.5 U,O | 0.42 U,O | 0.3 U,O | 24 | 1.4 U,O | 1 J,O | 0.96 U |
| 1,2,3,7,8-Pentachlorodibenzofuran | 57117-41-6 | -- | 2.8 J,O | 0.32 U,O | 1.9 U | 0.2 U | 0.15 U | 20 | 1.9 U | 0.39 U | 0.55 J,O |
| 2,3,4,6,7,8-Hexachlorodibenzofuran | 60851-34-5 | -- | 120 | 5.7 | 13 J,O | 1 U,O | 0.91 J,O | 340 | 9.5 | 4.6 J,O | 5.2 |
| 2,3,4,7,8-Pentachlorodibenzofuran | 57117-31-4 | -- | 26 J,O | 0.98 U | 11 J,O | 0.45 U | 0.27 U | 190 | 6.2 | 2.7 J,O | 2.6 J,O |
| 2,3,7,8-Tetrachlorodibenzodioxin | 1746-01-6 | -- | 0.46 U | 0.14 U | 0.47 U | 0.17 U | 0.081 U | 4.7 | 0.34 U | 0.12 U | 0.16 U,O |
| 2,3,7,8-Tetrachlorodibenzofuran | 51207-31-9 | -- | 0.33 U,O | 0.3 U | 0.75 U | 0.24 J,O | 0.18 U,O | 6 J,O | 1.3 J,O | 0.57 U,O | 0.46 U |
| Heptachlorodibenzodioxin (Total) | 37871-00-4 | -- | 54000 J,O | 2200 J,O | 1900 J,O | 320 J,O | 270 J,O | 2600 J,O | 680 J,O | 530 J,O | 480 J,O |
| Heptachlorodibenzofuran (Total) | 38998-75-3 | -- | 44000 J,O | 2000 J,O | 1400 J,O | 89 J,O | 57 J,O | 50000 J,O | 860 J,O | 480 J,O | 520 J,O |
| Hexachlorodibenzodioxin (Total) | 34465-46-8 | -- | 3300 J,O | 160 J,O | 230 J,O | 38 J,O | 34 J,O | 1500 J,O | 96 J,O | 64 J,O | 65 J,O |
| Hexachlorodibenzofuran (Total) | 55684-94-1 | -- | 8000 J,O | 370 J,O | 450 J,O | 24 J,O | 20 J,O | 15000 J,O | 240 J,O | 140 J,O | 140 J,O |
| Octachlorodibenzodioxin | 3268-87-9 | -- | 180000 J,O | 10000 J,O | 8800 | 1400 | 1300 | 8000 | 3200 | 2600 | 2400 |
| Octachlorodibenzofuran | 39001-02-0 | -- | 52000 | 2200 | 1600 | 86 | 54 | 13000 | 820 | 400 | 420 |
| Pentachlorodibenzodioxin (Total) | 36088-22-9 | -- | 81 J,O | 6.3 J,O | 48 J,O | 5.8 J,O | 4 J,O | 230 J,O | 21 J,O | 9.9 J,O | 9.3 J,O |
| Pentachlorodibenzofuran (Total) | 30402-15-4 | -- | 81 J,O | 17 J,O | 34 J,O | 4.6 J,O | 4.7 J,O | 1400 J,O | 64 J,O | 26 J,O | 25 J,O |
| TEQ (Avian Toxic. Equiv. Value, WHO TEQ-98) | R4-0428 | -- | 250 J,O | 12 J,O | 30 J,O | 2.5 J,O | 1.8 J,O | 700 | 18 J,O | 9 J,O | 9.4 J,O |
| TEQ (Fish Toxic. Equiv. Value, WHO TEQ-98) | R4-0429 | -- | 250 J,O | 12 J,O | 26 J,O | 2.3 J,O | 1.9 J,O | 610 | 14 J,O | 7.5 J,O | 8.1 J,O |
| TEQ (Mammalian Toxic. Equiv. Value, WHO TEQ-2005) | R4-0430 | 50 | 480 J,O | 23 J,O | 33 J,O | 3.6 J,O | 3 J,O | 600 | 18 J,O | 10 J,O | 11 J,O |
| Tetrachlorodibenzodioxin (Total) | 41903-57-5 | -- | 17 J,O | 1.2 J,O | 6.3 J,O | 0.73 J,O | 0.28 J,O | 52 J,O | 11 J,O | 2.5 J,O | 3.1 J,O |
| Tetrachlorodibenzofuran (Total) | 30402-14-3 | -- | 27 J,O | 1.6 J,O | 16 J,O | 1 J,O | 1.4 J,O | 120 J,O | 28 J,O | 8.5 J,O | 8 J,O |

**Notes:**

Value exceeds residential soil PRG

-- - Not established

CAS - Chemical Abstract Service

dup - duplicate sample

ft bls - feet below land surface

ng/kg - nanograms per kilogram

NA - Not Applicable

PRG - preliminary remedial goal

TEQ - Toxic Equivalents

U - The analyte was not detected at or above the reporting limit

J - Estimated Value

O - Other qualifiers, provided from the laboratory to explain qualifier

# Table 4-5
# Dioxin in Surface Soil - 2008, 2012, 2013
# Southeastern Wood Preserving Site
# Canton, Madison County Mississippi

| Chemical Name | CAS Number | Residential Soil PRG | Sample ID | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SWP211 | SWP212 | SWP213 | SWP214 | SWP215 | SWP216 | SWP217 | SWP218 | SWP219 |
| | | | Sample Date | | | | | | | | |
| | | | 10/24/2012 | 10/26/2012 | 10/24/2012 | 10/29/2012 | 10/24/2012 | 10/29/2012 | 10/24/2012 | 10/24/2012 | 10/24/2012 |
| | | | Depth Interval (ft bls) | | | | | | | | |
| | | | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 |
| **Dioxins (ng/kg)** | | | | | | | | | | | |
| % Moisture | E1644012 | -- | 21 | 24 | 20 | 19 | 23 | 20 | 23 | 20 | 15 |
| 1,2,3,4,6,7,8-Heptachlorodibenzodioxin | 35822-46-9 | -- | 19000 | 7600 | 120 | 59 | 1600 | 150 | 140 | 150 | 320 |
| 1,2,3,4,6,7,8-Heptachlorodibenzofuran | 67562-39-4 | -- | 13000 | 4300 | 56 | 38 | 890 | 620 | 190 | 680 | 380 |
| 1,2,3,4,7,8,9-Heptachlorodibenzofuran | 55673-89-7 | -- | 440 | 130 | 1.8 U,O | 1.5 J,O | 27 | 7.7 | 3.5 J,O | 9.4 | 9.5 |
| 1,2,3,4,7,8-Hexachlorodibenzodioxin | 39227-28-6 | -- | 52 J,O | 24 | 1.2 U,O | 0.7 J,O | 8.5 | 1.8 J,O | 1.6 J,O | 2.2 J,O | 4.1 J,O |
| 1,2,3,4,7,8-Hexachlorodibenzofuran | 70648-26-9 | -- | 110 J,O | 47 | 1.5 J,O | 1.1 J,O | 14 | 22 | 7.3 | 25 | 21 |
| 1,2,3,6,7,8-Hexachlorodibenzodioxin | 57653-85-7 | -- | 430 | 190 | 4 J,O | 1.9 J,O | 42 | 18 | 5.9 | 21 | 12 |
| 1,2,3,6,7,8-Hexachlorodibenzofuran | 57117-44-9 | -- | 45 J,O | 22 | 1.4 J,O | 1 U,O | 6.3 | 12 | 4.3 J,O | 14 | 12 |
| 1,2,3,7,8,9-Hexachlorodibenzodioxin | 19408-74-3 | -- | 120 J,O | 56 | 2.7 J,O | 1.4 J,O | 19 | 8.6 | 3.8 J,O | 8 | 12 |
| 1,2,3,7,8,9-Hexachlorodibenzofuran | 72918-21-9 | -- | 13 J,O | 8.3 J,O | 1.1 U | 0.31 U | 2.4 J,O | 2.5 J,O | 0.91 U | 3.3 J,O | 3.1 J,O |
| 1,2,3,7,8-Pentachlorodibenzodioxin | 40321-76-4 | -- | 5 | 6.6 | 0.8 J,O | 0.3 U,O | 2.5 J,O | 1.8 J,O | 0.76 J,O | 1.9 J,O | 2.2 J,O |
| 1,2,3,7,8-Pentachlorodibenzofuran | 57117-41-6 | -- | 2.4 J,O | 1.6 U | 0.41 U | 0.13 U | 0.52 U | 1.3 U | 0.49 U | 1.6 U | 1.1 U |
| 2,3,4,6,7,8-Hexachlorodibenzofuran | 60851-34-5 | -- | 120 J,O | 49 | 1.6 J,O | 1.4 J,O | 12 | 16 | 5.6 | 19 | 15 |
| 2,3,4,7,8-Pentachlorodibenzofuran | 57117-31-4 | -- | 13 J,O | 7.9 | 0.41 U | 0.34 U | 3.9 J,O | 14 | 5.6 | 18 | 16 |
| 2,3,7,8-Tetrachlorodibenzodioxin | 1746-01-6 | -- | 0.29 U | 0.29 U | 0.16 U | 0.1 U | 0.25 U | 0.32 U | 0.11 U | 0.36 U,O | 0.39 U,O |
| 2,3,7,8-Tetrachlorodibenzofuran | 51207-31-9 | -- | 0.47 J,O | 0.67 U | 0.21 U | 0.16 U | 0.5 J,O | 1.1 J,O | 0.52 J,O | 1.2 J,O | 0.58 J,O |
| Heptachlorodibenzodioxin (Total) | 37871-00-4 | -- | 57000 J,O | 20000 J,O | 260 J,O | 130 J,O | 3800 J,O | 290 J,O | 250 J,O | 270 J,O | 710 J,O |
| Heptachlorodibenzofuran (Total) | 38998-75-3 | -- | 54000 J,O | 17000 J,O | 130 J,O | 92 J,O | 3100 J,O | 1000 J,O | 330 J,O | 1100 J,O | 740 J,O |
| Hexachlorodibenzodioxin (Total) | 34465-46-8 | -- | 3400 J,O | 1200 J,O | 41 J,O | 18 J,O | 290 J,O | 140 J,O | 51 J,O | 160 J,O | 140 J,O |
| Hexachlorodibenzofuran (Total) | 55684-94-1 | -- | 9400 J,O | 3200 J,O | 45 J,O | 32 J,O | 600 J,O | 470 J,O | 190 J,O | 560 J,O | 450 J,O |
| Octachlorodibenzodioxin | 3268-87-9 | -- | 190000 | 71000 J,O | 1700 | 590 | 18000 J,O | 1000 | 1400 | 1000 | 4000 J,O |
| Octachlorodibenzofuran | 39001-02-0 | -- | 64000 | 21000 | 100 | 84 | 3400 | 250 | 140 | 270 | 320 |
| Pentachlorodibenzodioxin (Total) | 36088-22-9 | -- | 54 J,O | 60 J,O | 5.8 J,O | 1.7 J,O | 30 J,O | 24 J,O | 8 J,O | 27 J,O | 31 J,O |
| Pentachlorodibenzofuran (Total) | 30402-15-4 | -- | 50 J,O | 140 J,O | 6.7 J,O | 6.4 J,O | 44 J,O | 130 J,O | 54 J,O | 170 J,O | 160 J,O |
| TEQ (Avian Toxic. Equiv. Value, WHO TEQ-98) | R4-0428 | -- | 250 J,O | 98 J,O | 3.4 J,O | 2 J,O | 26 J,O | 31 J,O | 12 J,O | 36 J,O | 31 J,O |
| TEQ (Fish Toxic. Equiv. Value, WHO TEQ-98) | R4-0429 | -- | 250 J,O | 100 J,O | 3.3 J,O | 1.9 J,O | 26 J,O | 22 J,O | 8.7 J,O | 26 J,O | 23 J,O |
| TEQ (Mammalian Toxic. Equiv. Value, WHO TEQ-2005) | R4-0430 | 50 | 500 J,O | 200 J,O | 4.8 J,O | 2.5 J,O | 46 J,O | 23 J,O | 9.4 J,O | 26 J,O | 24 J,O |
| Tetrachlorodibenzodioxin (Total) | 41903-57-5 | -- | 10 J,O | 9 J,O | 0.71 J,O | 3.1 J,O | 7.8 J,O | 6.4 J,O | 1.8 J,O | 8.4 J,O | 5.7 J,O |
| Tetrachlorodibenzofuran (Total) | 30402-14-3 | -- | 16 J,O | 26 J,O | 1.7 J,O | 0.43 J,O | 9.5 J,O | 34 J,O | 11 J,O | 46 J,O | 24 J,O |

**Notes:**

Value exceeds residential soil PRG

-- - Not established

CAS - Chemical Abstract Service

dup - duplicate sample

ft bls - feet below land surface

ng/kg - nanograms per kilogram

NA - Not Applicable

PRG - preliminary remedial goal

TEQ - Toxic Equivalents

U - The analyte was not detected at or above the reporting limit

J - Estimated Value

O - Other qualifiers, provided from the laboratory to explain qualifier

# Table 4-5
# Dioxin in Surface Soil - 2008, 2012, 2013
# Southeastern Wood Preserving Site
# Canton, Madison County Mississippi

| Chemical Name | CAS Number | Residential Soil PRG | Sample ID | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SWP220 | SWP221 | SWP222 | SWP223 | SWP224 | SWP225 | SWP226 | SWP227 | SWP227 (dup) |
| | | | Sample Date | | | | | | | | |
| | | | 10/24/2012 | 10/26/2012 | 10/27/2012 | 10/25/2012 | 10/25/2012 | 10/25/2012 | 1/23/2013 | 1/23/2013 | 1/23/2013 |
| | | | Depth Interval (ft bls) | | | | | | | | |
| | | | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 |
| **Dioxins (ng/kg)** | | | | | | | | | | | |
| % Moisture | E1644012 | -- | 17 | 16 | 19 | 16 | 19 | 12 | 23 | 16 | 16 |
| 1,2,3,4,6,7,8-Heptachlorodibenzodioxin | 35822-46-9 | -- | 260 | 640 | 1500 | 32000 | 280 | 370 | 11000 J,O | 5100 J,O | 5600 J,O |
| 1,2,3,4,6,7,8-Heptachlorodibenzofuran | 67562-39-4 | -- | 530 | 320 | 570 | 5000 | 200 | 360 | 9200 J,O | 3900 J,O | 4300 J,O |
| 1,2,3,4,7,8,9-Heptachlorodibenzofuran | 55673-89-7 | -- | 8.1 | 12 | 23 | 380 | 6.7 | 12 | 270 J,O | 120 J,O | 130 J,O |
| 1,2,3,4,7,8-Hexachlorodibenzodioxin | 39227-28-6 | -- | 2.2 J,O | 6.7 | 9.7 | 320 | 2.4 J,O | 2 J,O | 47 | 17 | 22 |
| 1,2,3,4,7,8-Hexachlorodibenzofuran | 70648-26-9 | -- | 21 | 11 | 13 | 130 | 7.1 | 11 | 120 | 43 | 59 |
| 1,2,3,6,7,8-Hexachlorodibenzodioxin | 57653-85-7 | -- | 14 | 22 | 44 | 750 | 8.6 | 13 | 350 | 160 | 170 |
| 1,2,3,6,7,8-Hexachlorodibenzofuran | 57117-44-9 | -- | 10 | 5.6 | 6.9 | 180 | 4.1 J,O | 4.4 J,O | 43 | 18 | 25 |
| 1,2,3,7,8,9-Hexachlorodibenzodioxin | 19408-74-3 | -- | 6.6 | 11 | 22 | 650 | 5.9 | 4.3 J,O | 86 | 36 | 43 |
| 1,2,3,7,8,9-Hexachlorodibenzofuran | 72918-21-9 | -- | 3.4 J,O | 1.5 J,O | 2.1 J,O | 22 J,O | 1 J,O | 1.6 J,O | 22 | 6.4 J,O | 10 |
| 1,2,3,7,8-Pentachlorodibenzodioxin | 40321-76-4 | -- | 1.8 U,O | 2.7 J,O | 4.1 J,O | 79 | 0.92 J,O | 0.72 J,O | 17 | 5 U,O | 8.4 U,O |
| 1,2,3,7,8-Pentachlorodibenzofuran | 57117-41-6 | -- | 1 U | 0.4 J,O | 0.53 U | 13 | 0.61 U | 0.49 U | 2.7 U,O | 2.6 U | 2.2 U |
| 2,3,4,6,7,8-Hexachlorodibenzofuran | 60851-34-5 | -- | 16 | 7.5 | 12 | 380 | 6.2 | 5.2 | 110 J,O | 45 J,O | 58 J,O |
| 2,3,4,7,8-Pentachlorodibenzofuran | 57117-31-4 | -- | 25 | 5 | 4.1 J,O | 55 | 3.3 J,O | 4.1 J,O | 7.6 U,O | 5.1 U,O | 8.2 U,O |
| 2,3,7,8-Tetrachlorodibenzodioxin | 1746-01-6 | -- | 0.28 U,O | 0.43 J,O | 0.18 J,O | 6 | 0.29 U | 0.13 U | 1.2 U | 1.3 U | 1.1 U |
| 2,3,7,8-Tetrachlorodibenzofuran | 51207-31-9 | -- | 0.74 U,O | 0.17 U | 0.22 U | 2.7 J,O | 0.24 U | 0.29 U | 2 U | 1.4 U | 1.9 U |
| Heptachlorodibenzodioxin (Total) | 37871-00-4 | -- | 550 J,O | 1400 J,O | 3600 J,O | 52000 J,O | 770 J,O | 1100 J,O | 32000 J,O | 15000 J,O | 16000 J,O |
| Heptachlorodibenzofuran (Total) | 38998-75-3 | -- | 930 J,O | 890 J,O | 1900 J,O | 15000 J,O | 510 J,O | 1000 J,O | 35000 J,O | 15000 J,O | 16000 J,O |
| Hexachlorodibenzodioxin (Total) | 34465-46-8 | -- | 98 J,O | 160 J,O | 320 J,O | 4600 J,O | 91 J,O | 100 J,O | 2500 J,O | 1100 J,O | 1200 J,O |
| Hexachlorodibenzofuran (Total) | 55684-94-1 | -- | 610 J,O | 260 J,O | 480 J,O | 8300 J,O | 160 J,O | 240 J,O | 5200 J,O | 2300 J,O | 2600 J,O |
| Octachlorodibenzodioxin | 3268-87-9 | -- | 4000 J,O | 10000 J,O | 15000 J,O | 340000 | 7700 J,O | 5500 J,O | 110000 J,O | 58000 J,O | 69000 J,O |
| Octachlorodibenzofuran | 39001-02-0 | -- | 290 | 750 | 2100 | 14000 | 380 | 860 | 34000 J,O | 14000 J,O | 16000 J,O |
| Pentachlorodibenzodioxin (Total) | 36088-22-9 | -- | 15 J,O | 20 J,O | 22 J,O | 670 J,O | 13 J,O | 7.9 J,O | 140 J,O | 64 J,O | 97 J,O |
| Pentachlorodibenzofuran (Total) | 30402-15-4 | -- | 220 J,O | 42 J,O | 43 J,O | 1600 J,O | 30 J,O | 28 J,O | 340 J,O | 180 J,O | 230 J,O |
| TEQ (Avian Toxic. Equiv. Value, WHO TEQ-98) | R4-0428 | -- | 39 J,O | 18 J,O | 24 J,O | 430 | 11 J,O | 13 J,O | 190 J,O | 83 J,O | 100 J,O |
| TEQ (Fish Toxic. Equiv. Value, WHO TEQ-98) | R4-0429 | -- | 27 J,O | 17 J,O | 24 J,O | 480 | 9.2 J,O | 11 J,O | 200 J,O | 83 J,O | 100 J,O |
| TEQ (Mammalian Toxic. Equiv. Value, WHO TEQ-2005) | R4-0430 | 50 | 26 J,O | 24 J,O | 43 J,O | 820 | 13 J,O | 16 J,O | 350 J,O | 150 J,O | 180 J,O |
| Tetrachlorodibenzodioxin (Total) | 41903-57-5 | -- | 6.3 J,O | 3.7 J,O | 1.8 J,O | 52 J,O | 2.9 J,O | 1.3 J,O | 6.3 J,O | 2.8 J,O | 1.3 J,O |
| Tetrachlorodibenzofuran (Total) | 30402-14-3 | -- | 33 J,O | 4.9 J,O | 5.6 J,O | 210 J,O | 5.4 J,O | 2.4 J,O | 18 J,O | 13 J,O | 12 J,O |

