

**FINAL EXPANDED SITE INSPECTION REPORT
SHAFFER EQUIPMENT/ARBUCKLE CREEK AREA SITE
MINDEN, FAYETTE COUNTY, WEST VIRGINIA**

Prepared for:



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LIST OF ACRONYMS AND ABBREVIATIONS

µg/kg	micrograms per kilogram
µg/L	micrograms per liter
AOC	Area of Concern
bgs	below ground surface
BTAG	Biological Technical Assistance Group
CBC	chlorinated biphenyl congeners
CDD	chlorinated dibenzo-p-dioxins
CDF	chlorinated dibenzofurans
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CFA	Conservation Focus Area
CLP	Contract Laboratory Program
CRQL	Contract-Required Quantitation Limit
DDD	dichlorodiphenyldichloroethane
DDE	dichlorodiphenyldichloroethylene
DDT	dichlorodiphenyltrichloroethane
EPA	U.S. Environmental Protection Agency
ESAT	Environmental Service Assistance Team
ESI	Expanded Site Inspection
FEMA	Federal Emergency Management Agency
HRS	Hazard Ranking System
HRSM	High Resolution Superfund Methods
kg	kilogram
MCL	Maximum Contaminant Level
ng/kg	nanogram per kilogram
NR&P	New River and Pocahontas Coal Company
OLEM	Office of Land and Emergency Management
OSRTI	Office of Superfund Remediation and Technology Innovation
PA	Preliminary Assessment
PAH	polycyclic aromatic hydrocarbon

LIST OF ACRONYMS AND ABBREVIATIONS (CONTINUED)

PCB	polychlorinated biphenyl
pg/L	picogram per liter
ppb	part per billion
ppm	part per million
RDL	reporting detection limit
RML	EPA Removal Management Level
SEC	Shaffer Equipment Company
SI	Site Investigation
SIM	Selective Ion Monitoring
SOW	Statement of Work
START	Eastern Area Superfund Technical Assessment and Response Team
SVOC	semivolatile organic compound
SWAP	State Wildlife Action Plan
TAL	Target Analyte List
TCDD	2,3,7,8-Tetrachlorodibenzodioxin
TDD	Technical Direction Document
TDL	target distance limit
TEQ	toxic equivalent
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VOC	volatile organic compound
WESTON®	Weston Solutions, Inc.
WVDNR	West Virginia Department of Natural Resources

1.0 INTRODUCTION

Under the Eastern Area Superfund Technical Assessment and Response Team (START) Contract No. EP-S3-15-02, Technical Direction Document (TDD) No. W503-17-12-001, the U.S. Environmental Protection Agency (EPA) Region III tasked Weston Solutions, Inc. (WESTON®) to conduct an Expanded Site Inspection (ESI) of the Shaffer Equipment/Arbuckle Creek Area site (the Site) located in Minden, Fayette County, West Virginia.

The ESI was conducted in accordance with EPA *Guidance for Performing Site Inspections Under CERCLA* (EPA, 1992). The purposes of the ESI were to collect sufficient analytical data and information concerning conditions at the Site to assess the relative threat posed to human health and the environment with respect to actual or potential releases of hazardous substances, and to determine the need for additional action under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) based on criteria as set forth in EPA *Hazard Ranking System; Final Rule* (EPA, 1990).

2.0 SITE BACKGROUND

This section presents a description of the Site and its location, provides a discussion of the Site's ownership and history, and presents a summary of previous SI activities.

2.1 SITE LOCATION AND DESCRIPTION

The Site is located in Minden, Fayette County, West Virginia, as shown on **Figure 1**, Site Location Map. The approximate geographic coordinates of the former Shaffer Equipment Company (SEC) property are 37.97651° North latitude and -81.1265° West longitude. The Site consists of the former SEC property, contaminated sediments within Arbuckle Creek, and residential properties located within the floodplain of Arbuckle Creek downstream of the former SEC property.

As shown in **Figure 2**, Site Layout Map, the former SEC property is located within the floodplain of Arbuckle Creek, which borders the property to the north. Arbuckle Creek flows in an easterly direction for approximately 1 mile through residential properties before reaching the New River

Gorge National River park. Arbuckle Creek flows for an additional approximate 2 miles through the New River Gorge National River park to its confluence with the New River.

Historically, it has been reported that Arbuckle Creek floods on average about seven times a year, and, in recent years, the creek has been known to flood approximately four to five times a year. Additionally, historic flood events occurred in the eastern portion of West Virginia in 1985, as well as specifically in Minden, in July 2001, June 2016, and June 2017. In the summer of 1984, prior to the discovery of polychlorinated biphenyl (PCB) contamination on the Shaffer property, in efforts to control the periodic flooding of Arbuckle Creek, the creek was dredged and the sediments were allegedly placed on residential properties as fill and in abandoned mine piles (NUS, 1991a).

2.1 PREVIOUS INVESTIGATIONS

Historically, the Town of Minden was a coal mining town dating back to the late 1800s. The New River and Pocahontas Coal Company (a.k.a Berwind Land Company) owned a majority of the land surrounding the town and conducted coal mining operations until the 1950s (NUS, 1991a).