**Notes:**

Value exceeds residential soil PRG

-- - Not established

CAS - Chemical Abstract Service

dup - duplicate sample

ft bls - feet below land surface

ng/kg - nanograms per kilogram

NA - Not Applicable

PRG - preliminary remedial goal

TEQ - Toxic Equivalents

U - The analyte was not detected at or above the reporting limit

J - Estimated Value

O - Other qualifiers, provided from the laboratory to explain qualifier

# Table 4-5
# Dioxin in Surface Soil - 2008, 2012, 2013
# Southeastern Wood Preserving Site
# Canton, Madison County Mississippi

| Chemical Name | CAS Number | Residential Soil PRG | Sample ID | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SWP228 | SWP229 | SWP230 | SWP231 | SWP232 | SWP233 | SWP234 | SWP235 | SWP236 |
| | | | Sample Date | | | | | | | | |
| | | | 1/23/2013 | 1/23/2013 | 1/23/2013 | 1/23/2013 | 1/23/2013 | 1/23/2013 | 1/24/2013 | 1/24/2013 | 1/24/2013 |
| | | | Depth Interval (ft bls) | | | | | | | | |
| | | | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 |
| **Dioxins (ng/kg)** | | | | | | | | | | | |
| % Moisture | E1644012 | -- | 26 | 25 | 22 | 23 | 24 | 26 | 23 | 27 | 17 |
| 1,2,3,4,6,7,8-Heptachlorodibenzodioxin | 35822-46-9 | -- | 5700 J,O | 7700 J,O | 15000 J,O | 370 J,O | 440 J,O | 15000 J,O | 750 J,O | 31000 J,O | 850 J,O |
| 1,2,3,4,6,7,8-Heptachlorodibenzofuran | 67562-39-4 | -- | 5400 J,O | 6600 J,O | 14000 J,O | 490 J,O | 1100 J,O | 13000 J,O | 960 J,O | 30000 J,O | 220 U,O |
| 1,2,3,4,7,8,9-Heptachlorodibenzofuran | 55673-89-7 | -- | 170 J,O | 210 J,O | 480 J,O | 17 U,O | 18 J,O | 360 J,O | 26 U,O | 1000 J,O | 17 J,O |
| 1,2,3,4,7,8-Hexachlorodibenzodioxin | 39227-28-6 | -- | 26 | 35 U,O | 76 | 3.9 U,O | 4.2 U,O | 50 | 3 U | 120 | 13 U,O |
| 1,2,3,4,7,8-Hexachlorodibenzofuran | 70648-26-9 | -- | 66 | 62 | 160 | 14 U,O | 34 | 120 | 28 U,O | 300 | 6.2 J,O |
| 1,2,3,6,7,8-Hexachlorodibenzodioxin | 57653-85-7 | -- | 210 | 260 | 540 | 19 | 28 | 500 | 34 U,O | 1200 | 38 |
| 1,2,3,6,7,8-Hexachlorodibenzofuran | 57117-44-9 | -- | 28 | 30 | 66 | 9.5 J,O | 18 U,O | 45 | 19 | 130 | 8 U,O |
| 1,2,3,7,8,9-Hexachlorodibenzodioxin | 19408-74-3 | -- | 55 | 66 U,O | 130 | 9 U,O | 8.9 J,O | 110 | 11 | 270 | 34 |
| 1,2,3,7,8,9-Hexachlorodibenzofuran | 72918-21-9 | -- | 11 | 16 U,O | 27 U,O | 1.6 U | 3.5 U,O | 23 | 4.9 U,O | 51 | 1.7 J,O |
| 1,2,3,7,8-Pentachlorodibenzodioxin | 40321-76-4 | -- | 9.4 U,O | 12 | 20 | 1.5 J,O | 2 U | 9.4 U,O | 1.7 U | 35 | 4.5 U,O |
| 1,2,3,7,8-Pentachlorodibenzofuran | 57117-41-6 | -- | 1.7 U | 2.2 U | 7.5 J,O | 2.8 U | 2 U | 1.8 U | 1.9 U | 4.2 J,O | 1.6 U |
| 2,3,4,6,7,8-Hexachlorodibenzofuran | 60851-34-5 | -- | 64 J,O | 61 J,O | 160 J,O | 13 U,O | 24 J,O | 110 J,O | 19 U,O | 280 J,O | 7.1 U,O |
| 2,3,4,7,8-Pentachlorodibenzofuran | 57117-31-4 | -- | 2.9 U,O | 3.8 U,O | 3.2 U,O | 4.3 J,O | 16 | 5.8 U,O | 9.3 J,O | 6 U,O | 1.7 U |
| 2,3,7,8-Tetrachlorodibenzodioxin | 1746-01-6 | -- | 2.2 U | 0.94 U | 1.1 U | 0.95 U | 1.4 U | 0.88 U | 0.95 U | 1.5 U | 0.81 U |
| 2,3,7,8-Tetrachlorodibenzofuran | 51207-31-9 | -- | 6.2 U,J,O | 1.4 U | 2.4 U | 1.4 U,O | 1.8 U | 1.4 U | 1.8 U | 2.6 U | 1 U |
| Heptachlorodibenzodioxin (Total) | 37871-00-4 | -- | 15000 J,O | 23000 J,O | 40000 J,O | 860 J,O | 980 J,O | 42000 J,O | 1900 J,O | 78000 J,O | 1400 J,O |
| Heptachlorodibenzofuran (Total) | 38998-75-3 | -- | 21000 J,O | 26000 J,O | 58000 J,O | 1200 J,O | 2200 J,O | 52000 J,O | 2600 J,O | 120000 J,O | 520 J,O |
| Hexachlorodibenzodioxin (Total) | 34465-46-8 | -- | 1300 J,O | 1900 J,O | 3300 J,O | 120 J,O | 180 J,O | 3100 J,O | 210 J,O | 6200 J,O | 260 J,O |
| Hexachlorodibenzofuran (Total) | 55684-94-1 | -- | 3300 J,O | 4000 J,O | 8100 J,O | 330 J,O | 880 J,O | 7300 J,O | 660 J,O | 16000 J,O | 210 J,O |
| Octachlorodibenzodioxin | 3268-87-9 | -- | 59000 J,O | 83000 J,O | 150000 J,O | 4100 J,O | 4500 J,O | 180000 J,O | 8600 J,O | 310000 J,O | 7500 J,O |
| Octachlorodibenzofuran | 39001-02-0 | -- | 22000 J,O | 27000 J,O | 54000 J,O | 1000 U,O | 1300 U,O | 60000 J,O | 2400 J,O | 98000 J,O | 410 U,J,O |
| Pentachlorodibenzodioxin (Total) | 36088-22-9 | -- | 51 J,O | 77 J,O | 140 J,O | 8.7 J,O | 17 J,O | 92 J,O | 9.1 J,O | 190 J,O | 21 J,O |
| Pentachlorodibenzofuran (Total) | 30402-15-4 | -- | 170 J,O | 230 J,O | 470 J,O | 140 J,O | 320 J,O | 420 J,O | 160 J,O | 740 J,O | 55 J,O |
| TEQ (Avian Toxic. Equiv. Value, WHO TEQ-98) | R4-0428 | -- | 120 J,O | 130 J,O | 270 J,O | 19 J,O | 42 J,O | 240 J,O | 34 J,O | 540 J,O | 19 J,O |
| TEQ (Fish Toxic. Equiv. Value, WHO TEQ-98) | R4-0429 | -- | 120 J,O | 140 J,O | 290 J,O | 17 J,O | 34 J,O | 250 J,O | 28 J,O | 570 J,O | 20 J,O |
| TEQ (Mammalian Toxic. Equiv. Value, WHO TEQ-2005) | R4-0430 | 50 | 200 J,O | 240 J,O | 500 J,O | 21 J,O | 37 J,O | 460 J,O | 38 J,O | 1000 J,O | 30 J,O |
| Tetrachlorodibenzodioxin (Total) | 41903-57-5 | -- | 2.2 U,J,O | 1.3 J,O | 4.2 J,O | 3.9 J,O | 17 J,O | 6.3 J,O | 1.2 J,O | 13 J,O | 0.81 U,J,O |
| Tetrachlorodibenzofuran (Total) | 30402-14-3 | -- | 6.5 J,O | 13 J,O | 26 J,O | 38 J,O | 78 J,O | 18 J,O | 16 J,O | 36 J,O | 5.1 J,O |

**Notes:**

Value exceeds residential soil PRG

-- - Not established

CAS - Chemical Abstract Service

dup - duplicate sample

ft bls - feet below land surface

ng/kg - nanograms per kilogram

NA - Not Applicable

PRG - preliminary remedial goal

TEQ - Toxic Equivalents

U - The analyte was not detected at or above the reporting limit

J - Estimated Value

O - Other qualifiers, provided from the laboratory to explain qualifier

# Table 4-6
## Detected Semi-Volatile Organic Compounds in Subsurface Soil - 2008, 2012, 2013
## Southeastern Wood Preserving Site
## Canton, Madison County, Mississippi

| Chemical Name | CAS Number | Residential Soil PRG | Industrial Soil PRG | Sample ID | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | SWPB01 (Background) | SWPB01 (Background) | SWPB01 (Background) | SWPB01 (Background) | SWPB01 (Background) | SWP02 | SWP03 | SWP04 | SWP04 (dup) |
| | | | | Sample Date | | | | | | | | |
| | | | | 9/22/2008 | 9/22/2008 | 9/22/2008 | 9/22/2008 | 9/22/2008 | 9/25/2008 | 9/25/2008 | 9/25/2008 | 9/25/2008 |
| | | | | Onsite | Onsite | Onsite | Onsite | Onsite | Onsite | Onsite | Onsite | Onsite |
| | | | | Depth Interval (ft bls) | | | | | | | | |
| | | | | 2-4 | 4-8 | 8-12 | 12-16 | 16-20 | 4-8 | 4-8 | 8-12 | 8-12 |
| **Semi-Volatile Organic Compound (SVOC) (µg/kg)** | | | | | | | | | | | | |
| (3-and/or 4-)Methylphenol | 1319-77-3 | -- | -- | 210 U | 210 U | 200 U | 200 U | 2600 U,J,O | 2800 U | 3100 U | 3100 U | 3100 U |
| 1,1-Biphenyl | 92-52-4 | -- | -- | 210 U | 210 U | 200 U | 200 U | 2600 U | 6700 U,J,O | 3100 U | 19000 U | 18000 U |
| 2,3,4,6-Tetrachlorophenol | 58-90-2 | -- | -- | 210 U | 210 U | 200 U | 200 U | 2600 U | 2800 U | 3100 U | 3100 U | 3100 U |
| 2,4-Dimethylphenol | 105-67-9 | -- | -- | 210 U | 210 U | 200 U | 200 U | 2600 U | 2800 U | 3100 U | 3100 U | 3100 U |
| 2-Methylnaphthalene | 91-57-6 | -- | -- | 4.2 U | 4 U | 3.9 U | 4 U | 81 J,O | 20000 J,O | 300 | 42000 U | 40000 U |
| 2-Methylphenol | 95-48-7 | -- | -- | 210 U | 210 U | 200 U | 200 U | 2600 U,J,O | 2800 U,J,O | 3100 U,J,O | 3100 U,J,O | 3100 U,J,O |
| Acenaphthene | 83-32-9 | 3400000 | 33000000 | 4.2 U | 4 U | 3.9 U | 4 U | 96 J,O | 31000 U,J,O | 270 U | 22000 U | 27000 U |
| Acenaphthylene | 208-96-8 | -- | -- | 4.2 U | 4 U | 3.9 U | 4 U | 110 U | 820 J,O | 120 U | 1100 U,J,O | 1900 U,J,O |
| Acetophenone | 98-86-2 | -- | -- | 210 U | 210 U | 200 U | 200 U | 2600 U | 2800 U | 3100 U | 3100 U | 3100 U |
| Anthracene | 120-12-7 | 17000000 | 170000000 | 4.2 U | 4 U | 3.9 U | 4 U | 100 J,O | 12000 J,O | 210 | 24000 | 26000 J,O |
| Benzo(a)anthracene | 56-55-3 | 150 | 2100 | 4.2 U | 4 U | 3.9 U | 4 U | 65 J,O | 10000 U,J,O | 420 U | 16000 U | 13000 U |
| Benzo(a)pyrene | 50-32-8 | 15 | 210 | 4.2 U | 4 U | 3.9 U | 4 U | 110 U | 2000 U,J,O | 290 J,O | 4500 U,J,O | 4200 U,J,O |
| Benzo(b)fluoranthene | 205-99-2 | 150 | 2100 | 2.6 J,O | 4 U | 3.9 U | 4 U | 53 J,O | 1800 J,O | 310 | 4800 U | 4400 U |
| Benzo(g,h,i)perylene | 191-24-2 | -- | -- | 4.2 U | 4 U | 3.9 U | 4 U | 70 J,O | 470 J,O | 170 | 890 U | 960 U |
| Benzo(k)fluoranthene | 207-08-9 | 1500 | 21000 | 4.2 U | 4 U | 3.9 U | 4 U | 56 J,O | 2000 J,O | 270 | 4900 U | 4500 U |
| Bis(2-ethylhexyl) phthalate | 117-81-7 | -- | -- | 210 U | 210 U | 200 U | 200 U | 2600 U | 2800 U | 3100 U | 3100 U | 3400 |
| Carbazole | 86-74-8 | -- | -- | 210 U | 210 U | 200 U | 200 U | 2600 U | 7700 | 660 J,O | 13000 | 6100 |
| Chrysene | 218-01-9 | 15000 | 210000 | 4.2 U | 4 U | 3.9 U | 4 U | 130 | 8500 | 480 | 13000 | 12000 |
| Dibenzo(a,h)anthracene | 53-70-3 | 15 | 210 | 4.2 U,J,O | 4 U,J,O | 3.9 U,J,O | 4 U,J,O | 110 U | 190 | 120 U | 310 | 360 |
| Dibenzofuran | 132-64-9 | -- | -- | 210 U | 210 U | 200 U | 200 U | 2600 U | 25000 | 3100 U | 65000 | 60000 |
| Diethyl phthalate | 84-66-2 | -- | -- | 210 U | 210 U | 200 U | 200 U | 2600 U | 2800 U | 3100 U | 3100 U | 3100 U |
| Fluoranthene | 206-44-0 | 2300000 | 22000000 | 4.2 U | 4 U | 3.9 U | 3.2 J,O | 400 | 49000 | 5300 | 99000 | 100000 |
| Fluorene | 86-73-7 | 2300000 | 22000000 | 4.2 U | 4 U | 3.9 U | 4 U | 120 | 30000 | 300 | 25000 | 33000 |
| Indeno (1,2,3-cd) pyrene | 193-39-5 | 150 | 2100 | 4.2 U,J,O | 4 U,J,O | 3.9 U,J,O | 4 U,J,O | 77 J,O | 740 | 250 | 1900 | 1700 |
| Naphthalene | 91-20-3 | 3600 | 18000 | 4 J,O | 3.1 J,O | 2.4 J,O | 2.8 J,O | 110 J,O | 60000 | 1100 | 140000 | 130000 |
| Naphthalene, 1-methyl- | 90-12-0 | -- | -- | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Pentachlorophenol | 87-86-5 | 890 | 2700 | 2.9 J,O | 8.1 U,J,O | 7.9 U,J,O | 6.2 J,O | 210 U | 650 | 250 U | 470 | 1100 |
| Phenanthrene | 85-01-8 | -- | -- | 4.2 U | 4 U | 3.9 U | 4 U | 640 | 88000 | 580 | 230000 | 220000 |
| Phenol | 108-95-2 | -- | -- | 210 U | 210 U | 200 U | 200 U | 2600 U,J,O | 2800 U | 3100 U | 3100 U | 3100 U |
| Pyrene | 129-00-0 | 1700000 | 17000000 | 4.2 U | 4 U | 3.9 U | 3.3 J,O | 330 | 32000 | 4600 | 80000 | 69000 |
| Benzo(a)pyrene TEQ | NA | 15 | 210 | ND | ND | ND | ND | 20 | 473 | 349 | 513 | 542 |

**Notes:**

Value exceeds residential soil PRG

Value exceeds industrial soil PRG

-- - Not established

CAS - Chemical Abstract Service

dup - duplicate sample

ft bls - feet below land surface

µg/kg - micrograms per kilogram

NA - Not Applicable

ND - Not Detected

PRG - preliminary remedial goal

TEQ - Toxic Equivalents

U - The analyte was not detected at or above the reporting limit

J - Estimated Value

O - Other qualifiers, provided from the laboratory to explain qualifier

# Table 4-6
## Detected Semi-Volatile Organic Compounds in Subsurface Soil - 2008, 2012, 2013
## Southeastern Wood Preserving Site
## Canton, Madison County, Mississippi

| Chemical Name | CAS Number | Residential Soil PRG | Industrial Soil PRG | Sample ID | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | SWP05 | SWP06 | SWP07 | SWP07 | SWP08 | SWP09 | SWP10 | SWP11 | SWP12 |
| | | | | Sample Date | | | | | | | | |
| | | | | 9/24/2008 | 9/24/2008 | 9/23/2008 | 9/23/2008 | 9/24/2008 | 9/24/2008 | 9/25/2008 | 9/24/2008 | 9/23/2008 |
| | | | | Onsite | Onsite | Onsite | Onsite | Onsite | Onsite | Onsite | Onsite | Onsite |
| | | | | Depth Interval (ft bls) | | | | | | | | |
| | | | | 12-16 | 4-8 | 1-4 | 1-4 | 8-12 | 8-12 | 4-8 | 16-20 | 8-12 |
| **Semi-Volatile Organic Compound (SVOC) (µg/kg)** | | | | | | | | | | | | |
| (3-and/or 4-)Methylphenol | 1319-77-3 | -- | -- | 2700 U,J,O | 2500 U,J,O | 2800 U | 2400 U | 2500 U | 65000 | 2700 U,J,O | 69000 | 2700 U |
| 1,1-Biphenyl | 92-52-4 | -- | -- | 2700 U | 2500 U | 2800 U | 2400 U | 2500 U | 460000 J,O | 13000 | 150000 | 2700 U |
| 2,3,4,6-Tetrachlorophenol | 58-90-2 | -- | -- | 2700 U,J,O | 2500 U,J,O | 2800 U | 2400 U | 2500 U | 29000 | 2700 U | 2600 U | 2700 U |
| 2,4-Dimethylphenol | 105-67-9 | -- | -- | 2700 U | 2500 U | 2800 U | 2400 U | 2500 U | 92000 | 2700 U | 33000 | 2700 U |
| 2-Methylnaphthalene | 91-57-6 | -- | -- | 110 U | 100 U | 2800 U | 63 J,O | 710 | 1700000 | 4100 | 420000 | 110 U |
| 2-Methylphenol | 95-48-7 | -- | -- | 2700 U,J,O | 2500 U,J,O | 2800 U,J,O | 2400 U,J,O | 2500 U,J,O | 31000 J,O | 2700 U,J,O | 25000 J,O | 2700 U,J,O |
| Acenaphthene | 83-32-9 | 3400000 | 33000000 | 110 U | 100 U | 16000 | 230 | 340 | 2300000 | 110000 | 720000 | 110 U |
| Acenaphthylene | 208-96-8 | -- | -- | 110 U | 100 U | 2800 U | 670 | 100 U | 610000 U | 1000 J,O | 21000 | 110 U |
| Acetophenone | 98-86-2 | -- | -- | 2700 U | 2500 U | 2800 U | 2400 U | 2500 U | 9400 | 2700 U | 5300 | 2700 U |
| Anthracene | 120-12-7 | 17000000 | 170000000 | 200 J,O | 81 J,O | 8900 | 46000 | 380 | 970000 | 100000 | 190000 | 110 U |
| Benzo(a)anthracene | 56-55-3 | 150 | 2100 | 520 U | 320 | 14000 | 3500 | 290 | 400000 J,O | 66000 | 140000 J,O | 110 U |
| Benzo(a)pyrene | 50-32-8 | 15 | 210 | 460 J,O | 220 | 10000 | 3500 | 110 | 130000 J,O | 11000 | 42000 | 110 U |
| Benzo(b)fluoranthene | 205-99-2 | 150 | 2100 | 570 U | 270 | 16000 | 7700 | 170 | 150000 J,O | 55000 | 69000 | 110 U |
| Benzo(g,h,i)perylene | 191-24-2 | -- | -- | 120 U | 62 J,O | 7400 | 3800 | 99 J,O | 54000 J,O | 6700 | 10000 | 110 U |
| Benzo(k)fluoranthene | 207-08-9 | 1500 | 21000 | 560 U | 240 | 14000 | 5300 | 150 | 130000 J,O | 33000 | 34000 | 110 U |
| Bis(2-ethylhexyl) phthalate | 117-81-7 | -- | -- | 2700 U | 2500 U | 2800 U | 2400 U | 4100 | 3000 U | 2700 U | 2700 U,O | 2700 U |
| Carbazole | 86-74-8 | -- | -- | 2700 U | 2500 U | 2800 U | 15000 | 2500 U | 320000 J,O | 46000 | 120000 | 2700 U |
| Chrysene | 218-01-9 | 15000 | 210000 | 670 | 350 | 19000 | 7100 | 270 | 380000 J,O | 100000 | 80000 J,O | 110 U |
| Dibenzo(a,h)anthracene | 53-70-3 | 15 | 210 | 110 U | 100 U | 3700 J,O | 670 | 100 U | 27000 J,O | 4800 | 4300 | 110 U |
| Dibenzofuran | 132-64-9 | -- | -- | 2700 U | 2500 U | 7000 | 1300 J,O | 780 J,O | 1600000 J,O | 79000 | 530000 | 2700 U |
| Diethyl phthalate | 84-66-2 | -- | -- | 2700 U | 2500 U | 2800 U | 2400 U | 2500 U | 3000 U | 2700 U | 2600 U | 2700 U |
| Fluoranthene | 206-44-0 | 2300000 | 22000000 | 930 | 140 | 37000 | 5200 | 1400 | 2700000 | 570000 | 620000 | 110 U |
| Fluorene | 86-73-7 | 2300000 | 22000000 | 78 J,O | 100 U | 11000 | 4500 | 500 | 1900000 J,O | 120000 | 510000 | 110 U |
| Indeno (1,2,3-cd) pyrene | 193-39-5 | 150 | 2100 | 190 | 88 J,O | 7600 | 3800 | 130 | 65000 J,O | 8600 | 13000 | 110 U |
| Naphthalene | 91-20-3 | 3600 | 18000 | 140 | 120 | 830 | 700 | 1600 | 6900000 | 870 | 1400000 | 110 U |
| Naphthalene, 1-methyl- | 90-12-0 | -- | -- | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Pentachlorophenol | 87-86-5 | 890 | 2700 | 220 U,J,O | 200 U,J,O | 600 J,O | 790 J,O | 130 J,O | 80000 J,O | 1700 | 1800 | 220 U |
| Phenanthrene | 85-01-8 | -- | -- | 320 | 100 J,O | 23000 | 7700 | 3300 | 5600000 | 700000 | 1500000 | 110 U |
| Phenol | 108-95-2 | -- | -- | 2700 U,J,O | 2500 U,J,O | 2800 U | 2400 U | 2500 U | 21000 | 2700 U,J,O | 100000 U,J,O | 2700 U |
| Pyrene | 129-00-0 | 1700000 | 17000000 | 1100 | 150 | 33000 | 5100 | 1100 | 1800000 | 320000 | 400000 | 110 U |
| Benzo(a)pyrene TEQ | NA | 15 | 210 | 480 | 291 | 17619 | 5730 | 171 | 220180 | 29190 | 68920 | ND |

**Notes:**

Value exceeds residential soil PRG

Value exceeds industrial soil PRG

-- - Not established

CAS - Chemical Abstract Service

dup - duplicate sample

ft bls - feet below land surface

µg/kg - micrograms per kilogram

NA - Not Applicable

ND - Not Detected

PRG - preliminary remedial goal

TEQ - Toxic Equivalents

U - The analyte was not detected at or above the reporting limit

J - Estimated Value

O - Other qualifiers, provided from the laboratory to explain qualifier

# Table 4-6
## Detected Semi-Volatile Organic Compounds in Subsurface Soil - 2008, 2012, 2013
## Southeastern Wood Preserving Site
## Canton, Madison County, Mississippi

| Chemical Name | CAS Number | Residential Soil PRG | Industrial Soil PRG | Sample ID | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | SWP13 | SWP14 | SWPR01 | SWPR02 | SWPR03 | SWPR04 | SWPR05 | SWPR06 | SWP001 |
| | | | | Sample Date | | | | | | | | |
| | | | | 9/22/2008 | 9/24/2008 | 9/24/2008 | 9/24/2008 | 9/25/2008 | 9/24/2008 | 9/24/2008 | 9/24/2008 | 1/8/2013 |
| | | | | Onsite | Onsite | Residential | Residential | Residential | Residential | Residential | Residential | Residential |
| | | | | Depth Interval (ft bls) | | | | | | | | |
| | | | | 4-8 | 2-4 | 1-2 | 1-2 | 1-2 | 1-2 | 1-2 | 1-2 | 18-19 |
| **Semi-Volatile Organic Compound (SVOC) (µg/kg)** | | | | | | | | | | | | |
| (3-and/or 4-)Methylphenol | 1319-77-3 | -- | -- | 3200 U | 3000 U,J,O | 190 U | 190 U | 210 U | 220 U | 210 U | 210 U | 17000 U |
| 1,1-Biphenyl | 92-52-4 | -- | -- | 3200 U | 3000 U | 190 U | 190 U | 210 U | 220 U | 210 U | 210 U | 74000 |
| 2,3,4,6-Tetrachlorophenol | 58-90-2 | -- | -- | 3200 U | 3000 U,J,O | 190 U | 190 U | 210 U | 220 U | 210 U | 210 U | 17000 U |
| 2,4-Dimethylphenol | 105-67-9 | -- | -- | 3200 U | 3000 U | 190 U | 190 U | 210 U | 220 U | 210 U | 210 U | 17000 U |
| 2-Methylnaphthalene | 91-57-6 | -- | -- | 130 U | 120 U | 3.7 U | 3.7 U | 4 U | 4.2 U | 4 U | 4.2 U | 330000 |
| 2-Methylphenol | 95-48-7 | -- | -- | 3200 U,J,O | 3000 U,J,O | 190 U | 190 U | 210 U | 220 U | 210 U | 210 U | 17000 U |
| Acenaphthene | 83-32-9 | 3400000 | 33000000 | 130 U | 120 U | 3.7 U | 3.7 U | 4 U | 4.2 U | 4 U | 4.2 U | 190000 |
| Acenaphthylene | 208-96-8 | -- | -- | 130 U | 120 U | 3.7 U | 2.1 J,O | 4 U | 4.2 U | 11 | 4.2 U | 2600 |
| Acetophenone | 98-86-2 | -- | -- | 3200 U | 3000 U | 190 U | 190 U | 210 U | 220 U | 210 U | 210 U | 17000 U |
| Anthracene | 120-12-7 | 17000000 | 170000000 | 130 U | 100 J,O | 3.7 U | 2.5 J,O | 7.3 | 11 | 23 | 4.2 U | 69000 |
| Benzo(a)anthracene | 56-55-3 | 150 | 2100 | 130 U | 270 | 3.7 U | 3.3 J,O | 5.5 | 12 | 20 | 4.2 U | 70000 |
| Benzo(a)pyrene | 50-32-8 | 15 | 210 | 130 U | 330 | 3.7 U | 7.4 | 8 | 18 | 25 | 9.4 | 19000 |
| Benzo(b)fluoranthene | 205-99-2 | 150 | 2100 | 130 U | 410 | 3.7 U | 9.6 | 10 | 37 | 32 | 4.2 U | 28000 |
| Benzo(g,h,i)perylene | 191-24-2 | -- | -- | 130 U | 98 J,O | 3.7 U | 6.1 | 4.8 | 12 | 15 | 4.2 U | 4500 |
| Benzo(k)fluoranthene | 207-08-9 | 1500 | 21000 | 130 U | 400 | 3.7 U | 7 J,O | 8.1 J,O | 25 J,O | 32 J,O | 4.2 U | 24000 |
| Bis(2-ethylhexyl) phthalate | 117-81-7 | -- | -- | 3200 U | 3000 U | 190 U | 190 U | 210 U | 220 U | 210 U | 210 U | 17000 U |
| Carbazole | 86-74-8 | -- | -- | 3200 U | 3000 U | 190 U | 190 U | 210 U | 220 U | 210 U | 210 U | 48000 |
| Chrysene | 218-01-9 | 15000 | 210000 | 130 U | 290 | 3.7 U | 5.1 | 7.1 | 25 | 37 | 4.2 U | 65000 |
| Dibenzo(a,h)anthracene | 53-70-3 | 15 | 210 | 130 U | 120 U | 3.7 U,J,O | 3.7 U,J,O | 4 U,J,O | 3.7 J,O | 5.5 J,O | 4.2 U | 1800 |
| Dibenzofuran | 132-64-9 | -- | -- | 3200 U | 3000 U | 190 U | 190 U | 210 U | 220 U | 210 U | 210 U | 250000 |
| Diethyl phthalate | 84-66-2 | -- | -- | 3200 U | 3000 U | 190 U | 190 U | 210 U | 220 U | 210 U | 210 U | 17000 U |
| Fluoranthene | 206-44-0 | 2300000 | 22000000 | 130 U | 220 | 3.7 U | 5.3 | 12 | 25 | 32 | 4.2 U | 360000 |
| Fluorene | 86-73-7 | 2300000 | 22000000 | 130 U | 120 U | 3.7 U | 3.7 U | 4 U | 4.2 U | 3.1 J,O | 4.2 U | 160000 |
| Indeno (1,2,3-cd) pyrene | 193-39-5 | 150 | 2100 | 130 U | 160 | 3.7 U,J,O | 8.4 J,O | 6.8 J,O | 19 J,O | 26 J,O | 4.2 U | 5400 |
| Naphthalene | 91-20-3 | 3600 | 18000 | 160 | 150 | 4.8 | 4.5 | 4.9 | 4.7 | 4.4 | 5.3 | 810000 |
| Naphthalene, 1-methyl- | 90-12-0 | -- | -- | NA | NA | NA | NA | NA | NA | NA | NA | 160000 |
| Pentachlorophenol | 87-86-5 | 890 | 2700 | 250 U | 240 U,J,O | 7.6 U,J,O | 2 J,O | 25 J,O | 5.4 J,O | 14 J,O | 8.5 U | 17000 U |
| Phenanthrene | 85-01-8 | -- | -- | 130 U | 150 | 3.7 U | 2.2 J,O | 8.4 | 4.2 U | 2.1 J,O | 4.2 U | 700000 |
| Phenol | 108-95-2 | -- | -- | 3200 U | 3000 U,J,O | 190 U | 190 U | 210 U | 220 U | 210 U | 210 U | 17000 U |
| Pyrene | 129-00-0 | 1700000 | 17000000 | 130 U | 240 | 1.9 J,O | 5.7 | 13 | 4.2 | 40 | 4.2 U | 250000 |
| Benzo(a)pyrene TEQ | NA | 15 | 210 | ND | 418 | ND | 10 | 10 | 29 | 39 | 9 | 31445 |

**Notes:**

Value exceeds residential soil PRG

Value exceeds industrial soil PRG

-- - Not established

CAS - Chemical Abstract Service

dup - duplicate sample

ft bls - feet below land surface

µg/kg - micrograms per kilogram

NA - Not Applicable

ND - Not Detected

PRG - preliminary remedial goal

TEQ - Toxic Equivalents

U - The analyte was not detected at or above the reporting limit

J - Estimated Value

O - Other qualifiers, provided from the laboratory to explain qualifier

# Table 4-6
## Detected Semi-Volatile Organic Compounds in Subsurface Soil - 2008, 2012, 2013
## Southeastern Wood Preserving Site
## Canton, Madison County, Mississippi

| Chemical Name | CAS Number | Residential Soil PRG | Industrial Soil PRG | Sample ID | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | SWP001 | SWP001 (dup) | SWP001 | SWP002 | SWP002 | SWP002 | SWP004 | SWP004 | SWP004 |
| | | | | Sample Date | | | | | | | | |
| | | | | 1/8/2013 | 1/8/2013 | 1/10/2013 | 1/12/2013 | 1/12/2013 | 1/15/2013 | 11/6/2012 | 11/6/2012 | 11/6/2012 |
| | | | | Onsite | Onsite | Onsite | Onsite | Onsite | Onsite | Onsite | Onsite | Onsite |
| | | | | Depth Interval (ft bls) | | | | | | | | |
| | | | | 68-69 | 68-69 | 295-296 | 6-12 | 66.5-67.5 | 298-300 | 14-15 | 60-60.5 | 70-70.5 |
| **Semi-Volatile Organic Compound (SVOC) (µg/kg)** | | | | | | | | | | | | |
| (3-and/or 4-)Methylphenol | 1319-77-3 | -- | -- | 420 U | 420 U | 410 U | 420 U | 470 U | 430 U | 200 U | 210 U | 210 U |
| 1,1-Biphenyl | 92-52-4 | -- | -- | 42 U | 42 U | 41 U | 50 | 47 U | 43 U | 200 U | 210 U | 210 U |
| 2,3,4,6-Tetrachlorophenol | 58-90-2 | -- | -- | 420 U | 420 U | 410 U | 420 U | 470 U | 430 U | 200 U | 210 U | 210 U |
| 2,4-Dimethylphenol | 105-67-9 | -- | -- | 420 U | 420 U | 410 U | 420 U | 470 U | 430 U | 200 U | 210 U | 210 U |
| 2-Methylnaphthalene | 91-57-6 | -- | -- | 42 U | 42 U | 41 U | 130 | 47 U | 43 U | 200 U | 210 U | 210 U |
| 2-Methylphenol | 95-48-7 | -- | -- | 420 U | 420 U | 410 U | 420 U | 470 U | 430 U | 200 U | 210 U | 210 U |
| Acenaphthene | 83-32-9 | 3400000 | 33000000 | 42 U | 42 U | 41 U | 200 | 47 U | 43 U | 200 U | 210 U | 210 U |
| Acenaphthylene | 208-96-8 | -- | -- | 42 U | 42 U | 41 U | 42 U | 47 U | 43 U | 200 U | 210 U | 210 U |
| Acetophenone | 98-86-2 | -- | -- | 420 U | 420 U | 410 U | 420 U | 470 U | 430 U | 200 U | 210 U | 210 U |
| Anthracene | 120-12-7 | 17000000 | 170000000 | 42 U | 42 U | 41 U | 190 | 47 U | 43 U | 200 U | 210 U | 210 U |
| Benzo(a)anthracene | 56-55-3 | 150 | 2100 | 42 U | 42 U | 41 U | 190 | 47 U | 43 U | 200 U | 210 U | 210 U |
| Benzo(a)pyrene | 50-32-8 | 15 | 210 | 42 U | 42 U | 41 U | 140 | 47 U | 43 U | 200 U | 210 U | 210 U |
| Benzo(b)fluoranthene | 205-99-2 | 150 | 2100 | 42 U | 42 U | 41 U | 200 | 47 U | 43 U | 200 U | 210 U | 210 U |
| Benzo(g,h,i)perylene | 191-24-2 | -- | -- | 42 U | 42 U | 41 U | 63 | 47 U | 43 U | 200 U | 210 U | 210 U |
| Benzo(k)fluoranthene | 207-08-9 | 1500 | 21000 | 42 U | 42 U | 41 U | 160 | 47 U | 43 U | 200 U | 210 U | 210 U |
| Bis(2-ethylhexyl) phthalate | 117-81-7 | -- | -- | 420 U | 420 U | 410 U | 420 U | 470 U | 430 U | 200 U | 210 U | 210 U |
| Carbazole | 86-74-8 | -- | -- | 42 U | 42 U | 41 U | 98 | 47 U | 43 U | 200 U | 210 U | 210 U |
| Chrysene | 218-01-9 | 15000 | 210000 | 42 U | 42 U | 41 U | 240 | 47 U | 43 U | 200 U | 210 U | 210 U |
| Dibenzo(a,h)anthracene | 53-70-3 | 15 | 210 | 42 U | 42 U | 41 U | 42 U | 47 U | 43 U | 200 U | 210 U | 210 U |
| Dibenzofuran | 132-64-9 | -- | -- | 42 U | 42 U | 41 U | 220 | 47 U | 43 U | 200 U | 210 U | 210 U |
| Diethyl phthalate | 84-66-2 | -- | -- | 420 U | 420 U | 410 U | 420 U | 470 U | 430 U | 200 U | 210 U | 210 U |
| Fluoranthene | 206-44-0 | 2300000 | 22000000 | 110 | 42 U | 41 U | 900 | 47 U | 43 U | 200 U | 210 U | 210 U |
| Fluorene | 86-73-7 | 2300000 | 22000000 | 42 U | 42 U | 41 U | 270 | 47 U | 43 U | 200 U | 210 U | 210 U |
| Indeno (1,2,3-cd) pyrene | 193-39-5 | 150 | 2100 | 42 U | 42 U | 41 U | 66 | 47 U | 43 U | 200 U | 210 U | 210 U |
| Naphthalene | 91-20-3 | 3600 | 18000 | 71 | 42 U | 41 U | 140 | 160 | 43 U | 200 U | 210 U | 210 U |
| Naphthalene, 1-methyl- | 90-12-0 | -- | -- | 42 U | 42 U | 41 U | 68 | 47 U | 43 U | NA | NA | NA |
| Pentachlorophenol | 87-86-5 | 890 | 2700 | 420 U | 420 U | 410 U | 420 U | 470 U | 430 U | 380 U | 400 U | 410 U |
| Phenanthrene | 85-01-8 | -- | -- | 180 | 42 U | 41 U | 970 | 47 U | 43 U | 200 U | 210 U | 210 U |
| Phenol | 108-95-2 | -- | -- | 420 U | 420 U | 410 U | 420 U | 470 U | 430 U | 200 U | 210 U | 210 U |
| Pyrene | 129-00-0 | 1700000 | 17000000 | 67 | 42 U | 41 U | 660 | 47 U | 43 U | 200 U | 210 U | 210 U |
| Benzo(a)pyrene TEQ | NA | 15 | 210 | ND | ND | ND | 187 | ND | ND | ND | ND | ND |

**Notes:**

Value exceeds residential soil PRG

Value exceeds industrial soil PRG

-- - Not established

CAS - Chemical Abstract Service

dup - duplicate sample

ft bls - feet below land surface

µg/kg - micrograms per kilogram

NA - Not Applicable

ND - Not Detected

PRG - preliminary remedial goal

TEQ - Toxic Equivalents

U - The analyte was not detected at or above the reporting limit

J - Estimated Value

O - Other qualifiers, provided from the laboratory to explain qualifier

# Table 4-6
## Detected Semi-Volatile Organic Compounds in Subsurface Soil - 2008, 2012, 2013
## Southeastern Wood Preserving Site
## Canton, Madison County, Mississippi

| Chemical Name | CAS Number | Residential Soil PRG | Industrial Soil PRG | Sample ID | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | SWP201 | SWP201 (dup) | SWP202 | SWP202 (dup) | SWP203 | SWP204 | SWP205 | SWP206 | SWP207 |
| | | | | Sample Date | | | | | | | | |
| | | | | 10/24/2012 | 10/24/2012 | 10/29/2012 | 10/29/2012 | 10/29/2012 | 10/26/2012 | 10/25/2012 | 10/25/2012 | 10/25/2012 |
| | | | | Residential | Residential | Residential | Residential | Residential | Residential | Residential | Residential | Residential |
| | | | | Depth Interval (ft bls) | | | | | | | | |
| | | | | 0.5-1 | 0.5-1 | 0.5-1 | 0.5-1 | 0.5-1 | 0.5-1 | 1-1.5 | 0.5-1 | 0.5-1 |
| **Semi-Volatile Organic Compound (SVOC) (µg/kg)** | | | | | | | | | | | | |
| (3-and/or 4-)Methylphenol | 1319-77-3 | -- | -- | 190 U | 190 U | 180 U | 190 U | 200 U | 210 U | 200 U | 190 U | 200 U |
| 1,1-Biphenyl | 92-52-4 | -- | -- | 190 U | 190 U | 180 U | 190 U | 200 U | 210 U | 200 U | 190 U | 200 U |
| 2,3,4,6-Tetrachlorophenol | 58-90-2 | -- | -- | 190 U | 190 U | 180 U | 190 U | 200 U | 210 U | 200 U | 190 U | 200 U |
| 2,4-Dimethylphenol | 105-67-9 | -- | -- | 190 U | 190 U | 180 U | 190 U | 200 U | 210 U | 200 U | 190 U | 200 U |
| 2-Methylnaphthalene | 91-57-6 | -- | -- | 190 U | 190 U | 180 U | 190 U | 200 U | 210 U | 200 U | 190 U | 200 U |
| 2-Methylphenol | 95-48-7 | -- | -- | 190 U | 190 U | 180 U | 190 U | 200 U | 210 U | 200 U | 190 U | 200 U |
| Acenaphthene | 83-32-9 | 3400000 | 33000000 | 190 U | 190 U | 180 U | 190 U | 200 U | 210 U | 200 U | 110 J,O | 200 U |
| Acenaphthylene | 208-96-8 | -- | -- | 190 U | 190 U | 180 U | 190 U | 200 U | 210 U | 200 U | 250 | 200 U |
| Acetophenone | 98-86-2 | -- | -- | 190 U | 190 U | 180 U | 190 U | 200 U | 210 U | 200 U | 190 U | 200 U |
| Anthracene | 120-12-7 | 17000000 | 170000000 | 190 U,J,O | 190 U,J,O | 180 U,J,O | 190 U,J,O | 200 U | 190 J,O | 200 U,J,O | 860 | 200 U |
| Benzo(a)anthracene | 56-55-3 | 150 | 2100 | 190 U | 190 U | 180 U | 190 U | 260 | 610 | 210 | 880 | 200 U |
| Benzo(a)pyrene | 50-32-8 | 15 | 210 | 190 U | 190 U | 180 U | 190 U | 260 | 580 | 170 J,O | 1100 | 200 U |
| Benzo(b)fluoranthene | 205-99-2 | 150 | 2100 | 190 U | 190 U | 180 U | 190 U | 520 | 1000 | 290 | 1700 | 200 U |
| Benzo(g,h,i)perylene | 191-24-2 | -- | -- | 190 U | 190 U | 180 U | 190 U | 180 J,O | 320 | 110 J,O | 1100 | 200 U |
| Benzo(k)fluoranthene | 207-08-9 | 1500 | 21000 | 190 U | 190 U | 180 U | 190 U | 420 | 780 | 250 | 1200 | 200 U |
| Bis(2-ethylhexyl) phthalate | 117-81-7 | -- | -- | 190 U | 190 U | 180 U | 190 U | 200 U | 210 U | 490 | 570 | 200 U |
| Carbazole | 86-74-8 | -- | -- | 190 U | 190 U | 180 U | 190 U | 200 U | 120 J,O | 200 U | 300 | 200 U |
| Chrysene | 218-01-9 | 15000 | 210000 | 190 U | 190 U | 180 U | 190 U | 550 | 1100 | 350 | 1000 | 200 U |
| Dibenzo(a,h)anthracene | 53-70-3 | 15 | 210 | 190 U | 190 U | 180 U | 190 U | 200 U | 150 J,O | 200 U | 370 | 200 U |
| Dibenzofuran | 132-64-9 | -- | -- | 190 U | 190 U | 180 U | 190 U | 200 U | 210 U | 200 U | 190 U | 200 U |
| Diethyl phthalate | 84-66-2 | -- | -- | 190 U | 190 U | 180 U | 190 U | 200 U | 210 U | 200 U | 190 U | 200 U |
| Fluoranthene | 206-44-0 | 2300000 | 22000000 | 190 U,J,O | 190 U,J,O | 180 U,J,O | 190 U,J,O | 440 | 930 J,O | 220 J,O | 1700 | 200 U |
| Fluorene | 86-73-7 | 2300000 | 22000000 | 190 U | 190 U | 180 U | 190 U | 200 U | 210 U | 200 U | 83 J,O | 200 U |
| Indeno (1,2,3-cd) pyrene | 193-39-5 | 150 | 2100 | 190 U | 190 U | 180 U | 190 U | 190 J,O | 340 | 110 J,O | 1100 | 200 U |
| Naphthalene | 91-20-3 | 3600 | 18000 | 190 U | 190 U | 180 U | 190 U | 200 U | 210 U | 200 U | 190 U | 200 U |
| Naphthalene, 1-methyl- | 90-12-0 | -- | -- | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Pentachlorophenol | 87-86-5 | 890 | 2700 | 370 U | 380 U | 360 U | 360 U | 390 U | 410 U | 380 U | 380 U,J,O | 400 U,J,O |
| Phenanthrene | 85-01-8 | -- | -- | 190 U | 190 U | 180 U | 190 U | 200 U | 100 J,O | 200 U | 940 | 200 U |
| Phenol | 108-95-2 | -- | -- | 190 U | 190 U | 180 U | 190 U | 200 U | 210 U | 200 U | 190 U | 200 U |
| Pyrene | 129-00-0 | 1700000 | 17000000 | 190 U,J,O | 190 U,J,O | 180 U,J,O | 190 U,J,O | 410 | 970 J,O | 250 J,O | 1300 | 200 U |
| Benzo(a)pyrene TEQ | NA | 15 | 210 | ND | ND | ND | ND | 362 | 934 | 234 | 1851 | ND |