Numerous EPA investigations have been conducted at various locations throughout the Town of Minden in an attempt to identify the source and extent of PCBs present in the soil at residential properties and sediment within Arbuckle Creek. The following sections provide a brief summary of these investigations.

2.1.1 Shaffer Equipment Co.

The SEC site is located on the western end of the Town of Minden off Old Minden Road. Arbuckle Creek borders the site to the north. Historically, the property was owned by the Berwind Land Company until it was sold to Mr. William Shaffer in 1970. The SEC operated at the Site from approximately 1970 until 1983 building electrical substations for the coal mining industry. During an initial inspection of the SEC facility conducted in September 1984 by the West Virginia Department of Natural Resources (WVDNR) and a subsequent visit conducted in October 1984 by WVDNR and EPA, hundreds of transformers and capacitors were observed

across the property with the majority of them resting on their sides. Several of the transformers and capacitors had broken insulators with heavy oil spillage evident on the ground surface. A four-point composite soil sample in the transformer area, a grab soil sample from the main transformer area, a grab soil sample from a drainage ditch leading towards Arbuckle Creek, and surface and subsurface soil samples from the capacitor spillage area were collected, as well as two sediment samples from Arbuckle Creek. Analytical data indicated the presence of PCBs at concentrations of 8,200 parts per million (ppm) (0.82%) in the composite sample, 33 ppm in the main transformer area soil sample, 260 ppm in the soil sample collected from the drainage ditch, 260,000 ppm (26%) in the surface soil sample collected from the capacitor spillage area, 40,000 ppm (4 %) in the subsurface soil sample collected from the capacitor spillage area, and 4 ppm and 3 ppm in the sediment samples collected from Arbuckle Creek (EPA, 1984a; EPA, 1984b; and EPA, 1987). Additional soil and sediment samples collected in January 1985 indicated soil at a residential property approximately 1 mile downstream of the Shaffer property contained PCBs as high as 15 ppm and in Arbuckle Creek as high as 73 ppm 300 feet downstream (EPA, 1987).

Between November 1984 and February 1985, EPA conducted a series of sampling events at the Site that identified concentrations of PCBs as high as 260,000 ppm in the surface soil on the SEC property, as high as 200 ppm in sediment from Arbuckle Creek, and as high as 15 ppm in soil from residential yards along Arbuckle Creek as far as one mile downstream from the SEC property (EPA, 1987). From December 1984 to December 1987, EPA conducted a removal action at the SEC property, which consisted of the removal and offsite disposal of 4,735 tons of soil from an approximate 1-acre area that contained PCBs at concentrations greater than 50 ppm and the removal and off-site disposal of capacitors, transformers, and numerous drums of transformer fluid (EPA, 1987). Six inches of surface soil were removed from an area of the western end of the property along Arbuckle Creek (Area I) and post-excavation sample analysis indicated PCB concentrations less than (<) 50 ppm. An area just west of the former building along Arbuckle Creek (Area II) was excavated to 2 feet and the post-excavation samples indicated PCB concentrations <50 ppm (NUS, 1990; IC, Inc., 2003). The excavated area is shown on **Figures 2 and 3**.

In March 1990, EPA conducted additional sampling on the SEC property, nearby residential properties, and from Arbuckle Creek. Analytical data indicated PCBs on the SEC property as high as 660,000 micrograms per kilograms ($\mu\text{g/kg}$) (roughly equivalent to parts per billion [ppb]) in a sample collected from an on-property drainage ditch to Arbuckle Creek (SD-8), 240,000 $\mu\text{g/kg}$ in surface soil (S-1), 110,000 $\mu\text{g/kg}$ in subsurface soil (S-7), as high as 2,100 $\mu\text{g/kg}$ on a residential property (S-102), and as high as 5,200 $\mu\text{g/kg}$ in Arbuckle Creek sediment (SD-5) (NUS, 1990). Additional samples were collected from the SEC property in June 1990; the highest concentrations of PCBs detected were reported at 40,302.8 ppm (IC, Inc., 2003). In November 1990, EPA conducted a second removal action at the SEC property that consisted of the excavation and off-property disposal of soil from six areas at the property from depths ranging from 1 inch to 4 feet below ground surface (bgs) (IC, Inc., 2003, WESTON, 1994). Post-excavation samples collected from three areas were determined to be clean. Post-excavation samples collected from a fourth area showed results of 772 ppm and less than 50 ppm. The remaining two areas indicated PCB concentrations of 2,030 ppm and 10,500 ppm; additional soil was excavated from these areas. The excavated areas were backfilled with soil from a borrow area south of the SEC facility. The backfilled area was resampled and PCB concentrations ranged from 0.1 to 1000 ppm (IC, Inc., 2003).