**Notes:**

Value exceeds residential soil PRG

Value exceeds industrial soil PRG

-- - Not established

CAS - Chemical Abstract Service

dup - duplicate sample

ft bls - feet below land surface

µg/kg - micrograms per kilogram

NA - Not Applicable

ND - Not Detected

PRG - preliminary remedial goal

TEQ - Toxic Equivalents

U - The analyte was not detected at or above the reporting limit

J - Estimated Value

O - Other qualifiers, provided from the laboratory to explain qualifier

# Table 4-6
## Detected Semi-Volatile Organic Compounds in Subsurface Soil - 2008, 2012, 2013
## Southeastern Wood Preserving Site
## Canton, Madison County, Mississippi

| Chemical Name | CAS Number | Residential Soil PRG | Industrial Soil PRG | Sample ID | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | SWP208 | SWP209 | SWP210 | SWP211 | SWP212 | SWP212 (dup) | SWP213 | SWP214 | SWP215 |
| | | | | Sample Date | | | | | | | | |
| | | | | 10/26/2012 | 10/24/2012 | 10/24/2012 | 10/24/2012 | 10/26/2012 | 10/28/2012 | 10/24/2012 | 10/29/2012 | 10/24/2012 |
| | | | | Residential | Residential | Residential | Residential | Residential | Residential | Residential | Residential | Residential |
| | | | | Depth Interval (ft bls) | | | | | | | | |
| | | | | 0.5-1 | 0.5-1 | 0.5-1 | 0.5-1 | 0.5-1 | 0.5-1 | 0.5-1 | 0.5-1 | 0.5-1 |
| **Semi-Volatile Organic Compound (SVOC) (µg/kg)** | | | | | | | | | | | | |
| (3-and/or 4-)Methylphenol | 1319-77-3 | -- | -- | 190 U | 190 U | 190 U | 220 U | 210 U | 180 U | 220 U | 200 U | 210 U |
| 1,1-Biphenyl | 92-52-4 | -- | -- | 190 U | 190 U | 190 U | 220 U | 210 U | 180 U | 220 U | 200 U | 210 U |
| 2,3,4,6-Tetrachlorophenol | 58-90-2 | -- | -- | 190 U | 190 U | 190 U | 220 U | 210 U | 180 U | 220 U | 200 U | 210 U |
| 2,4-Dimethylphenol | 105-67-9 | -- | -- | 190 U | 190 U | 190 U | 220 U | 210 U | 180 U | 220 U | 200 U | 210 U |
| 2-Methylnaphthalene | 91-57-6 | -- | -- | 190 U | 190 U | 190 U | 220 U | 210 U | 180 U | 220 U | 200 U | 210 U |
| 2-Methylphenol | 95-48-7 | -- | -- | 190 U | 190 U | 190 U | 220 U | 210 U | 180 U | 220 U | 200 U | 210 U |
| Acenaphthene | 83-32-9 | 3400000 | 33000000 | 190 U | 190 U | 190 U | 220 U | 210 U | 180 U | 220 U | 200 U | 210 U |
| Acenaphthylene | 208-96-8 | -- | -- | 190 U | 190 U | 190 U | 220 U | 210 U | 180 U | 220 U | 200 U | 210 U |
| Acetophenone | 98-86-2 | -- | -- | 190 U | 190 U | 190 U | 220 U | 210 U | 180 U | 220 U | 200 U | 210 U |
| Anthracene | 120-12-7 | 17000000 | 170000000 | 190 U | 190 U,J,O | 190 U,J,O | 90 J,O | 210 U | 180 U | 220 U | 200 U,J,O | 210 U |
| Benzo(a)anthracene | 56-55-3 | 150 | 2100 | 190 U | 190 U | 190 U | 170 J,O | 210 U | 180 U | 220 U | 200 U | 210 U |
| Benzo(a)pyrene | 50-32-8 | 15 | 210 | 190 U | 190 U | 190 U | 190 J,O | 210 U | 180 U | 220 U | 200 U | 210 U |
| Benzo(b)fluoranthene | 205-99-2 | 150 | 2100 | 190 U | 190 U | 190 U | 390 | 210 U | 180 U | 220 U | 200 U | 210 U |
| Benzo(g,h,i)perylene | 191-24-2 | -- | -- | 190 U | 190 U | 190 U | 130 J,O | 210 U | 180 U | 220 U | 200 U | 210 U |
| Benzo(k)fluoranthene | 207-08-9 | 1500 | 21000 | 190 U | 190 U | 190 U | 260 | 210 U | 180 U | 220 U | 200 U | 210 U |
| Bis(2-ethylhexyl) phthalate | 117-81-7 | -- | -- | 190 U | 190 U | 190 U | 220 U | 210 U | 180 U | 220 U | 200 U | 300 |
| Carbazole | 86-74-8 | -- | -- | 190 U | 190 U | 190 U | 220 U | 210 U | 180 U | 220 U | 200 U | 210 U |
| Chrysene | 218-01-9 | 15000 | 210000 | 190 U | 190 U | 190 U | 410 | 210 U | 180 U | 220 U | 200 U | 210 U |
| Dibenzo(a,h)anthracene | 53-70-3 | 15 | 210 | 190 U | 190 U | 190 U | 220 U | 210 U | 180 U | 220 U | 200 U | 210 U |
| Dibenzofuran | 132-64-9 | -- | -- | 190 U | 190 U | 190 U | 220 U | 210 U | 180 U | 220 U | 200 U | 210 U |
| Diethyl phthalate | 84-66-2 | -- | -- | 190 U | 190 U | 190 U | 220 U | 210 U | 180 U | 220 U | 200 U | 210 U |
| Fluoranthene | 206-44-0 | 2300000 | 22000000 | 190 U | 190 U,J,O | 190 U,J,O | 570 | 210 U | 180 U | 220 U | 200 U,J,O | 210 U |
| Fluorene | 86-73-7 | 2300000 | 22000000 | 190 U | 190 U | 190 U | 220 U | 210 U | 180 U | 220 U | 200 U | 210 U |
| Indeno (1,2,3-cd) pyrene | 193-39-5 | 150 | 2100 | 190 U | 190 U | 190 U | 140 J,O | 210 U | 180 U | 220 U | 200 U | 210 U |
| Naphthalene | 91-20-3 | 3600 | 18000 | 190 U | 190 U | 190 U | 220 U | 210 U | 180 U | 220 U | 200 U | 210 U |
| Naphthalene, 1-methyl- | 90-12-0 | -- | -- | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Pentachlorophenol | 87-86-5 | 890 | 2700 | 370 U,J,O | 370 U | 360 U | 430 U,J,O | 400 U,J,O | 350 U | 430 U,J,O | 400 U | 410 U,J,O |
| Phenanthrene | 85-01-8 | -- | -- | 190 U | 190 U | 190 U | 130 J,O | 210 U | 180 U | 220 U | 200 U | 210 U |
| Phenol | 108-95-2 | -- | -- | 190 U | 190 U | 190 U | 220 U | 210 U | 180 U | 220 U | 200 U | 210 U |
| Pyrene | 129-00-0 | 1700000 | 17000000 | 190 U | 190 U,J,O | 190 U,J,O | 440 | 210 U | 180 U | 220 U | 200 U,J,O | 210 U |
| Benzo(a)pyrene TEQ | NA | 15 | 210 | ND | ND | ND | 263 | ND | ND | ND | ND | ND |

**Notes:**

Value exceeds residential soil PRG

Value exceeds industrial soil PRG

-- - Not established

CAS - Chemical Abstract Service

dup - duplicate sample

ft bls - feet below land surface

µg/kg - micrograms per kilogram

NA - Not Applicable

ND - Not Detected

PRG - preliminary remedial goal

TEQ - Toxic Equivalents

U - The analyte was not detected at or above the reporting limit

J - Estimated Value

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# Table 4-6
## Detected Semi-Volatile Organic Compounds in Subsurface Soil - 2008, 2012, 2013
## Southeastern Wood Preserving Site
## Canton, Madison County, Mississippi

| Chemical Name | CAS Number | Residential Soil PRG | Industrial Soil PRG | Sample ID | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | SWP216 | SWP217 | SWP218 | SWP219 | SWP220 | SWP221 | SWP222 | SWP223 | SWP224 |
| | | | | Sample Date | | | | | | | | |
| | | | | 10/24/2012 | 10/24/2012 | 10/24/2012 | 10/24/2012 | 10/24/2012 | 10/26/2012 | 10/27/2012 | 10/25/2012 | 10/25/2012 |
| | | | | Residential | Residential | Residential | Residential | Residential | Residential | Residential | Residential | Residential |
| | | | | Depth Interval (ft bls) | | | | | | | | |
| | | | | 0.5-1 | 0.5-1 | 0.5-1 | 0.5-1 | 0.5-1 | 0.5-1 | 0.5-1 | 0.5-1 | 0.5-1 |
| **Semi-Volatile Organic Compound (SVOC) (µg/kg)** | | | | | | | | | | | | |
| (3-and/or 4-)Methylphenol | 1319-77-3 | -- | -- | 190 U | 220 U | 200 U | 190 U | 210 U | 210 U | 190 U | 190 U | 210 U |
| 1,1-Biphenyl | 92-52-4 | -- | -- | 190 U | 220 U | 200 U | 190 U | 210 U | 210 U | 190 U | 190 U | 210 U |
| 2,3,4,6-Tetrachlorophenol | 58-90-2 | -- | -- | 190 U | 220 U | 200 U | 190 U | 210 U | 210 U | 190 U | 190 U | 210 U |
| 2,4-Dimethylphenol | 105-67-9 | -- | -- | 190 U | 220 U | 200 U | 190 U | 210 U | 210 U | 190 U | 190 U | 210 U |
| 2-Methylnaphthalene | 91-57-6 | -- | -- | 190 U | 220 U | 200 U | 190 U | 210 U | 210 U | 190 U | 190 U | 210 U |
| 2-Methylphenol | 95-48-7 | -- | -- | 190 U | 220 U | 200 U | 190 U | 210 U | 210 U | 190 U | 190 U | 210 U |
| Acenaphthene | 83-32-9 | 3400000 | 33000000 | 190 U | 220 U | 200 U | 190 U | 210 U | 210 U | 190 U | 190 U | 210 U |
| Acenaphthylene | 208-96-8 | -- | -- | 190 U | 220 U | 200 U | 190 U | 210 U | 210 U | 190 U | 190 U | 210 U |
| Acetophenone | 98-86-2 | -- | -- | 190 U | 220 U | 200 U | 190 U | 210 U | 210 U | 190 U | 190 U | 210 U |
| Anthracene | 120-12-7 | 17000000 | 170000000 | 190 U | 220 U,J,O | 200 U,J,O | 190 U,J,O | 210 U,J,O | 210 U,J,O | 190 U | 190 U | 210 U |
| Benzo(a)anthracene | 56-55-3 | 150 | 2100 | 190 U | 220 U | 200 U | 190 U | 210 U | 210 U | 190 U | 190 U | 210 U |
| Benzo(a)pyrene | 50-32-8 | 15 | 210 | 190 U | 220 U | 200 U | 190 U | 210 U | 210 U | 190 U | 190 U | 210 U |
| Benzo(b)fluoranthene | 205-99-2 | 150 | 2100 | 190 U | 220 U | 200 U | 190 U | 210 U | 210 U | 220 | 190 U | 210 U |
| Benzo(g,h,i)perylene | 191-24-2 | -- | -- | 190 U | 220 U | 200 U | 190 U | 210 U | 210 U | 190 U | 190 U | 210 U |
| Benzo(k)fluoranthene | 207-08-9 | 1500 | 21000 | 190 U | 220 U | 200 U | 190 U | 210 U | 210 U | 190 U | 190 U | 210 U |
| Bis(2-ethylhexyl) phthalate | 117-81-7 | -- | -- | 190 U | 400 | 200 U | 190 U | 210 U | 210 U | 190 U | 190 U | 210 U |
| Carbazole | 86-74-8 | -- | -- | 190 U | 220 U | 200 U | 190 U | 210 U | 210 U | 190 U | 190 U | 210 U |
| Chrysene | 218-01-9 | 15000 | 210000 | 190 U | 220 U | 200 U | 190 U | 210 U | 210 U | 150 J,O | 190 U | 210 U |
| Dibenzo(a,h)anthracene | 53-70-3 | 15 | 210 | 190 U | 220 U | 200 U | 190 U | 210 U | 210 U | 190 U | 190 U | 210 U |
| Dibenzofuran | 132-64-9 | -- | -- | 190 U | 220 U | 200 U | 190 U | 210 U | 210 U | 190 U | 190 U | 210 U |
| Diethyl phthalate | 84-66-2 | -- | -- | 190 U | 220 U | 200 U | 190 U | 210 U | 210 U | 190 U | 310 | 360 |
| Fluoranthene | 206-44-0 | 2300000 | 22000000 | 190 U | 220 U,J,O | 200 U,J,O | 190 U,J,O | 210 U,J,O | 210 U,J,O | 190 U | 190 U | 210 U |
| Fluorene | 86-73-7 | 2300000 | 22000000 | 190 U | 220 U | 200 U | 190 U | 210 U | 210 U | 190 U | 190 U | 210 U |
| Indeno (1,2,3-cd) pyrene | 193-39-5 | 150 | 2100 | 190 U | 220 U | 200 U | 190 U | 210 U | 210 U | 190 U | 190 U | 210 U |
| Naphthalene | 91-20-3 | 3600 | 18000 | 190 U | 220 U | 200 U | 190 U | 210 U | 210 U | 190 U | 190 U | 210 U |
| Naphthalene, 1-methyl- | 90-12-0 | -- | -- | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Pentachlorophenol | 87-86-5 | 890 | 2700 | 370 U | 430 U | 400 U | 370 U | 400 U | 400 U | 360 U | 370 U,J,O | 400 U,J,O |
| Phenanthrene | 85-01-8 | -- | -- | 190 U | 220 U | 200 U | 190 U | 210 U | 210 U | 190 U | 190 U | 210 U |
| Phenol | 108-95-2 | -- | -- | 190 U | 220 U | 200 U | 190 U | 210 U | 210 U | 190 U | 190 U | 210 U |
| Pyrene | 129-00-0 | 1700000 | 17000000 | 190 U | 220 U,J,O | 200 U,J,O | 190 U,J,O | 210 U,J,O | 210 U,J,O | 190 U | 190 U | 210 U |
| Benzo(a)pyrene TEQ | NA | 15 | 210 | ND | ND | ND | ND | ND | ND | 22 | ND | ND |

**Notes:**

Value exceeds residential soil PRG

Value exceeds industrial soil PRG

-- - Not established

CAS - Chemical Abstract Service

dup - duplicate sample

ft bls - feet below land surface

µg/kg - micrograms per kilogram

NA - Not Applicable

ND - Not Detected

PRG - preliminary remedial goal

TEQ - Toxic Equivalents

U - The analyte was not detected at or above the reporting limit

J - Estimated Value

O - Other qualifiers, provided from the laboratory to explain qualifier

# Table 4-6
## Detected Semi-Volatile Organic Compounds in Subsurface Soil - 2008, 2012, 2013
## Southeastern Wood Preserving Site
## Canton, Madison County, Mississippi

| Chemical Name | CAS Number | Residential Soil PRG | Industrial Soil PRG | Sample ID | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | SWP224 (dup) | SWP225 | SWP226 | SWP229 | SWP236 |
| | | | | Sample Date | | | | |
| | | | | 10/25/2012 | 10/25/2012 | 1/23/2013 | 1/23/2013 | 1/24/2013 |
| | | | | Residential | Residential | Residential | Residential | Residential |
| | | | | Depth Interval (ft bls) | | | | |
| | | | | 0.5-1 | 0.5-1 | 0.5-1 | 0.5-1 | 0.5-1 |
| **Semi-Volatile Organic Compound (SVOC) (µg/kg)** | | | | | | | | |
| (3-and/or 4-)Methylphenol | 1319-77-3 | -- | -- | 200 U | 190 U | 440 U | 430 U | 400 U |
| 1,1-Biphenyl | 92-52-4 | -- | -- | 200 U | 190 U | 44 U | 43 U | 40 U |
| 2,3,4,6-Tetrachlorophenol | 58-90-2 | -- | -- | 200 U | 190 U | 440 U | 430 U | 400 U |
| 2,4-Dimethylphenol | 105-67-9 | -- | -- | 200 U | 190 U | 440 U | 430 U | 400 U |
| 2-Methylnaphthalene | 91-57-6 | -- | -- | 200 U | 190 U | 44 U | 43 U | 40 U |
| 2-Methylphenol | 95-48-7 | -- | -- | 200 U | 190 U | 440 U | 430 U | 400 U |
| Acenaphthene | 83-32-9 | 3400000 | 33000000 | 200 U | 190 U | 44 U | 43 U | 40 U |
| Acenaphthylene | 208-96-8 | -- | -- | 200 U | 190 U | 73 | 43 U | 40 U |
| Acetophenone | 98-86-2 | -- | -- | 200 U | 190 U | 440 U | 430 U | 400 U |
| Anthracene | 120-12-7 | 17000000 | 170000000 | 200 U,J,O | 120 J,O | 200 | 57 | 40 U |
| Benzo(a)anthracene | 56-55-3 | 150 | 2100 | 200 U | 140 J,O | 1300 | 260 | 40 U |
| Benzo(a)pyrene | 50-32-8 | 15 | 210 | 200 U | 220 | 1600 | 470 | 40 U |
| Benzo(b)fluoranthene | 205-99-2 | 150 | 2100 | 200 U | 400 | 3500 | 1000 | 40 U |
| Benzo(g,h,i)perylene | 191-24-2 | -- | -- | 200 U | 150 J,O | 620 | 220 | 40 U |
| Benzo(k)fluoranthene | 207-08-9 | 1500 | 21000 | 200 U | 260 | 2700 | 700 | 40 U |
| Bis(2-ethylhexyl) phthalate | 117-81-7 | -- | -- | 200 U | 190 U | 440 U | 430 U | 400 U |
| Carbazole | 86-74-8 | -- | -- | 200 U | 190 U | 190 | 43 U | 40 U |
| Chrysene | 218-01-9 | 15000 | 210000 | 200 U | 210 | 2400 | 600 | 40 U |
| Dibenzo(a,h)anthracene | 53-70-3 | 15 | 210 | 200 U | 190 U | 210 | 56 | 40 U |
| Dibenzofuran | 132-64-9 | -- | -- | 200 U | 190 U | 48 | 43 U | 40 U |
| Diethyl phthalate | 84-66-2 | -- | -- | 200 U | 190 U | 440 U | 430 U | 400 U |
| Fluoranthene | 206-44-0 | 2300000 | 22000000 | 200 U,J,O | 110 J,O | 1900 | 460 | 40 U |
| Fluorene | 86-73-7 | 2300000 | 22000000 | 200 U | 190 U | 44 U | 43 U | 40 U |
| Indeno (1,2,3-cd) pyrene | 193-39-5 | 150 | 2100 | 200 U | 170 J,O | 720 | 230 | 40 U |
| Naphthalene | 91-20-3 | 3600 | 18000 | 200 U | 190 U | 87 | 43 U | 40 U |
| Naphthalene, 1-methyl- | 90-12-0 | -- | -- | NA | NA | 44 U | 43 U | 40 U |
| Pentachlorophenol | 87-86-5 | 890 | 2700 | 390 U | 360 U,J,O | 90 J,O | 83 J,O | 400 U |
| Phenanthrene | 85-01-8 | -- | -- | 200 U | 190 U | 250 | 110 | 40 U |
| Phenol | 108-95-2 | -- | -- | 200 U | 190 U | 440 U | 430 U | 400 U |
| Pyrene | 129-00-0 | 1700000 | 17000000 | 200 U,J,O | 130 J,O | 2000 | 560 | 40 U |
| Benzo(a)pyrene TEQ | NA | 15 | 210 | ND | 294 | 2391 | 683 | ND |

**Notes:**

Value exceeds residential soil PRG

Value exceeds industrial soil PRG

-- - Not established

CAS - Chemical Abstract Service

dup - duplicate sample

ft bls - feet below land surface

µg/kg - micrograms per kilogram

NA - Not Applicable

ND - Not Detected

PRG - preliminary remedial goal

TEQ - Toxic Equivalents

U - The analyte was not detected at or above the reporting limit

J - Estimated Value

O - Other qualifiers, provided from the laboratory to explain qualifier

# Table 4-7
# Dioxin in Subsurface Soil - 2008, 2012, 2013
# Southeastern Wood Preserving Site
# Canton, Madison County, Mississippi

| Chemical Name | CAS Number | Residential Soil PRG | Sample ID | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | SWP02 | SWP03 | SWP04 | SWP04 (dup) | SWP05 | SWP07 | SWPR01 | SWPR02 |
| | | | Sample Date | | | | | | | |
| | | | 9/25/2008 | 9/25/2008 | 9/25/2008 | 9/25/2008 | 9/24/2008 | 9/23/2008 | 9/24/2008 | 9/24/2008 |
| | | | Depth Interval (ft bgs) | | | | | | | |
| | | | 4-8 | 4-8 | 8-12 | 8-12 | 12-16 | 1-4 | 1-2 | 1-2 |
| **Dioxins (ng/kg)** | | | | | | | | | | |
| % Moisture | E1644012 | -- | 71000 J,O | 12 | 5 U,J,O | 5 U,J,O | 5 U,J,O | 13 | 12 | 12 |
| 1,2,3,4,6,7,8-Heptachlorodibenzodioxin | 35822-46-9 | -- | 890 J,O | 5 U | 5 U | 5 U | 5 U | 17000 | 6.4 | 160 |
| 1,2,3,4,6,7,8-Heptachlorodibenzofuran | 67562-39-4 | -- | 50 U,J,O | 5 U | 5 U | 5 U | 5 U | 6300 | 1.2 J,O | 120 |
| 1,2,3,4,7,8,9-Heptachlorodibenzofuran | 55673-89-7 | -- | 50 U,J,O | 5 U | 5 U | 5 U | 5 U | 250 | 0.26 U | 3.2 J,O |
| 1,2,3,4,7,8-Hexachlorodibenzodioxin | 39227-28-6 | -- | 50 U,J,O | 5 U | 5 U,J,O | 5 U,J,O | 5 U,J,O | 56 J,O | 0.23 U | 0.78 J,O |
| 1,2,3,4,7,8-Hexachlorodibenzofuran | 70648-26-9 | -- | 50 U,J,O | 5 U | 5 U | 5 U | 5 U | 110 | 0.14 U,O | 2.4 J,O |
| 1,2,3,6,7,8-Hexachlorodibenzodioxin | 57653-85-7 | -- | 50 U,J,O | 5 U | 5 U,J,O | 5 U,J,O | 5 U,J,O | 380 J,O | 0.24 U | 4.6 J,O |
| 1,2,3,6,7,8-Hexachlorodibenzofuran | 57117-44-9 | -- | 7300 J,O | 1.1 J,O | 5 U | 5 U | 5 U | 33 J,O | 0.13 U,O | 1.2 J,O |
| 1,2,3,7,8,9-Hexachlorodibenzodioxin | 19408-74-3 | -- | 100 U,J,O | 10 U,J,O | 10 U,J,O | 10 U,J,O | 10 U,J,O | 98 J,O | 0.26 U,O | 1.8 J,O |
| 1,2,3,7,8,9-Hexachlorodibenzofuran | 72918-21-9 | -- | 50 U,J,O | 5 U | 5 U | 5 U | 5 U | 17 J,O | 0.19 U | 0.37 J,O |
| 1,2,3,7,8-Pentachlorodibenzodioxin | 40321-76-4 | -- | 50 U,J,O | 5 U | 5 U | 5 U | 5 U | 10 J,O | 0.18 U | 0.4 U,O |
| 1,2,3,7,8-Pentachlorodibenzofuran | 57117-41-6 | -- | 50 U,J,O | 5 U | 5 U | 5 U | 5 U | 5.3 J,O | 0.1 U | 0.13 U,O |
| 2,3,4,6,7,8-Hexachlorodibenzofuran | 60851-34-5 | -- | 50 U,J,O | 5 U | 5 U | 5 U | 5 U | 55 | 0.13 U | 1.8 J,O |
| 2,3,4,7,8-Pentachlorodibenzofuran | 57117-31-4 | -- | 100 U,J,O | 10 U,J,O | 10 U,J,O | 10 U,J,O | 10 U,J,O | 20 J,O | 0.084 U | 0.7 J,O |
| 2,3,7,8-Tetrachlorodibenzodioxin | 1746-01-6 | -- | 5100 J,O | 1.6 | 0.1 U | 0.1 U | 0.1 U | 1.4 U,J,O | 0.12 U | 0.11 U |
| 2,3,7,8-Tetrachlorodibenzofuran | 51207-31-9 | -- | 24000 J,O | 4.9 J,O | 5 U | 5 U | 5 U | 3.1 U,J,O | 0.14 U | 0.24 U,O |
| Heptachlorodibenzodioxin (Total) | 37871-00-4 | -- | 100 U,J,O | 10 U | 10 U,J,O | 10 U,J,O | 10 U,J,O | 42000 J,O | 14 J,O | 410 J,O |
| Heptachlorodibenzofuran (Total) | 38998-75-3 | -- | 50 U,J,O | 5 U | 5 U | 5 U | 5 U | 24000 J,O | 2.2 J,O | 340 J,O |
| Hexachlorodibenzodioxin (Total) | 34465-46-8 | -- | 50 U,J,O | 5 U | 5 U | 5 U | 5 U | 1900 J,O | 1.3 J,O | 32 J,O |
| Hexachlorodibenzofuran (Total) | 55684-94-1 | -- | 100 U,J,O | 10 U | 10 U,J,O | 10 U,J,O | 10 U,J,O | 4200 J,O | 0.5 J,O | 67 J,O |
| Octachlorodibenzodioxin | 3268-87-9 | -- | 50 U,J,O | 5 U | 5 U | 5 U | 5 U | 220000 J,O | 340 | 3200 |
| Octachlorodibenzofuran | 39001-02-0 | -- | 50 U,J,O | 5 U | 5 U | 5 U | 5 U | 28000 | 1.8 J,O | 380 |
| Pentachlorodibenzodioxin (Total) | 36088-22-9 | -- | 50 U,J,O | 5 U | 5 U,J,O | 5 U,J,O | 5 U,J,O | 110 J,O | 0.18 U,J,O | 1.9 J,O |
| Pentachlorodibenzofuran (Total) | 30402-15-4 | -- | 50 U,J,O | 5 U | 5 U | 5 U | 5 U | 73 J,O | 0.084 J,O | 8.6 J,O |
| TEQ (Avian Toxic. Equiv. Value, WHO TEQ-98) | R4-0428 | -- | 100 U,J,O | 10 U | 10 U,J,O | 10 U,J,O | 10 U,J,O | 180 J,O | 0.7 J,O | 4 J,O |
| TEQ (Fish Toxic. Equiv. Value, WHO TEQ-98) | R4-0429 | -- | 100 U,J,O | 10 U | 10 U | 10 U | 10 U,J,O | 180 J,O | 0.59 J,O | 3.6 J,O |
| TEQ (Mammalian Toxic. Equiv. Value, WHO TEQ-2005) | R4-0430 | 50 | 3000 J,O | 1 | 0.1 U | 0.1 U | 0.1 U | 400 J,O | 0.66 J,O | 6 J,O |
| Tetrachlorodibenzodioxin (Total) | 41903-57-5 | -- | 67 J,O | 0.1 U,J,O | 0.1 U | 0.1 U | 0.1 U | 19 J,O | 0.18 J,O | 0.29 J,O |
| Tetrachlorodibenzofuran (Total) | 30402-14-3 | -- | 50 U,J,O | 5 U | 5 U | 5 U | 5 U | 20 J,O | 0.32 J,O | 0.98 J,O |

**Notes:**

Value exceeds residential soil PRG

-- - Not established

CAS - Chemical Abstract Service

dup - duplicate sample

ft bls - feet below land surface

ng/kg - nanograms per kilogram

NA - Not Applicable

PRG - preliminary remedial goal

TEQ - Toxic Equivalents

U - The analyte was not detected at or above the reporting limit

J - Estimated Value

O - Other qualifiers, provided from the laboratory to explain qualifier

# Table 4-7
## Dioxin in Subsurface Soil - 2008, 2012, 2013
## Southeastern Wood Preserving Site
## Canton, Madison County, Mississippi

| Chemical Name | CAS Number | Residential Soil PRG | Sample ID | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | SWPR03 | SWPR04 | SWPR05 | SWPR06 | SWP001 | SWP002 | SWP002 (dup) | SWP004 |
| | | | Sample Date | | | | | | | |
| | | | 9/25/2008 | 9/24/2008 | 9/24/2008 | 9/24/2008 | 1/8/2013 | 1/12/2013 | 1/12/2013 | 11/6/2012 |
| | | | Depth Interval (ft bgs) | | | | | | | |
| | | | 1-2 | 1-2 | 1-2 | 1-2 | 9-10 | 6-12 | 6-12 | 5-5.5 |
| **Dioxins (ng/kg)** | | | | | | | | | | |
| % Moisture | E1644012 | -- | 18 | 19 | 18 | 21 | 19 | 22 | 22 | 26 |
| 1,2,3,4,6,7,8-Heptachlorodibenzodioxin | 35822-46-9 | -- | 160 | 350 | 500 | 17 | 700 | 830 | 210 | 54 |
| 1,2,3,4,6,7,8-Heptachlorodibenzofuran | 67562-39-4 | -- | 78 | 250 | 300 | 12 | 430 | 350 | 93 | 26 |
| 1,2,3,4,7,8,9-Heptachlorodibenzofuran | 55673-89-7 | -- | 2.1 J,O | 7.4 | 9 | 0.25 J,O | 15 J,O | 14 | 4.1 J,O | 0.82 U |
| 1,2,3,4,7,8-Hexachlorodibenzodioxin | 39227-28-6 | -- | 1.1 U,O | 1.8 J,O | 3.3 J,O | 0.21 J,O | 1.7 J,O | 3.6 J,O | 1.3 J,O | 0.73 U,O |
| 1,2,3,4,7,8-Hexachlorodibenzofuran | 70648-26-9 | -- | 2.2 J,O | 3.1 J,O | 5 | 0.54 J,O | 11 J,O | 8.4 J,O | 2.4 J,O | 0.92 J,O |
| 1,2,3,6,7,8-Hexachlorodibenzodioxin | 57653-85-7 | -- | 4.2 J,O | 10 | 15 | 0.51 U,O | 19 J,O | 20 | 5.7 J,O | 0.8 J,O |
| 1,2,3,6,7,8-Hexachlorodibenzofuran | 57117-44-9 | -- | 1.2 J,O | 1 J,O | 1.6 J,O | 0.24 J,O | 3.7 J,O | 3.1 J,O | 0.95 J,O | 0.53 U,O |
| 1,2,3,7,8,9-Hexachlorodibenzodioxin | 19408-74-3 | -- | 2.2 J,O | 2.9 J,O | 7.1 | 0.45 J,O | 3.9 J,O | 5.4 | 1.8 J,O | 0.63 J,O |
| 1,2,3,7,8,9-Hexachlorodibenzofuran | 72918-21-9 | -- | 0.32 J,O | 0.85 J,O | 0.85 U | 0.18 U | 3.6 U,J,O | 1.5 J,O | 0.52 J,O | 0.44 U |
| 1,2,3,7,8-Pentachlorodibenzodioxin | 40321-76-4 | -- | 0.46 J,O | 0.33 U,O | 1.1 J,O | 0.15 U | 1.4 J,O | 0.61 J,O | 0.16 J,O | 0.27 U |
| 1,2,3,7,8-Pentachlorodibenzofuran | 57117-41-6 | -- | 0.16 U,O | 0.091 J,O | 0.095 U | 0.084 U | 0.99 U | 0.58 J,O | 0.16 U | 0.23 U |
| 2,3,4,6,7,8-Hexachlorodibenzofuran | 60851-34-5 | -- | 1.7 J,O | 2.3 J,O | 3.2 J,O | 0.26 J,O | 2.2 U,O | 5.3 J,O | 1.4 J,O | 0.64 U |
| 2,3,4,7,8-Pentachlorodibenzofuran | 57117-31-4 | -- | 0.83 J,O | 0.38 U | 0.65 J,O | 0.28 U | 5.7 J,O | 3.6 J,O | 1 J,O | 0.42 J,O |
| 2,3,7,8-Tetrachlorodibenzodioxin | 1746-01-6 | -- | 0.5 J,O | 0.1 U | 0.17 U,O | 0.11 U | 0.63 U | 0.16 U,O | 0.12 U | 0.1 U |
| 2,3,7,8-Tetrachlorodibenzofuran | 51207-31-9 | -- | 0.23 U | 0.16 U | 0.16 U | 0.17 U | 1.8 J,O | 0.28 J,O | 0.16 U | 0.16 U |
| Heptachlorodibenzodioxin (Total) | 37871-00-4 | -- | 410 J,O | 970 J,O | 1200 J,O | 40 J,O | 2500 J,O | 2700 J,O | 660 J,O | 120 J,O |
| Heptachlorodibenzofuran (Total) | 38998-75-3 | -- | 220 J,O | 890 J,O | 1100 J,O | 23 J,O | 1600 J,O | 1200 J,O | 320 J,O | 56 J,O |
| Hexachlorodibenzodioxin (Total) | 34465-46-8 | -- | 36 J,O | 73 J,O | 130 J,O | 4.2 J,O | 160 J,O | 200 J,O | 59 J,O | 7.5 J,O |
| Hexachlorodibenzofuran (Total) | 55684-94-1 | -- | 58 J,O | 140 J,O | 170 J,O | 7.9 J,O | 410 J,O | 320 J,O | 90 J,O | 14 J,O |
| Octachlorodibenzodioxin | 3268-87-9 | -- | 2500 | 3200 | 3500 | 910 | 8200 | 9800 J,O | 2300 | 4700 J,O |
| Octachlorodibenzofuran | 39001-02-0 | -- | 220 | 1100 | 1300 | 14 | 1700 | 1200 | 310 | 35 |
| Pentachlorodibenzodioxin (Total) | 36088-22-9 | -- | 3 J,O | 3.2 J,O | 13 J,O | 0.15 U,J,O | 3.9 J,O | 11 J,O | 3.3 J,O | 0.67 J,O |
| Pentachlorodibenzofuran (Total) | 30402-15-4 | -- | 10 J,O | 7.5 J,O | 11 J,O | 1.8 J,O | 22 J,O | 18 J,O | 9.6 J,O | 2.2 J,O |
| TEQ (Avian Toxic. Equiv. Value, WHO TEQ-98) | R4-0428 | -- | 4.1 J,O | 5.5 J,O | 8.2 J,O | 1.1 J,O | 18 J,O | 13 J,O | 3.8 J,O | 2.1 J,O |
| TEQ (Fish Toxic. Equiv. Value, WHO TEQ-98) | R4-0429 | -- | 3.8 J,O | 5.7 J,O | 8.6 J,O | 0.88 J,O | 14 J,O | 12 J,O | 3.5 J,O | 2 J,O |
| TEQ (Mammalian Toxic. Equiv. Value, WHO TEQ-2005) | R4-0430 | 50 | 5.7 J,O | 10 J,O | 14 J,O | 1.2 J,O | 23 J,O | 22 J,O | 5.9 J,O | 3.2 J,O |
| Tetrachlorodibenzodioxin (Total) | 41903-57-5 | -- | 0.65 J,O | 0.98 J,O | 1.7 J,O | 0.11 U,J,O | 0.63 U,J,O | 0.71 J,O | 0.18 J,O | 0.1 U,J,O |
| Tetrachlorodibenzofuran (Total) | 30402-14-3 | -- | 1.4 J,O | 1.7 J,O | 1.2 J,O | 0.3 J,O | 4.3 J,O | 3.3 J,O | 0.74 J,O | 0.69 J,O |

**Notes:**

Value exceeds residential soil PRG

-- - Not established

CAS - Chemical Abstract Service

dup - duplicate sample

ft bls - feet below land surface

ng/kg - nanograms per kilogram

NA - Not Applicable

PRG - preliminary remedial goal

TEQ - Toxic Equivalents

U - The analyte was not detected at or above the reporting limit

J - Estimated Value

O - Other qualifiers, provided from the laboratory to explain qualifier

# Table 4-8
# Detected Semi-Volatile Organic Compounds in Waste - 2008
# Southeastern Wood Preserving Site
# Canton, Madison County, Mississippi

| Chemical Name | CAS Number | Industrial Soil PRG | Sample ID | | | |
|---|---|---|---|---|---|---|
| | | | SWP-WS-01 | SWP-WS-02 | SWP-WS-02 (dup) | SWP-WS-03 |
| | | | Sample Date | | | |
| | | | 2/28/2008 | 2/28/2008 | 2/28/2008 | 2/28/2008 |
| | | | Depth Interval (ft bls) | | | |
| | | | 2.5-3 | 0.5-2 | 0.5-2 | 1.66-2 |
| **Semi-Volatile Organic Compound (SVOC) (ug/kg)** | | | | | | |
| 2-Methylnaphthalene | 91-57-6 | -- | 423 U | 351 J | 274 J | 553 J |
| Acenaphthene | 83-32-9 | 33000000 | 423 U | 121 J | 760 J | 1990 U |
| Acenaphthylene | 208-96-8 | -- | 163 J | 223 J | 168 J | 986 J |
| Anthracene | 120-12-7 | 170000000 | 302 J | 2250 | 4390 | 4830 |
| Benzo(a)anthracene | 56-55-3 | 2100 | 173 J | 459 | 455 | 1510 J |
| Benzo(a)pyrene | 50-32-8 | 210 | 452 | 714 | 639 | 5440 |
| Benzo(b)fluoranthene | 205-99-2 | 2100 | 1210 | 1620 | 1440 | 13900 |
| Benzo(g,h,i)perylene | 191-24-2 | -- | 297 J | 223 J | 209 J | 1400 J |
| Benzo(k)fluoranthene | 207-08-9 | 21000 | 419 J | 467 | 497 | 4340 |
| Carbazole | 86-74-8 | -- | 108 J | 618 | 1280 | 769 J |
| Chrysene | 218-01-9 | 210000 | 278 J | 829 | 792 | 3760 |
| Dibenzo(a,h)anthracene | 53-70-3 | 210 | 937 J | 435 U | 423 U | 461 J |
| Dibenzofuran | 132-64-9 | -- | 642 J | 210 J | 347 J | 664 J |
| Fluoranthene | 206-44-0 | 22000000 | 296 J | 809 | 995 | 3600 |
| Fluorene | 86-73-7 | 22000000 | 423 U | 232 J | 449 | 1990 U |
| Indeno (1,2,3-cd) pyrene | 193-39-5 | 2100 | 334 J | 237 J | 221 J | 1560 J |
| Naphthalene | 91-20-3 | 18000 | 180 J | 883 | 723 | 1800 J |
| Pentachlorophenol | 87-86-5 | 2700 | 423 U | 435 U | 423 U | 1990 U |
| Phenanthrene | 85-01-8 | -- | 171 J | 681 | 1110 | 1890 J |
| Pyrene | 129-00-0 | 17000000 | 275 J | 774 | 891 | 3090 |
| Benzo(a)pyrene TEQ | NA | 210 | 1565 | 951 | 856 | 7645 |