In 1993, following the two soil excavation and off-property disposal removal actions conducted between 1984 and 1987 and in 1990, EPA collected 125 soil samples from the SEC property, eight soil samples from residential properties, 11 samples from a drainage ditch on the SEC property, and 24 sediment samples from Arbuckle Creek. Eleven samples indicated PCB concentrations greater than 50 ppm, 11 samples indicated PCB concentrations between 10 ppm and 50 ppm, and 91 samples indicated PCB concentrations less than 10 ppm. Twenty subsurface soil samples were collected from the SEC property and field-tested for PCBs. Two of the samples indicated PCB concentrations greater than 50 ppm and the remaining 18 indicated PCB concentrations less than 10 ppm (WESTON, 1994).

From October 2001 through December 2001, the U.S. Army Corps of Engineers conducted a third removal action at the SEC property that involved the installation of an impervious barrier/cap over a portion of the remaining contaminated soil on the SEC property that consisted

of a compacted clay layer and a 40-millimeter thick, high-density polyethylene impervious cap/barrier placed over the compacted clay, and the installation of metal sheet pilings along the bank of Arbuckle Creek (IC, Inc., 2003). Excavated and capped areas at the SEC property are shown on **Figures 2 and 3**. Although the property is privately owned, residents access the property for recreational use of driving all-terrain vehicles.

2.1.2 Arbuckle Creek Area

In 1990 and 1991, EPA conducted an assessment of the Arbuckle Creek Area portion of the site, which consisted of the collection of 17 soil samples from primarily residential properties, six surface water and sediment samples from Arbuckle Creek, and two sediment samples from a drainage ditch parallel to and south of Arbuckle Creek that originates near the former SEC property (NUS, 1991a).

PCBs were detected in 13 of the 17 soil samples ranging in concentration from 0.15 ppm to 5.1 ppm. Eight samples contained concentrations of PCBs greater than 1 ppm. The two sediment samples collected from the drainage ditch contained 1.3 ppm and 9 ppm PCBs. Three of the six sediment samples collected from Arbuckle Creek contained PCB concentrations ranging from 0.32 ppm to 0.64 ppm. The two sediment samples collected upstream of the former SEC property did not contain PCBs. PCBs were not detected in the collected surface water samples (NUS, 1991a).

During the assessment, residents of the Town of Minden stated that in 1984, prior to the discovery of PCBs in the sediment, Arbuckle Creek was dredged as part of flood control measures. The residents indicated that the dredged sediments were placed on residential properties as fill and berms for flood control measures (NUS, 1991a).

2.1.3 Bath House

In 1990 and 1991, EPA conducted an assessment of the Bath House site located on the western end of the Town of Minden off Old Minden Road on the north side of Arbuckle Creek across from the SEC site. The Bath House site consists of a large brick building located on approximately 3 acres of land. The brick building was used by the coal miners of New River and

Pocahontas Coal Company. The property was owned by Berwind Land Company until 1980 when it was purchased by Mr. Leroy Britt. Mr. Britt stated that the SEC Company used the brick building for storage of equipment, including transformers, until 1978 or 1979 when the property was owned by the Berwind Land Company (NUS, 1991b).

During the assessment, an abandoned transformer was observed on the property. EPA collected soil samples from the Site including near the transformer and from observed drainage ditches that discharge to Arbuckle Creek. Two soil samples contained concentrations of PCBs at 2.6 ppm near a 55-gallon drum and 0.3 ppm at the end of a drainage ditch leading from the 55-gallon drum to Arbuckle Creek. The remaining samples, including the samples collected near the abandoned transformer, did not contain PCBs (NUS, 1991b). Although the property is privately owned, residents access the property for recreational use of driving all-terrain vehicles.

2.1.4 Berwind Green Hill Mine Dump

In 1990 and 1991, EPA conducted an assessment of the Berwind Green Hill Mine Dump site located in the Town of Minden on the hillside that borders the town to the north. The property is owned by the Berwind Land Company and was historically used as an open coal mine dump by the New River and Pocahontas Coal Company. Residents in the Town of Minden state that in 1984 when Arbuckle Creek was dredged, prior to the discovery of PCBs in the creek, dredge material was placed in the abandoned mine dump. In approximately 1986 or 1987, the abandoned mine dump was reclaimed with soil and fill material and vegetated. The Site currently consists of vegetated reclaimed terraces with rock-lined ditches that convey surface water runoff from the hillside to Arbuckle Creek (NUS, 1991c).

As part of the assessment, EPA collected soil samples from the drainage ditches and observed areas that have been used as trash dumps by local residents. PCBs were not detected in any of the collected samples (NUS, 1991c). Although the property is privately owned, residents access the property for recreational use of driving all-terrain vehicles.

2.1.5 New River and Pocahontas Coal Company Supply House (a.k.a. Powerhouse)

In 1990 and 1991, EPA conducted an assessment of the New River and Pocahontas Coal Company Supply House (a.k.a Powerhouse) site located in the Town of Minden on the south side of town. The Powerhouse Site is an abandoned substation that was utilized by the New River and Pocahontas Coal Company that contains six abandoned transformers in a basement; no part of the building is currently above grade. In 1991, a concrete pad was present on the ground surface with visible steps into the basement. The Site is located on land owned by the Berwind Land Company. Samples collected by the property owner in 1989 of soil surrounding the outside the building, as well as water samples of pooled water in the basement, did not contain PCBs (NUS, 1991d).