**Notes:**

Value exceeds industrial soil PRG

CAS - Chemical Abstract Service

dup - duplicate sample

ft bls - feet below land surface

PRG - preliminary remedial goal

ug/kg - micrograms per kilogram

-- - Not established

NA - Not Applicable

U - The analyte was not detected at or above the reporting limit

J - Estimated Value

TEQ - Toxic Equivalents

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# Table 4-8
# Detected Semi-Volatile Organic Compounds in Waste - 2008
# Southeastern Wood Preserving Site
# Canton, Madison County, Mississippi

| Chemical Name | CAS Number | Industrial Soil PRG | Sample ID | | | |
|---|---|---|---|---|---|---|
| | | | SWP-WS-01 | SWP-WS-02 | SWP-WS-02 (dup) | SWP-WS-03 |
| | | | Sample Date | | | |
| | | | 2/28/2008 | 2/28/2008 | 2/28/2008 | 2/28/2008 |
| | | | Depth Interval (ft bls) | | | |
| | | | 2.5-3 | 0.5-2 | 0.5-2 | 1.66-2 |
| **Semi-Volatile Organic Compound (SVOC) (ug/kg)** | | | | | | |
| 2-Methylnaphthalene | 91-57-6 | -- | 423 U | 351 J | 274 J | 553 J |
| Acenaphthene | 83-32-9 | 33000000 | 423 U | 121 J | 760 J | 1990 U |
| Acenaphthylene | 208-96-8 | -- | 163 J | 223 J | 168 J | 986 J |
| Anthracene | 120-12-7 | 170000000 | 302 J | 2250 | 4390 | 4830 |
| Benzo(a)anthracene | 56-55-3 | 2100 | 173 J | 459 | 455 | 1510 J |
| Benzo(a)pyrene | 50-32-8 | 210 | 452 | 714 | 639 | 5440 |
| Benzo(b)fluoranthene | 205-99-2 | 2100 | 1210 | 1620 | 1440 | 13900 |
| Benzo(g,h,i)perylene | 191-24-2 | -- | 297 J | 223 J | 209 J | 1400 J |
| Benzo(k)fluoranthene | 207-08-9 | 21000 | 419 J | 467 | 497 | 4340 |
| Carbazole | 86-74-8 | -- | 108 J | 618 | 1280 | 769 J |
| Chrysene | 218-01-9 | 210000 | 278 J | 829 | 792 | 3760 |
| Dibenzo(a,h)anthracene | 53-70-3 | 210 | 937 J | 435 U | 423 U | 461 J |
| Dibenzofuran | 132-64-9 | -- | 642 J | 210 J | 347 J | 664 J |
| Fluoranthene | 206-44-0 | 22000000 | 296 J | 809 | 995 | 3600 |
| Fluorene | 86-73-7 | 22000000 | 423 U | 232 J | 449 | 1990 U |
| Indeno (1,2,3-cd) pyrene | 193-39-5 | 2100 | 334 J | 237 J | 221 J | 1560 J |
| Naphthalene | 91-20-3 | 18000 | 180 J | 883 | 723 | 1800 J |
| Pentachlorophenol | 87-86-5 | 2700 | 423 U | 435 U | 423 U | 1990 U |
| Phenanthrene | 85-01-8 | -- | 171 J | 681 | 1110 | 1890 J |
| Pyrene | 129-00-0 | 17000000 | 275 J | 774 | 891 | 3090 |
| Benzo(a)pyrene TEQ | NA | 210 | 1565 | 951 | 856 | 7645 |

**Notes:**

Value exceeds industrial soil PRG

CAS - Chemical Abstract Service

dup - duplicate sample

ft bls - feet below land surface

PRG - preliminary remedial goal

ug/kg - micrograms per kilogram

-- - Not established

NA - Not Applicable

U - The analyte was not detected at or above the reporting limit

J - Estimated Value

TEQ - Toxic Equivalents

# Table 4-9
# Dioxin in Subsurface Waste - 2008
# Southeastern Wood Preserving Site
# Canton, Madison County, Mississippi

| Chemical Name | CAS Number | Residential Soil PRG | Sample ID | | | |
|---|---|---|---|---|---|---|
| | | | SWP-WS-01 | SWP-WS-02 | SWP-WS-02 dup | SWP-WS-03 |
| | | | Sample Date | | | |
| | | | 2/28/2008 | 2/28/2008 | 2/28/2008 | 2/28/2008 |
| | | | Depth Interval (ft bls) | | | |
| | | | 2.5-3 | 0.5-2 | 0.5-2 | 1.66-2 |
| **Dioxins (ng/kg)** | | | | | | |
| % Moisture | E1644012 | -- | NA | NA | NA | NA |
| 1,2,3,4,6,7,8-Heptachlorodibenzodioxin | 35822-46-9 | -- | 280 | 1600 | 13000 | 13000 |
| 1,2,3,4,6,7,8-Heptachlorodibenzofuran | 67562-39-4 | -- | 160 | 520 | 4700 | 4700 |
| 1,2,3,4,7,8,9-Heptachlorodibenzofuran | 55673-89-7 | -- | 9.5 | 24 | 210 | 210 |
| 1,2,3,4,7,8-Hexachlorodibenzodioxin | 39227-28-6 | -- | 1.5 J | 3.8 J | 22 | 30 |
| 1,2,3,4,7,8-Hexachlorodibenzofuran | 70648-26-9 | -- | 4.6 J | 8.2 | 91 | 140 |
| 1,2,3,6,7,8-Hexachlorodibenzodioxin | 57653-85-7 | -- | 7.9 | 42 | 330 | 360 |
| 1,2,3,6,7,8-Hexachlorodibenzofuran | 57117-44-9 | -- | 2.1 J | 4.2 J | 31 O | 40 |
| 1,2,3,7,8,9-Hexachlorodibenzodioxin | 19408-74-3 | -- | 3.7 J | 7.7 | 46 | 54 |
| 1,2,3,7,8,9-Hexachlorodibenzofuran | 72918-21-9 | -- | 1.4 J | 3.3 J | 17 | 26 |
| 1,2,3,7,8-Pentachlorodibenzodioxin | 40321-76-4 | -- | 0.9 J | 0.98 J | 3.5 O | 5.7 |
| 1,2,3,7,8-Pentachlorodibenzofuran | 57117-41-6 | -- | 0.39 U | 1.8 J | 4 J | 11 |
| 2,3,4,6,7,8-Hexachlorodibenzofuran | 60851-34-5 | -- | 2.8 J | 6.7 | 16 | 25 |
| 2,3,4,7,8-Pentachlorodibenzofuran | 57117-31-4 | -- | 1.9 J | 6.6 O | 48 | 90 |
| 2,3,7,8-Tetrachlorodibenzodioxin | 1746-01-6 | -- | 0.36 U | 0.47 U | 0.7 U | 1.3 U |
| 2,3,7,8-Tetrachlorodibenzofuran | 51207-31-9 | -- | 0.32 U | 0.52 U | 1.8 | 3.7 |
| Heptachlorodibenzodioxin (Total) | 37871-00-4 | -- | 820 | 4300 | 40000 | 40000 |
| Heptachlorodibenzofuran (Total) | 38998-75-3 | -- | 540 | 2000 | 19000 | 17000 |
| Hexachlorodibenzodioxin (Total) | 34465-46-8 | -- | 61 | 270 | 2100 | 2400 |
| Hexachlorodibenzofuran (Total) | 55684-94-1 | -- | 110 | 400 | 3300 | 4300 |
| Octachlorodibenzodioxin | 3268-87-9 | -- | 5200 | 24000 | 210000 | 200000 |
| Octachlorodibenzofuran | 39001-02-0 | -- | 520 | 2200 | 20000 | 18000 |
| Pentachlorodibenzodioxin (Total) | 36088-22-9 | -- | 2.6 J | 10 | 67 | 110 |
| Pentachlorodibenzofuran (Total) | 30402-15-4 | -- | 11 | 47 | 370 | 640 |
| TEQ (Avian Toxic. Equiv. Value, WHO TEQ-98) | R4-0428 | | NA | NA | NA | NA |
| TEQ (Fish Toxic. Equiv. Value, WHO TEQ-98) | R4-0429 | | NA | NA | NA | NA |
| TEQ (Mammalian Toxic. Equiv. Value, WHO TEQ-2005) | R4-0430 | 50 | 14 | 56 | 480 | 520 |
| Tetrachlorodibenzodioxin (Total) | 41903-57-5 | -- | 0.36 U | 1.5 | 14 | 23 |
| Tetrachlorodibenzofuran (Total) | 30402-14-3 | | 0.32 U | 5.8 | 26 | 33 |

**Notes:**

Value exceeds residential Soil PRG

-- - Not established

ft bls - feet below land surface

ng/kg - nanograms per kilogram

NA - Not Applicable

PRG - preliminary remedial goal

TEQ - Toxic Equivalents

U - The analyte was not detected at or above the reporting limit

J - Estimated Value

O - Other qualifiers, provided from the laboratory to explain qualifier

# Table 4-10
# Metals in Subsurface Soil - 2012, 2013
# Southeastern Wood Preserving Site
# Canton, Madison County, Mississippi

| Chemical Name | CAS Number | Industrial Soil PRG | Sample ID | | | |
|---|---|---|---|---|---|---|
| | | | SWP001 | SWP002 | SWP002 (dup) | SWP004 |
| | | | Sample Date | | | |
| | | | 1/8/2013 | 1/12/2013 | 1/12/2013 | 11/6/2012 |
| | | | Depth Interval (ft bls) | | | |
| | | | 9-10 | 6-12 | 6-12 | 5 to 5.5 |
| **Metals (mg/kg)** | | | | | | |
| Aluminum | 7429-90-5 | 990000 | 5300 | 8800 | 8800 | 6100 |
| Antimony | 7440-36-0 | 410 | 0.2 U,J,O | 0.2 U | 0.2 U | 0.2 U,J,O |
| Arsenic | 7440-38-2 | 1.6 | 3.5 | 8.4 | 6.6 | 2.1 |
| Barium | 7440-39-3 | 190000 | 82 | 130 | 140 | 77 |
| Beryllium | 7440-41-7 | 2000 | 0.45 | 0.72 | 0.78 | 0.6 U |
| Cadmium | 7440-43-9 | 800 | 0.1 U | 0.099 U | 0.1 | 0.099 U |
| Calcium | 7440-70-2 | -- | 8700 | 1500 | 1400 | 1400 |
| Chromium | 7440-47-3 | -- | 9.8 | 16 | 20 | 7 |
| Cobalt | 7440-48-4 | 300 | 3.9 | 6.3 | 14 | 5.7 |
| Copper | 7440-50-8 | 41000 | 5.8 | 13 | 12 | 7.4 |
| Iron | 7439-89-6 | 720000 | 9900 | 21000 | 23000 | 10000 |
| Lead | 7439-92-1 | 800 | 6.6 | 11 | 15 | 12 |
| Magnesium | 7439-95-4 | -- | 1200 | 1800 | 1700 | 860 |
| Manganese | 7439-96-5 | 23000 | 310 | 490 | 810 | 900 |
| Molybdenum | 7439-98-7 | 5100 | 1 U | 0.99 U | 1 U | 2 U,J,O |
| Nickel | 7440-02-0 | 20000 | 7 | 14 | 16 | 5.6 |
| Potassium | 7440-09-7 | -- | 380 | 460 | 400 | 350 |
| Selenium | 7782-49-2 | -- | 1.3 | 2.3 | 2.3 | 0.4 U,J,O |
| Silver | 7440-22-4 | 5100 | 0.5 U | 0.49 U | 0.5 U | 0.99 U |
| Sodium | 7440-23-5 | -- | 240 | 150 | 160 | 380 |
| Strontium | 7440-24-6 | 610000 | 25 | 17 | 18 | 13 |
| Thallium | 7440-28-0 | 10 | 0.2 U | 0.2 U | 0.2 U | 0.2 U |
| Tin | 7440-31-5 | 610000 | 1.5 U | 1.5 U | 1.5 U | 3 U,J,O |
| Titanium | 7440-32-6 | -- | 41 J,O | 45 | 39 | 15 J,O |
| Vanadium | 7440-62-2 | -- | 14 | 27 | 33 | 15 |
| Yttrium | 7440-65-5 | -- | 6.8 | 13 | 13 | 9.1 |
| Zinc | 7440-66-6 | 310000 | 21 | 37 | 33 | 22 |

**Notes:**

Value exceeds Industrial Soil PRG

-- - Not established

CAS - Chemical Abstract Service

dup - duplicate sample

ft bls - feet below land surface

mg/kg - milligrams per kilogram

PRG - preliminary remedial goal

U - The analyte was not detected at or above the reporting limit

J - Estimated Value

O - Other qualifiers, provided from the laboratory to explain qualifier

# Table 4-11
## Summary of Geotechnical Results-2012 and 2013
## Southeastern Wood Preserving Site
## Canton, Madison County, Mississippi

| Boring Identification | Depth Interval (ft bls) | Geologic Unit | Soil Description | Soil Classfication (USCS) | Grain Size Distribution | | | | Natural Moisture % | Dry Bulk Density (pcf) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | % Gravel | % Sand | % Silt | % Clay | | |
| SWP001 | 17-18.5 | YC | Dark yellowish brown **SILT with sand** | **ML** | 0.0 | 27.8 | 49.4 | 22.8 | 29.06 | 119.9 |
| | 30-31 | | Mottled **CLAY** | | | | | | | |
| | 34-35 | | Gray fat **CLAY** | **CH** | 0.0 | 1.6 | 17.0 | 81.4 | | |
| | 36.5-38 | | Greenish-gray **CLAY** | | | | | | 26.92 | |
| | 71.5-72.5 | MF | Gray **Silty SAND** | **SM** | 0.0 | 79.5 | 9.7 | 10.8 | | |
| | 205-206.5 | CF | Dark brown **CLAY** | | | | | | | |
| | 297-298 | | Dark grayish brown poorly graded **SAND with silt** | **SP-SM** | 0.0 | 91.0 | 6.4 | 2.6 | | |
| SWP002 | 112.5-113.5 | CF | Dark brown **Silty CLAY** | | | | | | 29.40 | |
| | 117.5-118 | | Very dark grayish brown **Silty SAND** | **SM** | 0.0 | 61.2 | 22.9 | 15.9 | | |
| SWP004 | 6-8 | F | Mottled **Silty CLAY** | | | | | | | 119.0 |
| | 14-15 | YC | Dark brown **CLAY** | | | | | | | 116.7 |
| | 20-21 | | Olive yellow fat **CLAY** | **CH** | 0.0 | 4.3 | 26.9 | 68.8 | | |
| | 28.5-30 | | Greenish-gray **CLAY** | | | | | | 52.87 | |
| | 31.5-33 | | Olive gray fat **CLAY** | **CH** | 0.0 | 6.6 | 36.0 | 57.4 | | |
| | 68-69 | MF | Olive gray **Silty SAND** | **SM** | 0.8 | 66.8 | 13.9 | 18.5 | | |
| | 72-73 | CF | Black fat **CLAY** | **CH** | 0.0 | 11.4 | 40.2 | 48.4 | | |

**Notes:**

1) Soil description and classification completed by geotechnical lab and is based on visual classification where grain size and atterburg limits were not performed. Shaded descriptions are based on the log of boring.
2) Color determined by Munsell's Color Chart for Soils by geotechnical lab; field observations where shaded
3) Organic Matter determined by Walkley Black Method
   Moisture Content determined by ASTM D2216
   Atterberg Limits determined by ASTM D4318
   Grain Size Distribution determined by ASTM D422
   Hydraulic Conductivity determined by ASTM D5084
   Soil pH determined by EPA Method 9045

**Abbreviations:**

LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
su = standard units
pcf = per cubic foot
ft bls = feet below land surface
cm/sec = centimeters per second
USCS = Unified Soil Classification System

**Geologic Units:**

F = fill
YC = Yazoo Clay
MF = Moody's Branch Formation
CF = Cockfield Formation

# Table 4-11
## Summary of Geotechnical Results-2012 and 2013
## Southeastern Wood Preserving Site
## Canton, Madison County, Mississippi

| Boring Identification | Depth Interval (ft bls) | Geologic Unit | Soil Description | Atterberg Limits | | | pH (su) | Organic Content % | Hydraulic Conductivity (K) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | LL | PL | PI | | | Bulk Density (pcf) | Dry Density (pcf) | Hydraulic Conductivity (cm/sec) |
| SWP001 | 17-18.5 | YC | Dark yellowish brown **SILT with sand** | | | | | 0.19 | 99.2 | 77.8 | 8.40E-09 |
| | 30-31 | | Mottled **CLAY** | | | | 8.40 | | | | |
| | 34-35 | | Gray fat **CLAY** | | | | | 0.13 | | | |
| | 36.5-38 | | Greenish-gray **CLAY** | 65 | 18 | 47 | | | 119.4 | 92.6 | 5.90E-09 |
| | 71.5-72.5 | MF | Gray **Silty SAND** | | | | | 0.10 | | | |
| | 205-206.5 | CF | Dark brown **CLAY** | 63 | 22 | 41 | | 0.31 | | | |
| | 297-298 | | Dark grayish brown poorly graded **SAND with silt** | | | | | | | | |
| SWP002 | 112.5-113.5 | CF | Dark brown **Silty CLAY** | | | | | | 127.2 | 98.8 | 1.60E-08 |
| | 117.5-118 | | Very dark grayish brown **Silty SAND** | | | | | 1.21 | | | |
| SWP004 | 6-8 | F | Mottled **Silty CLAY** | | | | | 0.03 | | | |
| | 14-15 | YC | Dark brown **CLAY** | | | | | | | | |
| | 20-21 | | Olive yellow fat **CLAY** | | | | 7.65 | 0.13 | | | |
| | 28.5-30 | | Greenish-gray **CLAY** | | | | | | 105.4 | 69.1 | 1.40E-08 |
| | 31.5-33 | | Olive gray fat **CLAY** | 65 | 17 | 48 | | 0.26 | | | |
| | 68-69 | MF | Olive gray **Silty SAND** | | | | | 0.23 | | | |
| | 72-73 | CF | Black fat **CLAY** | 56 | 14 | 42 | | 0.52 | | | |

**Notes:**

1) Soil description and classification completed by geotechnical lab and is based on visual classification where grain size and atterburg limits were not performed. Shaded descriptions are based on the log of boring.
2) Color determined by Munsell's Color Chart for Soils by geotechnical lab; field observations where shaded
3) Organic Matter determined by Walkley Black Method
   Moisture Content determined by ASTM D2216
   Atterberg Limits determined by ASTM D4318
   Grain Size Distribution determined by ASTM D422
   Hydraulic Conductivity determined by ASTM D5084
   Soil pH determined by EPA Method 9045

**Abbreviations:**

LL = Liquid Limit
PL = Plastic Limit
PI = Plasticity Index
su = standard units
pcf = per cubic foot
ft bls = feet below land surface
cm/sec = centimeters per second
USCS = Unified Soil Classification System

**Geologic Units:**

F = fill
YC = Yazoo Clay
MF = Moody's Branch Formation
CF = Cockfield Formation

# Table 4-12
# Monitoring Well Groundwater Data - 2013
# Southeastern Wood Preserving Site
# Canton, Madison County, Mississippi

| Chemical Name | CAS Number | Tap Water PRG (ug/L) | Sample ID | | |
|---|---|---|---|---|---|
| | | | MW001 | MW001 (dup) | MW002 |
| | | | Screened Interval (ft bls) | | |
| | | | 290-300 | 290-300 | 300-310 |
| | | | Sample Date | | |
| | | | 1/22/2013 | 1/22/2013 | 1/22/2013 |
| **Semi-Volatile Organic Compounds (µg/L)** | | | | | |
| Acenaphthene | 83-32-9 | 400 | 0.1 U | 0.13 | 0.1 U |
| Dibenzofuran | 132-64-9 | 5.8 | 2 U | 2 U | 2 U |
| Fluoranthene | 206-44-0 | 630 | 0.1 U | 0.1 | 0.1 U |
| Fluorene | 86-73-7 | 220 | 0.1 U | 0.12 | 0.1 U |
| Naphthalene | 91-20-3 | 0.14 | 0.1 U | 0.13 | 0.1 U |
| Phenanthrene | 85-01-8 | -- | 0.4 | 0.49 | 0.1 U |
| Total SVOCs | NA | NA | 0.4 | 0.97 | ND |
| **Volatile Organic Compounds (µg/L)** | | | | | |
| Bromodichloromethane | 75-27-4 | 0.12 | 0.5 U | 0.5 U | 0.13 J,O |
| Carbon Tetrachloride | 56-23-5 | 0.39 | 0.5 U | 0.5 U | 0.16 J,O |
| Chloroform | 67-66-3 | 0.19 | 0.14 J,O | 0.16 J,O | 0.92 |
| Total VOCs | NA | NA | 0.14 | 0.16 | 1.21 |
| **Metals (µg/L)** | | | | | |
| Aluminum | 7429-90-5 | 16000 | 340 | 350 | 150 |
| Arsenic | 7440-38-2 | 0.045 | 1 U | 1 U | 1.8 |
| Barium | 7440-39-3 | 2900 | 120 | 120 | 110 |
| Calcium | 7440-70-2 | -- | 27000 | 27000 | 50000 |
| Iron | 7439-89-6 | 11000 | 2700 | 2700 | 170 |
| Lead | 7439-92-1 | -- | 1 U | 1 U | 1 |
| Magnesium | 7439-95-4 | -- | 5700 | 5800 | 15000 |
| Manganese | 7439-96-5 | 320 | 78 | 79 | 66 |
| Molybdenum | 7439-98-7 | 78 | 10 U | 10 U | 19 |
| Potassium | 7440-09-7 | -- | 3000 | 3100 | 5400 |
| Sodium | 7440-23-5 | -- | 25000 | 25000 | 63000 |
| Strontium | 7440-24-6 | 9300 | 340 | 330 | 1600 |
| Titanium | 7440-32-6 | -- | 8.5 | 7 | 5 U |
| Zinc | 7440-66-6 | 4700 | 23 | 19 | 20 |
| **Field Parameters** | | | | | |
| Dissolved Oxygen (mg/L) | NA | NA | 0.17 | NA | 0.26 |
| Oxidation Reduction Potential (mV) | NA | NA | -96 | NA | -115.8 |
| pH (SU) | NA | NA | 6.51 | NA | 7.88 |
| Specific Conductivity (mS/cm) | NA | NA | 0.305 | NA | 0.611 |
| Temperature (Deg C) | NA | NA | 19.71 | NA | 18.36 |
| Turbidity (NTU) | NA | NA | 8.61 | NA | 4.35 |

# Table 4-12
# Monitoring Well Groundwater Data - 2013
# Southeastern Wood Preserving Site
# Canton, Madison County, Mississippi

| Chemical Name | CAS Number | Tap Water PRG (ug/L) | Sample ID | | |
|---|---|---|---|---|---|
| | | | MW001 | MW001 (dup) | MW002 |
| | | | Screened Interval (ft bls) | | |
| | | | 290-300 | 290-300 | 300-310 |
| | | | Sample Date | | |
| | | | 1/22/2013 | 1/22/2013 | 1/22/2013 |
| **Classical Nutrients (mg/L)** | | | | | |
| Alkalinity, Total (as CaCO3) | E1640192 | -- | 88 | 89 | 310 |
| Carbon, Organic | E701250 | -- | 2.2 O | 2.9 O | 7.3 O |
| Nitrate/Nitrite as N | E701177 | -- | 0.05 U | 0.05 U | 0.05 U |
| Sulfate as SO4 | 14808-79-8 | -- | 50 | 50 | 15 |
| Sulfide | 18496-25-8 | -- | 1 U | 1 | 1 U |

**Notes:**

Value exceeds Tap Water PRG

ft bls - feet below land surface

-- - Not established

CaCO3 - calcium carbonate

CAS - Chemical Abstract Service

Deg C - degrees centigrade

dup - duplicate sample

mg/L - milligrams per liter

mS/cm - millisiemens per centimeter

mV - millivolts

µg/L - micrograms per liter

NA - Not applicable

ND - Not detected

NTU - Nephelometric Turbidity Unit

PRG - preliminary remedial goal

SU - Standard Units

SVOC - Semi-volatile organic compound

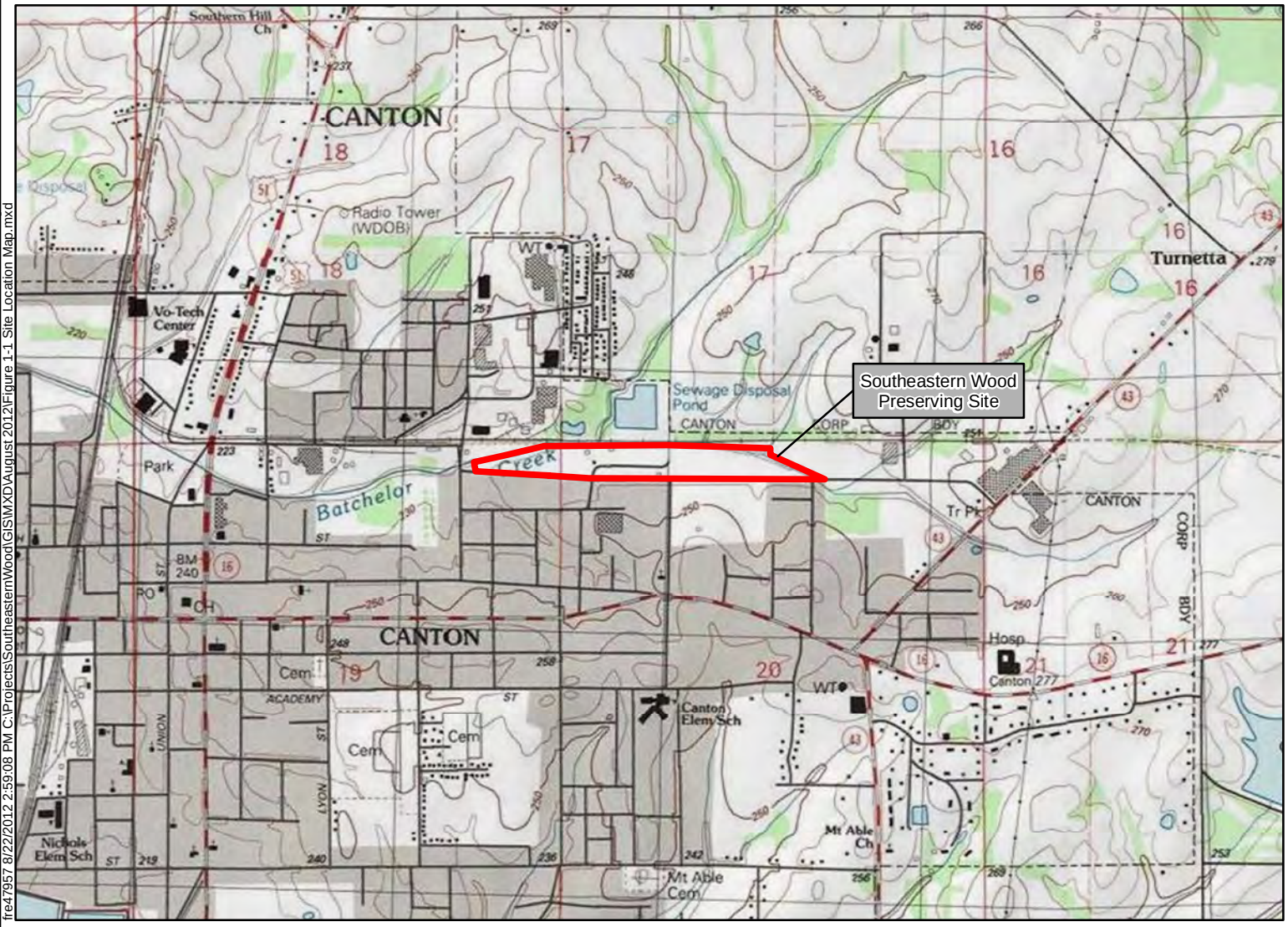
U - The analyte was not detected at or above the reporting limit

J - Estimated Value

O - Other qualifiers, provided from the laboratory to explain qualifier

# FIGURES






fre47957 8/22/2012 2:59:08 PM C:\Projects\SoutheasternWood\GIS\MXD\August 2012\Figure 1-1 Site Location Map.mxd

N

0
0.25
0.5
Miles

NAD 83 State Plane Mississippi West, Feet

# Site Location Map
# Southeastern Wood Preserving
# Canton, Madison County, Mississippi

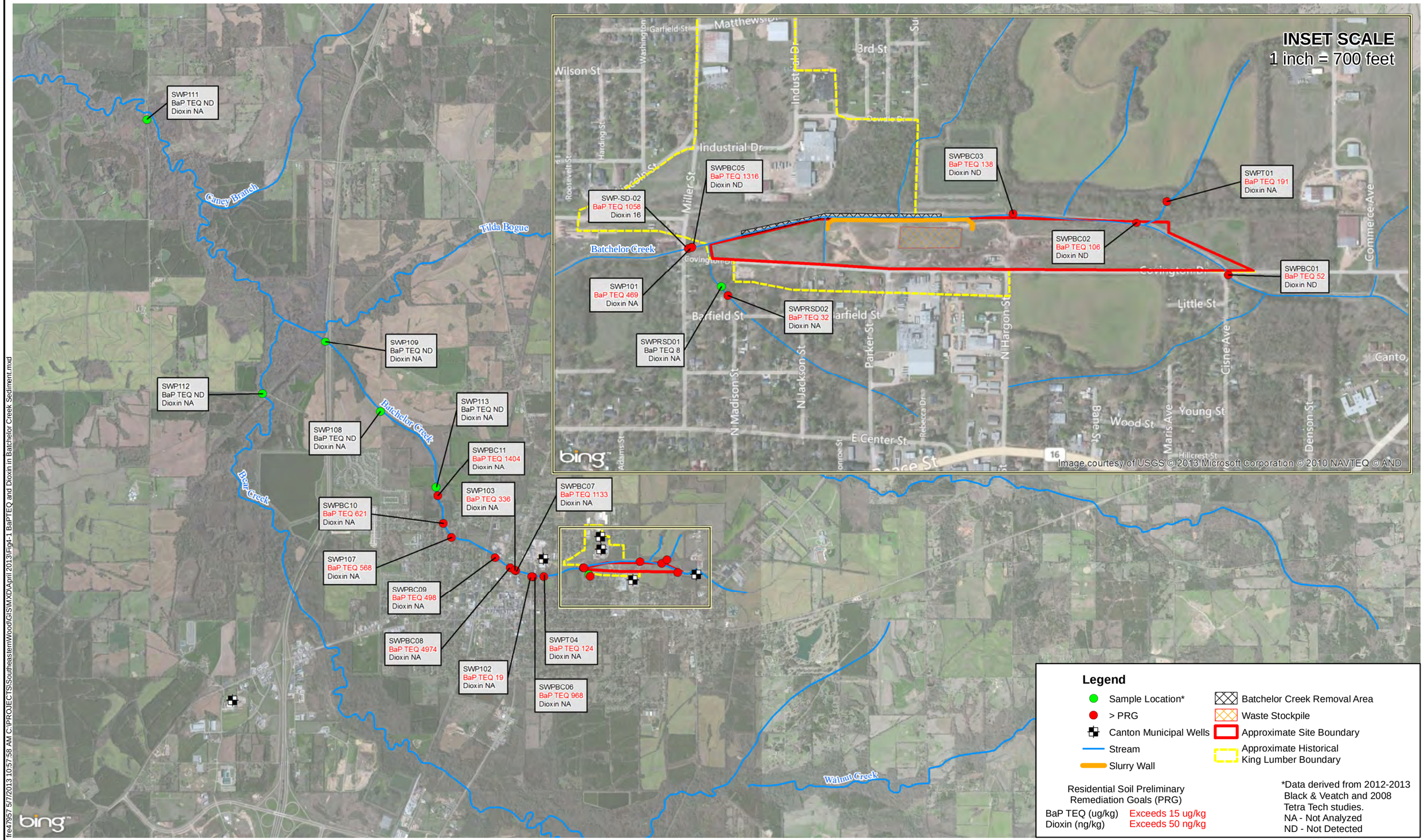
Figure
2.-1


fre47957 8/22/2012 3:00:08 PM C:\Projects\SoutheasternWood\GIS\MXD\August 2012\Figure 1-2 Site Layout.mxd

N 0 150 300 600
Feet
NAD83 Stateplane Mississippi West, Feet

Site Layout
Southeastern Wood Preserving
Canton, Madison County, Mississippi

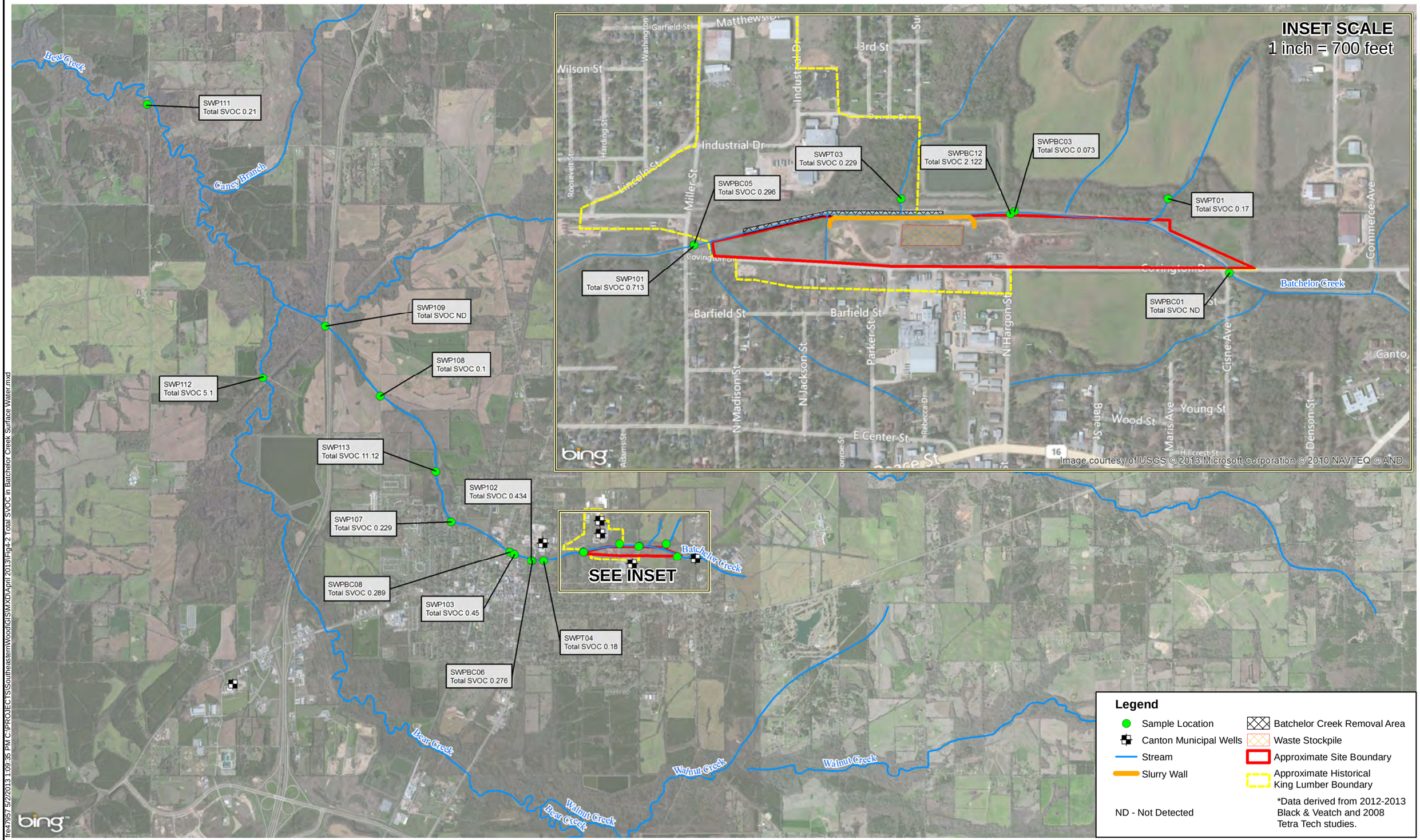
Figure 2-2




fre47957 5/7/2013 10:57:58 AM C:\PROJECTS\SoutheasternWood\GIS\MXD\April 2013\Fig4-1 BaPTEQ and Dioxin in Batchelor Creek Sediment.mxd

Benzo(a)Pyrene Toxic Equivalents (BaP TEQ) and Dioxin in Batchelor Creek Sediment
Southeastern Wood Preserving
Canton, Madison County, Mississippi

Figure 4-1




**Legend**

- Sample Location
- Canton Municipal Wells
- Stream
- Slurry Wall
- Batchelor Creek Removal Area
- Waste Stockpile
- Approximate Site Boundary
- Approximate Historical King Lumber Boundary

ND - Not Detected

*Data derived from 2012-2013 Black & Veatch and 2008 Tetra Tech studies.

N

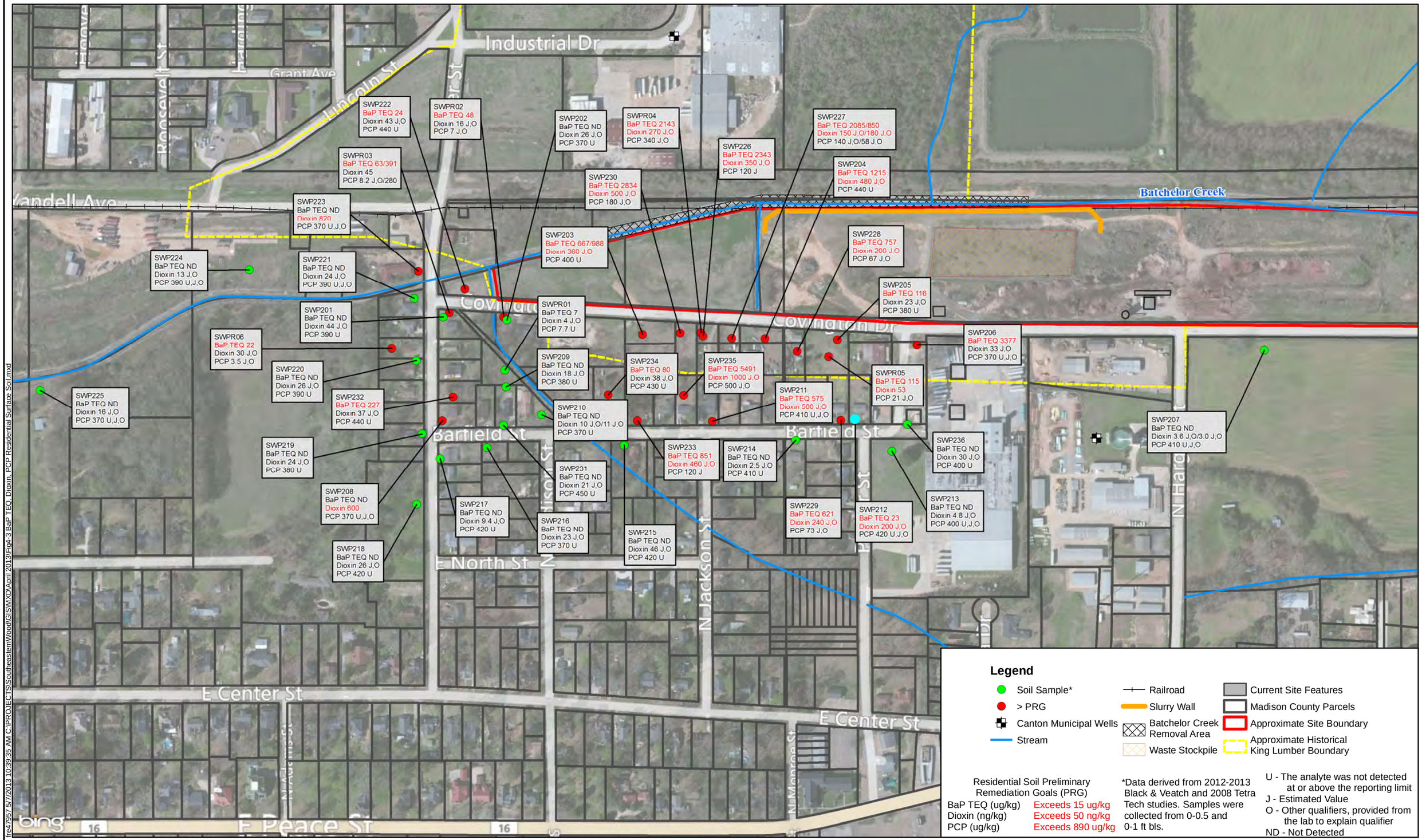
0 2,000 4,000 8,000

Feet

NAD83 Stateplane Mississippi West, Feet

Total Semi-Volatile Organic Compounds (SVOCs) in Batchelor Creek Surface Water
Southeastern Wood Preserving
Canton, Madison County, Mississippi

Figure 4-2




**Legend**

- Soil Sample*
- > PRG
- Canton Municipal Wells
- Stream
- Railroad
- Slurry Wall
- Batchelor Creek Removal Area
- Waste Stockpile
- Current Site Features
- Madison County Parcels
- Approximate Site Boundary
- Approximate Historical King Lumber Boundary

Residential Soil Preliminary Remediation Goals (PRG)

| | |
|---|---|
| BaP TEQ (ug/kg) | Exceeds 15 ug/kg |
| Dioxin (ng/kg) | Exceeds 50 ng/kg |
| PCP (ug/kg) | Exceeds 890 ug/kg |

*Data derived from 2012-2013 Black & Veatch and 2008 Tetra Tech studies. Samples were collected from 0-0.5 and 0-1 ft bls.