EPA collected surface soil samples around the concrete pad and from low-lying areas on the Site, as well as sediment samples from a drainage ditch that channels surface water runoff to Arbuckle Creek. PCBs were not detected in any of the collected samples (NUS, 1991d).

3.0 SOURCE CHARACTERISTICS

This section describes the sources associated with the Site and provides information on the source sampling locations and analytical data.

3.1 SOURCE DESCRIPTION

For Hazard Ranking System (HRS) purposes, a source is defined as an area where a hazardous substance has been deposited, stored, or placed, as well as those soils that have become contaminated from the migration of a hazardous substance. The sources associated with the Site are PCB-contaminated soil remaining on the former SEC property and PCB-contaminated soil located on residential properties. EPA conducted several sampling events at the Site from June 2017 to June 2018. Soil sampling locations are shown on Figure 3. The sampling activities and analytical results for the sampling events are presented in the following sections.

3.2 SAMPLING ACTIVITIES

In June 2017, EPA collected 33 surface soil samples and 8 subsurface soil samples from the Site and analyzed for PCBs. Five of the surface soil samples and four of the subsurface soil samples were collected from the former SEC property; whereas, the remaining surface and subsurface soil samples were collected from residential properties throughout the Town of Minden, including two collected as background samples from residential properties upstream of the former SEC property not suspected to have been impacted by site contaminants. Surface soil samples were generally collected from 0 to 6 inches bgs. Four of the subsurface soil samples were collected from approximately 2 feet bgs and the remaining four were collected from approximately 4 feet bgs. Additionally, 12 of the surface soil samples were analyzed for chlorinated dibenzo-p-dioxins (CDD) and chlorinated dibenzofurans (CDF). The June 2017 surface and subsurface soil sample locations are shown on Figure 3a. Samples obtained during this sampling event were collected approximately 10 days following a major flood event in Minden.

In December 2017, EPA collected a total of 39 surface soil samples from the Site, including two duplicate samples. Two surface soil samples were collected from the former SEC property. One surface soil sample was collected as a background sample from a residential property upstream of the former SEC property not suspected to have been impacted by site contaminants, and the remaining 35 samples were collected from within the floodplain of Arbuckle Creek as far as 1 mile downstream from the former SEC property. All samples were collected from 0 to 6 inches bgs and analyzed for PCBs. The December 2017 surface soil sample locations are shown on Figure 3b.

In March 2018, EPA collected a total of 42 surface soil samples from the Site. Nine samples, including one duplicate, were collected from the former SEC property and the remaining 33, including one duplicate, were collected from residential properties throughout the Town of Minden. Seven of the 33 samples were collected as background samples from residential properties upstream of the former SEC property not suspected to have been impacted by site

contaminants. All samples were collected from 0 to 6 inches bgs and analyzed for PCBs. The March 2018 surface soil sample locations are shown on Figure 3c.

In June 2018, EPA collected a total of 43 soil samples from residential properties and from additional areas of concern (AOC) throughout the Town of Minden. Eighteen of the 43 soil samples were collected from residential properties and the remaining 25 were collected from the additional AOCs. With the exception of the soil samples collected from two AOCs, ‘Needles Eye’ and “Five Hump,” soil samples were collected from 0 to 6 inches bgs. Backfill has been placed at the Needles Eye and Five Hump AOCs; therefore, soil samples were collected from these locations at 12 to 18 inches bgs. All soil samples were analyzed for PCBs. Additionally, four soil samples collected from residential properties were analyzed for semivolatile organic compounds (SVOCs) and polycyclic aromatic hydrocarbons (PAHs) by Selective Ion Monitoring (SIM) analysis. The samples were also submitted for pesticides and Target Analyte List (TAL) metals analyses. Soil samples collected from the additional AOCs were analyzed for PCBs, SVOCs, PAHs by SIM analysis, pesticides, and TAL metals. The June 2018 soil sample locations are shown on Figure 3d and described in the table provided in Appendix A.

Available photographic documentation logs for collected samples are provided in Appendix B and the field logbook notes are provided in Appendix C.

3.3 ANALYTICAL RESULTS

The surface and subsurface soil samples described above were submitted to and analyzed by the assigned EPA Contract Laboratory Program (CLP) laboratories. Analyses were conducted in accordance with EPA CLP Methods SOM02.4 for organics and ISM02.4 for inorganics and the data were validated by EPA Region III Environmental Services Assistance Team (ESAT) according to the National Functional Guidelines for Organic Superfund Methods Data Review and applicable EPA Region III modifications (EPA, 2016a, 2016b, 2017a, 2017b). Additionally, analysis for CDDs and CDFs was conducted in accordance with EPA CLP Method High Resolution Superfund Methods (HRSM) 01.2 and validated by EPA Region III ESAT according to the National Functional Guidelines for High Resolution Superfund Methods Data Review and applicable EPA Region III modifications (EPA, 2014, 2016c).

Analytical summary tables for results detected above the reporting detection limit (RDL) (i.e., adjusted contract-required quantitation limits [CRQLs] with respect to dilution factor and percent solids) are provided in Tables 1 through 6. The tables summarizing the detected PCBs also reflect the concentrations that are considered to be elevated with respect to background samples (SS-11, SS-12, SEC-SS-R5-01, and SS-150 through SS-156). PCBs were not detected above the RDL in the background samples. Samples containing compounds or elements that were not detected above the RDL in the background samples are considered to be elevated if they were detected at a concentration equal to or greater than the background sample RDL. Detected PCBs, therefore, were compared to the RDL (48U $\mu\text{g/kg}$) for background samples SS-150 and SS-152, which is the highest RDL of the background samples collected in March 2018. The analytical results for soil samples collected for dioxins and furans in June 2017 were compared to the concentrations detected in background soil sample SS-11. Background soil samples were analyzed for neither pesticides, SVOCs, PAHs, nor inorganics. Sample result qualifiers, where applicable, are included in the analytical summary data tables; however, they are not included in the following discussion of analytical results. Additionally, the analytical results were compared to EPA Removal Management Levels (RMLs) for residential soil based on a $1\text{E-}04$ risk level for carcinogenic analytes or compounds and a hazard quotient of 1 for non-carcinogenic analytes or compounds (EPA, 2018a). The validated analytical data packages are included in Attachment 1.

As shown in Table 1, the majority of surface soil samples collected in June 2017 contained elevated concentrations of PCBs (Aroclor-1260) with respect to background. Two soil samples, SS-43 and SS-44, collected from properties approximately 0.25 mile downstream and 0.75 mile downstream of the former SEC property, respectively, contained the highest concentrations of PCBs of 1,300 $\mu\text{g/kg}$ in sample SS-43 and 1,200 $\mu\text{g/kg}$ sample SS-44. These concentrations do not exceed EPA's RML for Aroclor-1260 in residential soil of 24,000 $\mu\text{g/kg}$. PCBs were not detected in the subsurface soil samples.

As shown in Table 2, dioxins and furans were not detected in the collected soil samples at elevated concentrations with respect to background (SS-11). The derived toxic equivalent (TEQ) (mammal) dioxin and furan data were compared to the EPA RML for

2,3,4,7,8-Tetrachlorodibenzodioxin (TCDD) in residential soil of 51 nanograms per kilogram (ng/kg). The derived TEQs did not exceed the applicable EPA RML.

As shown in Table 3, 18 of the 36 surface soil samples collected in December 2017 adjacent to Arbuckle Creek contained elevated concentrations of PCBs (Aroclor-1260) with respect to background. Sample SEC-SS-T8-05 contained the highest concentration of PCBs at 410 µg/kg. The two samples collected on the SEC property contained 54,000 µg/kg and 270 µg/kg PCBs (Aroclor-1260). As shown on Figure 3b, the sample containing 54,000 µg/kg, SEC-SS-SE-01, was collected just outside of the excavated area, and the sample containing 270 µg/kg, SEC-S-SE-02, was collected beneath a compromised section of the capped area. Only sample SEC-SS-SE-01, collected from the former SEC property, contained concentrations of PCBs exceeding the EPA RML for Aroclor-1260 in residential soil of 24,000 µg/kg. Split samples of all the samples collected in December 2017 were analyzed by a laboratory separate from the laboratory used for the parent sample in order to verify sample results; however, the split samples were analyzed past the technical holding time for PCB analysis as specified in the EPA Statement of Work (SOW) SOM02.4 for organics; therefore, the data associated with the split samples are not considered reliable and are neither presented nor discussed as part of this ESI (EPA, 2016a).

As shown in Table 4, only 3 of the 42 surface soil samples collected in March 2018 contained elevated concentrations of PCBs (Aroclor-1260) with respect to background. The highest concentration (72 µg/kg) was detected in sample SS-104, which was collected from a property approximately 1 mile downstream from the former SEC property. The nine soil samples collected from the former SEC property reported either non-detect for PCBs or had estimated PCB detections below the RDL. Detected concentrations did not exceed EPA's RML for Aroclor-1260 in residential soil of 24,000 µg/kg.