U - The analyte was not detected at or above the reporting limit
J - Estimated Value
O - Other qualifiers, provided from the lab to explain qualifier
ND - Not Detected

N

0 150 300 600

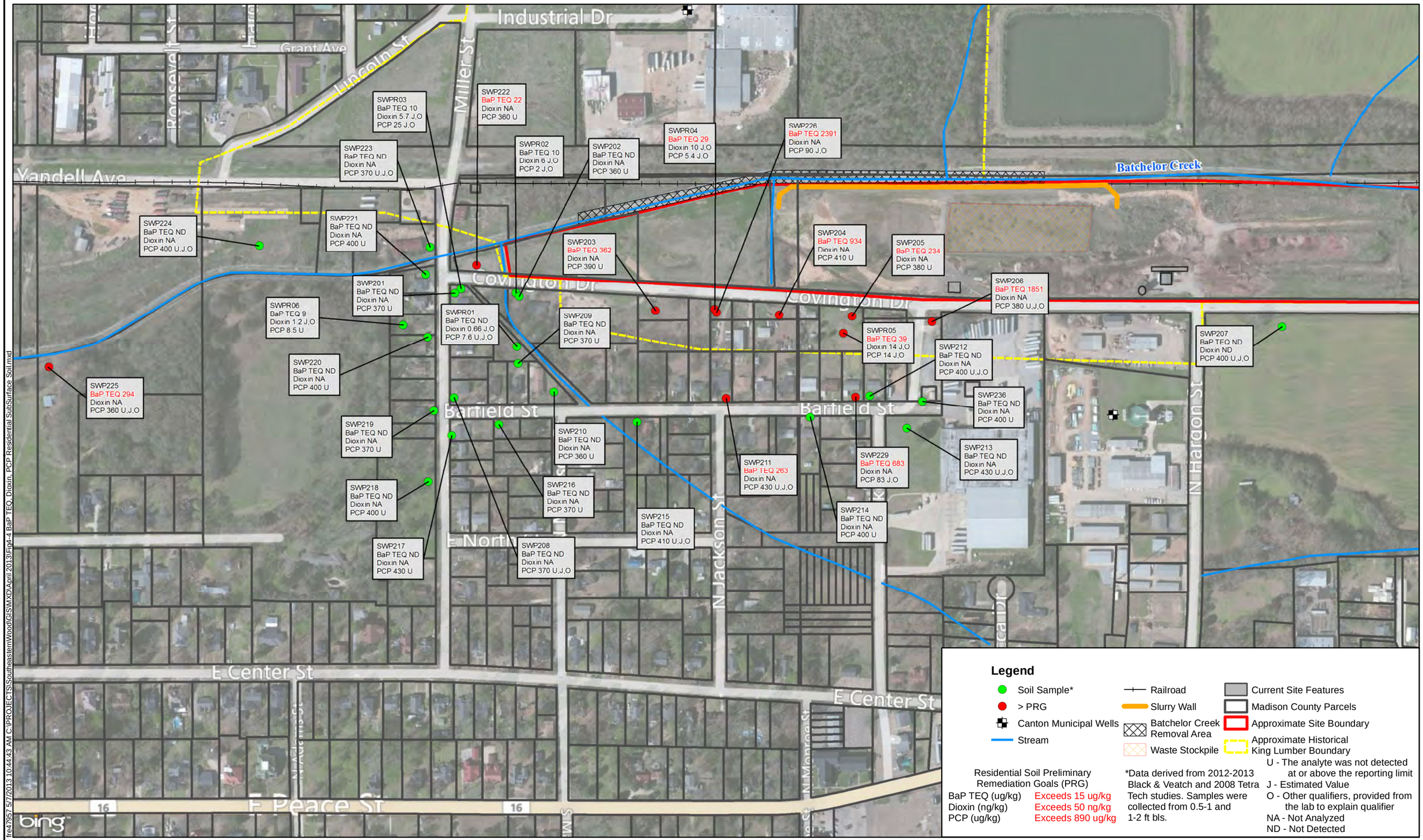
Feet

NAD83 Stateplane Mississippi West, Feet

Benzo(a)Pyrene Toxic Equivalents (BaP TEQ), Dioxin, and Pentachlorophenol (PCP) in Residential Surface Soil
Southeastern Wood Preserving
Canton, Madison County, Mississippi

Figure 4-3

fre47957 5/7/2013 10:39:35 AM C:\PROJECTS\SoutheasternWood\GIS\MXD\April 2013\Fig4-3 BaP TEQ, Dioxin, PCP Residential Surface Soil.mxd




**Legend**

- Soil Sample*
- > PRG
- Canton Municipal Wells
- Stream
- Railroad
- Slurry Wall
- Batchelor Creek Removal Area
- Waste Stockpile
- Current Site Features
- Madison County Parcels
- Approximate Site Boundary
- Approximate Historical King Lumber Boundary

Residential Soil Preliminary Remediation Goals (PRG)

| | |
|---|---|
| BaP TEQ (ug/kg) | Exceeds 15 ug/kg |
| Dioxin (ng/kg) | Exceeds 50 ng/kg |
| PCP (ug/kg) | Exceeds 890 ug/kg |

*Data derived from 2012-2013 Black & Veatch and 2008 Tetra Tech studies. Samples were collected from 0.5-1 and 1-2 ft bls.

U - The analyte was not detected at or above the reporting limit
J - Estimated Value
O - Other qualifiers, provided from the lab to explain qualifier
NA - Not Analyzed
ND - Not Detected

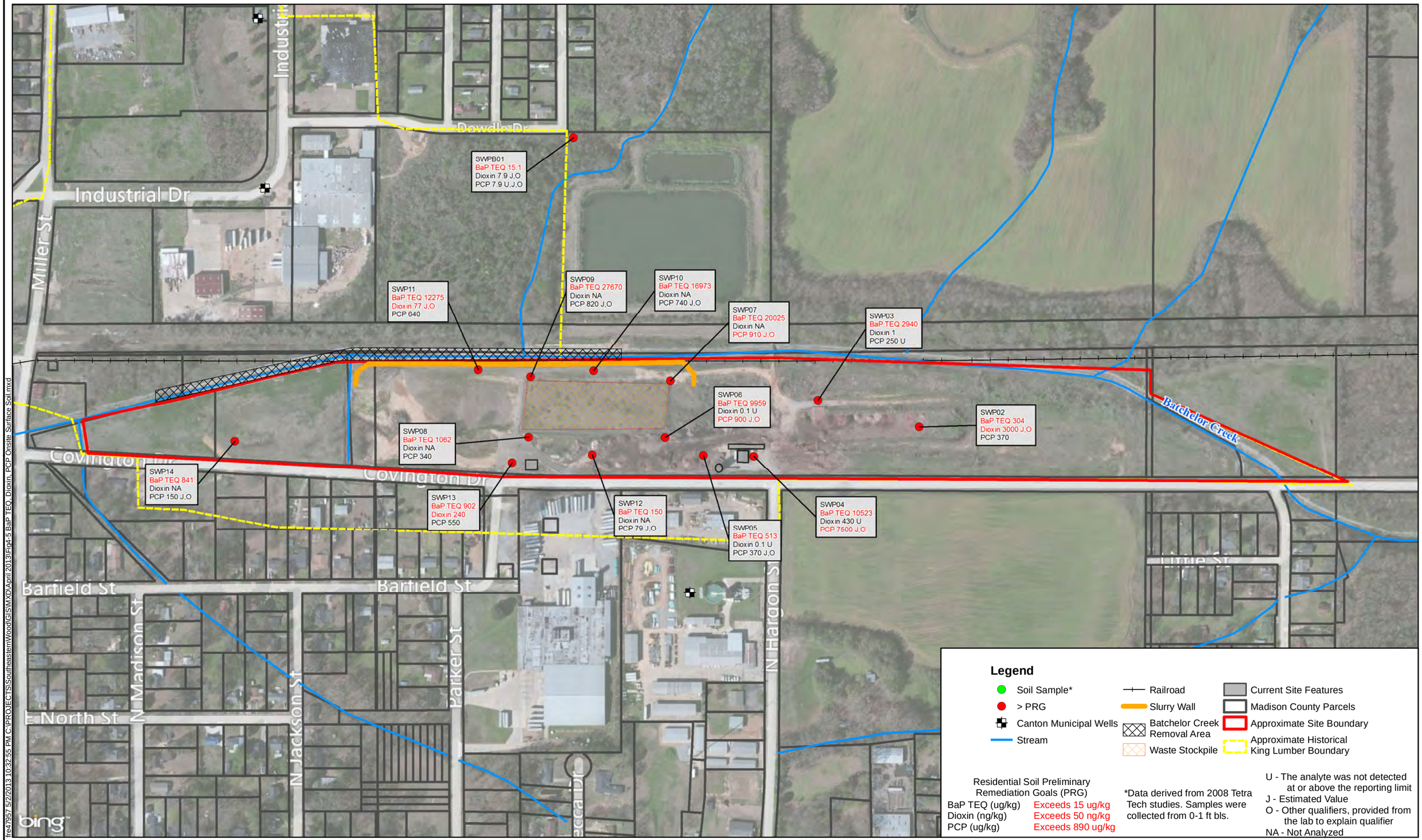
N 0 150 300 600 Feet

NAD83 Stateplane Mississippi West, Feet

Benzo(a)Pyrene Toxic Equivalents (BaP TEQ), Dioxin, and Pentachlorophenol (PCP) in Residential Subsurface Soil
Southeastern Wood Preserving
Canton, Madison County, Mississippi

Figure 4-4

fre47957 5/7/2013 10:44:43 AM C:\PROJECTS\SoutheasternWood\GIS\MXD\April 2013\Fig4-4 BaP TEQ, Dioxin, PCP Residential SubSurface Soil.mxd



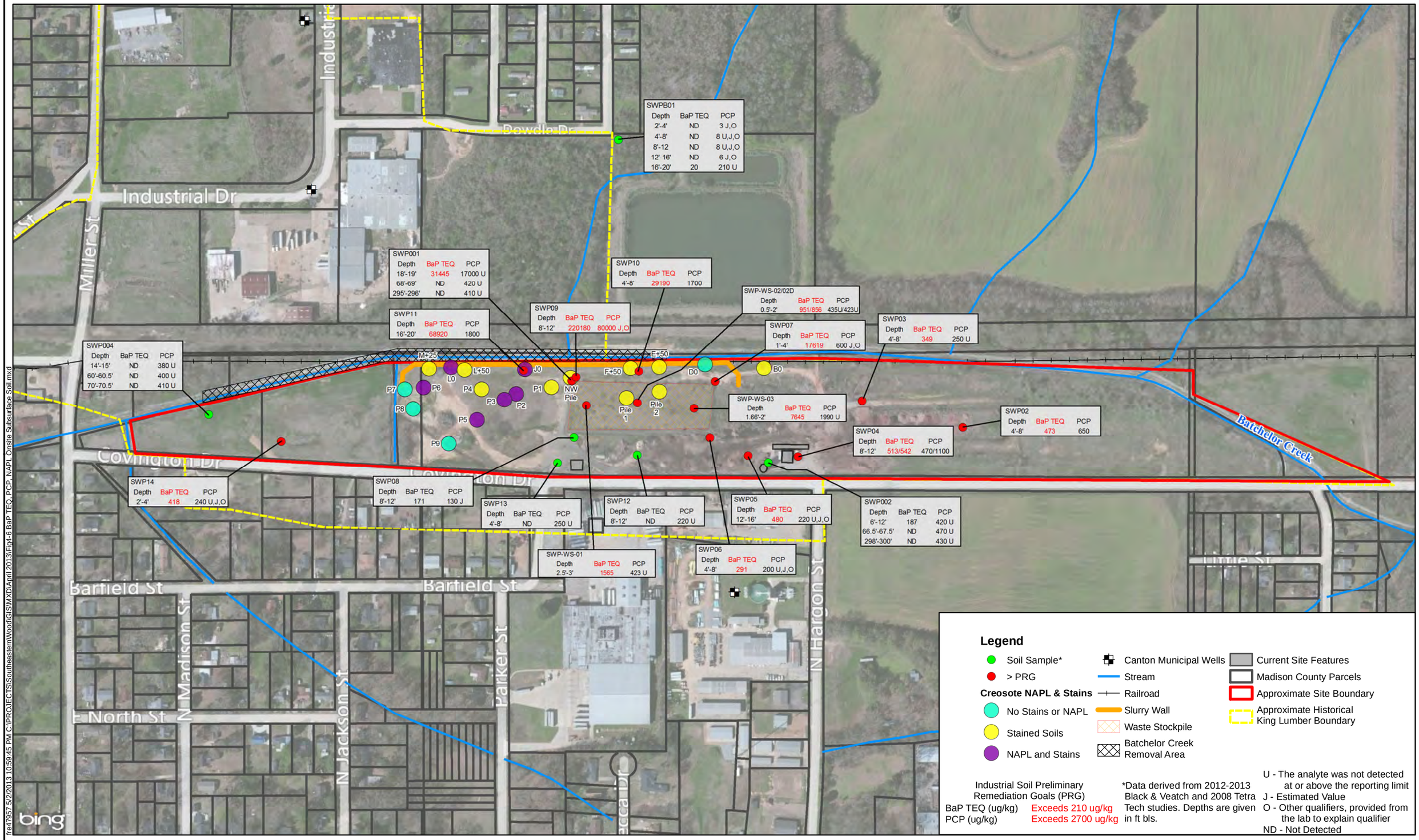

N 0 150 300 600 Feet

NAD83 Stateplane Mississippi West, Feet

Benzo(a)Pyrene Toxic Equivalents (BaP TEQ), Dioxin, and Pentachlorophenol (PCP) in Onsite Surface Soil
Southeastern Wood Preserving
Canton, Madison County, Mississippi

Figure 4-5

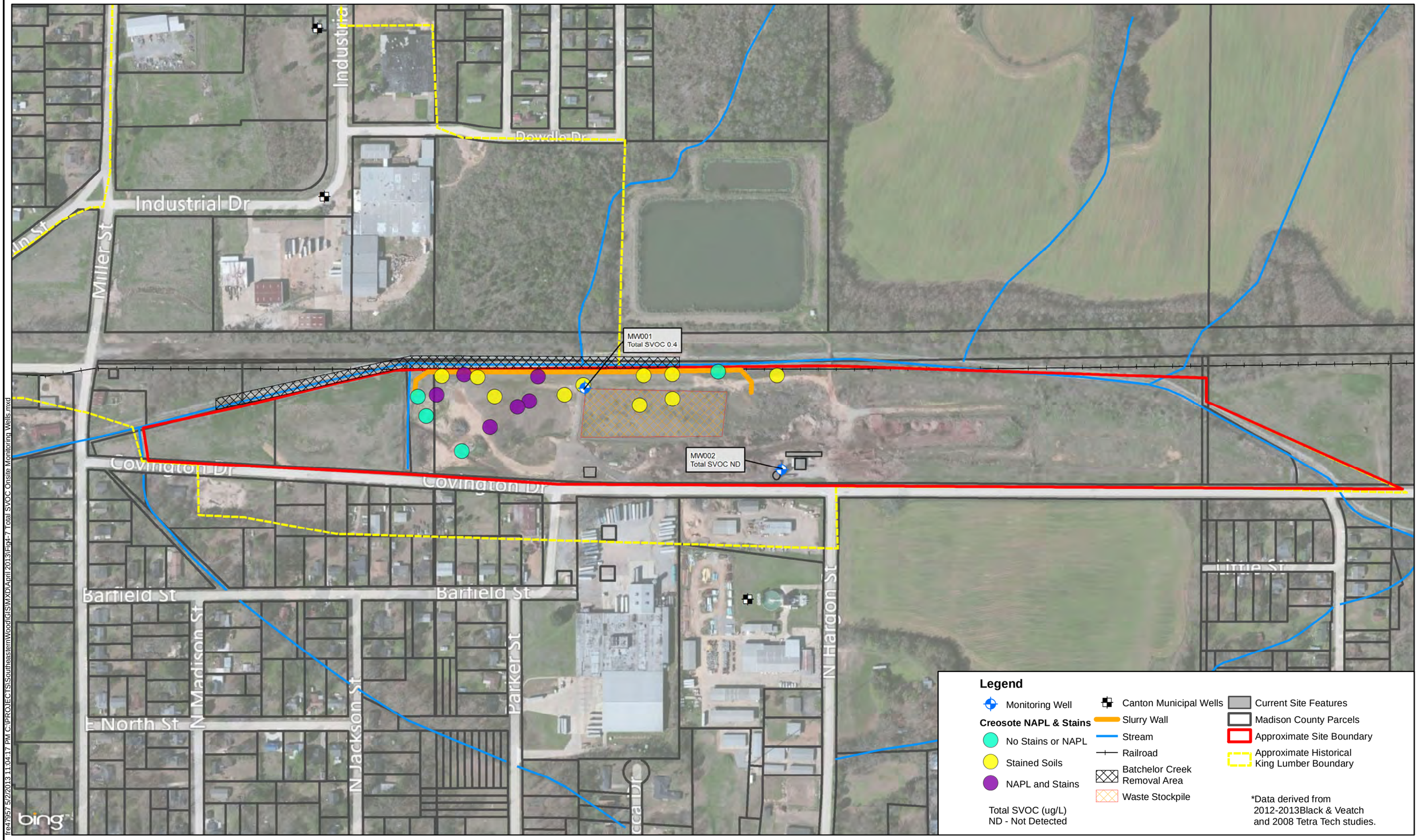
fre47957 5/2/2013 10:32:55 PM C:\PROJECTS\SoutheasternWood\GIS\MXD\April 2013\Fig4-5 BaP TEQ, Dioxin, PCP Onsite Surface Soil.mxd




fre47957 5/2/2013 10:59:45 PM C:\PROJECTS\SoutheasternWood\GIS\MXD\April 2013\Fig4-6 BaP TEQ, PCP, NAPL Onsite Subsurface Soil.mxd

Benzo(a)Pyrene Toxic Equivalents (BaP TEQ), Pentachlorophenol (PCP), and indications of Creosote Non-Aqueous Phase Liquid (NAPL) in Onsite Subsurface Soil
Southeastern Wood Preserving
Canton, Madison County, Mississippi

Figure 4-6

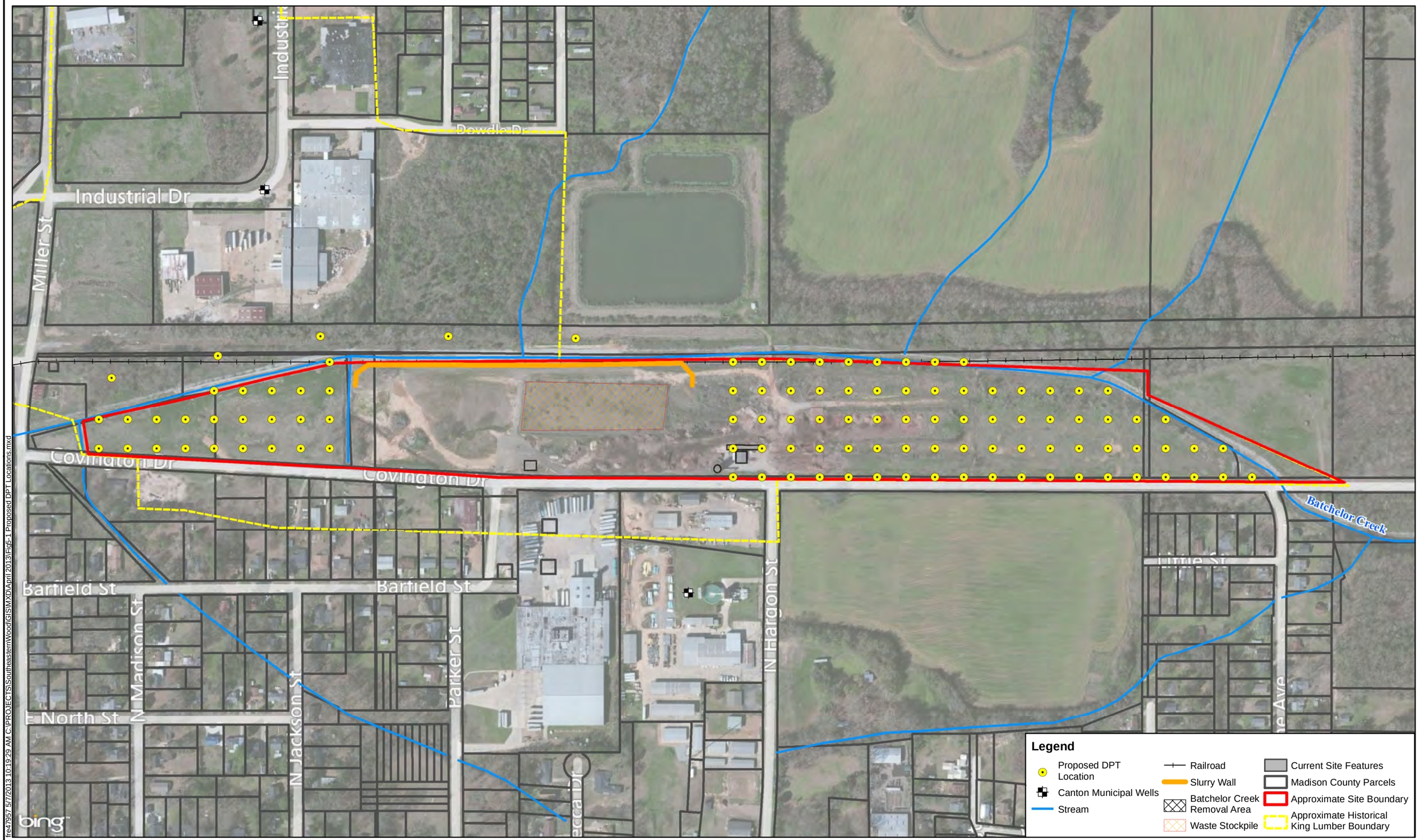



fr647957 5/2/2013 11:04:17 PM C:\PROJECTS\SoutheasternWood\GIS\MXD\April 2013\Fig4-7 Total SVOC Onsite Monitoring Wells.mxd

N 0 150 300 600
Feet
NAD83 Stateplane Mississippi West, Feet

Total Semi-Volatile Organic Compounds (SVOC) in Onsite Monitoring Wells
Southeastern Wood Preserving
Canton, Madison County, Mississippi

Figure 4-7




fre47957 5/7/2013 10:19:29 AM C:\PROJECTS\SoutheasternWood\GIS\MXD\April 2013\Fig5-1 Proposed DPT Locations.mxd

N 0 150 300 600
Feet
NAD83 Stateplane Mississippi West, Feet

Proposed Phase 2 Sampling Locations
Southeastern Wood Preserving
Canton, Madison County, Mississippi

Figure 5-1