As shown on Table 5, of the 43 soil samples collected in June 2018, PCBs (Aroclor-1260) were detected only in 2 samples, SS-217 and SS-223, both of which were collected from properties within the floodplain of Arbuckle Creek. Sample SS-217 contained 1,400 µg/kg PCBs (Aroclor-1260) and SS-223 contained 510 µg/kg PCBs (Aroclor-1260). The detected

concentrations did not exceed EPA's RML for Aroclor-1260 in residential soil of 24,000 µg/kg. Tables 6 and 7 show pesticides, SVOCs, and PAHs were detected in the majority of the soil samples in which they were analyzed; however, detected concentrations did not exceed applicable EPA RMLs for residential soil. As noted in the data validation report provided in Attachment 1, as a result of laboratory data quality issues, pesticide results in a number of the samples were rejected during data validation. A summary of the inorganics detected in soil samples collected in June 2018 is shown in Table 8. Samples SS-239 and SS-240 collected from the area referred to as Five Hump contained concentrations of arsenic above the EPA RML of 35 mg/kg at 50.9 mg/kg and 36.7 mg/kg, respectively. Cobalt was detected in two samples, SS-244 collected near a mine discharge and SS-252 collected from a vacant lot, above the EPA RML of 26 mg/kg at 152 mg/kg and 31.4 mg/kg, respectively. Iron was detected in three samples, SS-239, SS-244, and SS-245, at concentrations exceeding the EPA RML of 55,000 mg/kg and manganese was detected in one sample, SS-244, at a concentration above the EPA RML of 1,800 mg/kg. Thallium was detected in 18 of the soil samples at concentrations exceeding the EPA RML of 0.78 mg/kg ranging from 0.79 mg/kg to 4.2/mg/kg. Additionally, lead was detected in one sample, SS-221, collected from a residential property, at a concentration of 527 mg/kg, which exceeds the EPA lead standard for lead in residential soil level of 400 mg/kg. Background soil samples were analyzed for neither pesticides, SVOCs, PAHs, nor inorganics.

3.4 SOURCE CONCLUSIONS

Analytical results for surface soil samples collected from the Site document the presence of PCBs at concentrations significantly above background; however, with the exception of one sample collected on the former SEC property, the detected concentrations of Aroclor-1260 did not exceed the EPA RML. The derived TEQ (mammal) for dioxins and furans in the samples exceeded the applicable EPA RML in all samples analyzed, with the background sample containing the highest concentration. Detected concentrations of pesticides, SVOCs, and PAHs, in soil samples collected in June 2018 did not exceed applicable EPA RMLs. Several samples contained concentrations of inorganics above the applicable EPA RMLs. Additionally, one soil sample contained a concentration of lead above the EPA standard for lead in residential soil.

4.0 GROUNDWATER MIGRATION PATHWAY

This section describes the Site's hydrogeological setting, targets associated with the groundwater migration pathway, and conclusions regarding the groundwater migration pathway.

4.1 SITE GEOLOGY

The Shaffer Equipment/Arbuckle Creek Area site is situated in the Appalachian Plateaus Physiographic Province of West Virginia. The Appalachian Plateaus Province is a large, elongated structural basin that contains up to 15 kilometers of Paleozoic age sedimentary rocks. Non-marine to shallow marine sedimentary structures and fossils characterize the sedimentary sequence and indicate that deposition in the basin was in shallow environments on a slowly subsiding crust and not into an originally deep basin. In general, the individual rock units are laterally discontinuous and cannot be traced over large areas of the basin. At the close of the Pennsylvanian Period during the Allegheny *Orogeny*, the rocks within the Appalachian Plateaus Province were moderately deformed as a result of continental collision. The northwestward-directed tectonic compressional forces produced by continental collision folded the rocks into northeast-southwest-trending synclines and anticlines. The rocks in the Appalachian Plateaus are gently folded and often nearly flat lying. Structurally, the folding is less intense than that found to the east in the adjacent Valley and Ridge Physiographic Province. Although the rocks, in general, were moderately to severely deformed by the tectonic activity, they were not metamorphosed. Stress-relief fracturing has occurred in major valleys where significant amounts of the overlying strata have been removed. Tectonic fractures and stress-relief fractures account for a majority of the porosity and permeability found in the rocks. Topographically, the Appalachian Plateaus Province is characterized by a series of uplifted, dissected plateaus. The major tributaries have eroded broad, deep, steep-sided valleys; local relief along the valleys may exceed 1,000 feet. The drainage pattern exhibited is dendritic (NUS, 1991a).

The Site is underlain by the Pennsylvanian New River Formation (Pottsville Group). The New River Formation ranges in stratigraphic thickness from 0 to 730 feet in the Fayette County area and consists predominantly of sandstone, with some shale, siltstone, and coal. Minor amounts of conglomeratic sandstone may be present. The New River Formation extends from the top of the

Flat top Mountain Sandstone to the top of the Upper Nuttall Sandstone and includes Pocahontas Coal Nos. 8 and 9, and Iaeger, Sewell, Welch, Raleigh, Beckley, and Fire Creek coals. In the vicinity of the Site, the New River Formation caps the dissected plateaus between major stream valleys (NUS, 1991a).

The Pennsylvanian Kanawha Formation (Pottsville Group) stratigraphically overlies the New River Formation. The Kanawha Formation ranges in stratigraphic thickness from 0 to 1,370 feet in the Fayette County area and consists predominantly of sandstone, with some shale, siltstone, and coal. Several marine zones have been noted in the Kanawha Formation. The Kanawha Formation extends from the top of the Homewood Sandstone to the top of the Upper Nuttall Sandstone and includes Stockton (Mercer), Coalburg, Winifrede, Chilton, Williamson, Cedar Grove, Alma, Peerless, Campbell Creek, Eagle, Gilbert, and Douglas coals. In the study area, the Kanawha Formation caps the dissected plateaus between major stream valleys (NUS, 1991a).

4.2 SITE HYDROGEOLOGY

Groundwater in the Pottsville Group occurs in and moves through primary interstitial openings and secondary openings developed in the sedimentary bedrock. The strata in the vicinity of the Site have been only slightly deformed by tectonic activity so that secondary openings, such as fractures and joints, are minor, laterally discontinuous, and narrow. Joints and fractures in the area appear to serve as water conduits and not as water-storage reservoirs. Rocks in the study area are hydraulically interconnected via the joint and fracture openings. Groundwater recharge occurs primarily through the infiltration of local precipitation, and groundwater discharge is by wells, seeps, springs, and streams. Localized seasonal fluctuations in water levels are common and are the result of an increase or decrease in the amount of water available for infiltration (NUS, 1991a).

4.3 GROUNDWATER TARGETS

Groundwater targets have not been identified within the 4-mile target distance limit (TDL) of the Site (EPA, 2018b). The West Virginia American Water Company supplies potable water to

persons within the 4-mile TDL via a surface water intake on the New River located upstream of its confluence with Arbuckle Creek.(WVAWC, undated, 2018).

4.4 SAMPLING LOCATIONS

In June 2017, EPA collected groundwater samples from the four monitoring wells located on the SEC property and from three mine outfalls located on the property as shown on Figure 4. The monitoring wells are located around the perimeter of the capped area on the property. Background groundwater samples were not collected. The collected samples were analyzed for chlorinated biphenyl congeners (CBCs). Additionally, the groundwater sample collected from MW-3 and the three mine outfall samples were analyzed for CDDs and CDFs.

In June 2018, duplicate groundwater samples were collected from a mine hole using a bailer. The sample was analyzed for PCBs, pesticides, SVOCs, PAHs, and inorganics.

4.5 ANALYTICAL RESULTS

The June 2017 groundwater samples were submitted to and analyzed by the assigned CLP laboratory. Analysis was conducted in accordance with EPA CLP Method HRSM01.2 for PCB congeners, dioxins, and furans and the data were validated by EPA Region 3 ESAT according to the National Functional Guidelines for High Resolution Superfund Methods Data Review and applicable USEPA Region 3 modifications (EPA, 2014, 2016c). The June 2017 groundwater samples were not analyzed for PCB Aroclors comparable to the PCB analysis of the soil samples. The June 2018 groundwater samples were submitted to and analyzed by the assigned CLP laboratories. Analysis was conducted in accordance with EPA CLP Methods SOM02.4 for organics and ISM02.4 for inorganics and the data were validated by EPA Region 3 ESAT according to the National Functional Guidelines for Organic Superfund Methods Data Review and applicable USEPA Region 3 modifications (EPA, 2016a, 2016b, 2017a, 2017b).

Analytical results were compared to EPA National Primary Drinking Water Standards Maximum Contaminant Levels (MCL) (EPA, 2009). MCLs are legally enforceable standards that apply to public drinking water facilities and are presented here for comparison purposes. Additionally, the analytical results were compared to EPA RMLs for tap water based on a 1E-04 risk level for

carcinogenic analytes or compounds and a hazard quotient of 1 for non-carcinogenic analytes or compounds (EPA, 2018). The validated analytical data packages are included in Attachment 1.

Table 9 shows the cumulative total result of the detected PCB congeners detected in the monitoring well and mine outfall groundwater samples. As shown, the groundwater sample collected from MW-1 located on the former SEC property contained total PCB congener results (3.7 micrograms per liter [$\mu\text{g/L}$]) above the EPA MCL of 0.5 $\mu\text{g/L}$ and the EPA RML 0.78 $\mu\text{g/L}$. The remaining detections of total PCBs in the groundwater and mine outfall samples did not exceed the MCL or RML. Table 9 also shows the dioxin and furan results for the groundwater samples. The derived TEQ (mammal) dioxin and furan data were compared to the EPA MCL of 30 pg/L and the EPA RML for tap water of 12 picograms per liter (pg/L). The derived TEQs did not exceed the applicable EPA MCL and RML. A background sample was not collected for comparison.

PCBs were not detected in the groundwater sample collected from the mine hole in June 2018. As shown on Table 10, detected PAHs and inorganics did not exceed EPA MCLs or RMLs for tap water.

4.6 GROUNDWATER CONCLUSIONS

Although a groundwater sample from a monitoring well located on the former SEC property shows the presence of total PCB congeners above the EPA MCL in groundwater beneath the former SEC property, groundwater within the 4-mile TDL of the Site is not used for drinking water.

5.0 SURFACE WATER MIGRATION PATHWAY

This section describes the Site's hydrologic setting, targets associated with the surface water migration pathway, and conclusions regarding the surface water migration pathway.

5.1 HYDROLOGIC SETTING

The Site, including the former SEC property and the properties in Minden that border Arbuckle Creek, is located within Arbuckle Creek's floodplain, which is a Federal Emergency Management Agency (FEMA)-designated Zone A Flood Hazard Area indicating the area is subject to inundation by the 1-percent-annual-chance flood event (FEMA, 2018a). Historically, it has been reported that Arbuckle Creek floods on average about 7 times a year, and, in recent years, the creek has been known to flood approximately 4 to 5 times a year (EPA, 1987). Additionally, historic flood events occurred in the eastern portion of West Virginia in 1985, as well as specifically in Minden in July 2001, June 2016, and June 2017 (IC, Inc., 2003; Carpenter, 1991; Tale@DD.org, 2018; American Meteorological Society [AMS]; 2018; Farrish, 2017, Register-Herald, 2018).

On July 8, 2001, Arbuckle Creek in Minden, experienced an historic flood event that fully engulfed the town in several feet of water (IC, Inc., 2003; Carpenter, 1991; Tale@DD.org, 2018). In June 2016, a 1-in-1,000-year flood occurred in Fayette County, with approximately 8 to 10 inches (200-250 millimeter) of rain falling between 7 am and 8 pm (13 hours) (AMS; 2018). In June 2017, severe flooding occurred in Minden, with roadways closed due to Arbuckle Creek flooding the streets (Farrish, 2017; Register-Herald, 2018).

From the former SEC property, Arbuckle Creek flows in an easterly direction for approximately 3 miles before converging with the New River. The New River flows in a northerly direction. The 15-mile downstream TDL is completed in the New River.

5.2 SURFACE WATER TARGETS

There are no surface water intakes along the 15-mile TDL. The West Virginia American Water Company New River Water System source water is an intake on the New River located outside the 15-mile TDL; approximately 20 miles downstream from Minden at Hawks Nest (WVAWC, 2016). Arbuckle Creek is not a known fishery. The creek is known to contain high levels of fecal coliform (United States Geological Survey [USGS], 2007). However, the New River is a popular fishery along its entire length (National Park Service [NPS], 2018). Fish

species present in the river include bass (smallmouth, largemouth, striped, and rock), walleye, muskellunge, crappie, bluegill, carp, flathead, and channel catfish (NPS, 2018).

Arbuckle Creek within the area of actual contamination is evaluated as a habitat for a Federal designated endangered species, the Indiana Bat (*Myotis sodalis*) and a Federal-designated threatened species, the Northern Long-Eared Bat (*Myotis septentrionalis*) ([USFWS], 2018a, b, and c; Alliance Consulting, Inc., 2018a). The area of Actual Contamination is located within 5 miles of a known roosting, swarming, and foraging zone of a Priority 3 or 4 winter hibernaculum for the Indiana bat (United States Fish and Wildlife Service [USFWS], 2018a; Alliance Consulting, Inc., 2018a). The Indiana bats have a home range territory of approximately 255 hectares in the spring to 625 hectares in the fall and can travel up to thousands of kilometers from their winter hibernacula to their summer foraging ground (Animal Diversity Web, 2018; Alliance Consulting, Inc., 2018a). In 2004, a survey of bat communities within the New River Gorge National River park conducted by the NPS confirmed the presence of the Indiana bat within the park based on acoustic survey (NPS, 2007). The Indiana bat was recorded at 53 of the 453 acoustic survey locations (approximately 11.7% of the total locations) (NPS, 2007). Whereas the NPS report does not provide the specific locations where the Indiana bat was identified, based on the acoustic survey and the fact that it was conducted solely within the park boundary, the survey provides additional support that the zone of actual contamination is within the current range of the Indiana bat. The area of actual contamination, which consists of a forested riparian buffer zone, would provide a suitable habitat for the Indiana bat due to the presence of high quality foraging habitat over Arbuckle Creek and good to fair roosting habitat over the stream and adjacent riparian areas (Animal Diversity Web, 2018; NPS, 2007; USFWS, 2018b, Alliance Consulting, Inc., 2018a).

Additionally, the Northern Long-Eared bat was live captured within the New River Gorge park as recently as 2017 (Alliance Consulting, Inc., 2018a). The 2003 and 2004 survey of bat communities within the New River Gorge National River live captured 49 Northern Long-Eared bats and recorded 107 by acoustical survey (NPS, 2007). The Northern Long-Eared bat was the most common bat species found during the survey, which was expected given the habitat association of the species and that which is found at the park (NPS, 2007; USFWS, 2018c). The

2003 and 2004 survey of bat communities stated in general that, although bat foraging activity occurs over much of the park landscape, riparian areas, such as those found along large portions of the area of actual contamination along Arbuckle Creek, are the most critical component of bat foraging habitat (NPS, 2007; Alliance Consulting, Inc., 2018a).

WVDNR drafted a State Wildlife Action Plan (SWAP) in 2005 and revised it in 2015 in response to a 2001 request by Congress for each state to submit a comprehensive wildlife conservation strategy to U.S. Fish and Wildlife National Advisory Acceptance Team, in order to qualify for state wildlife grant funds (WVDNR, 2015; University of Michigan, 2018). The objective of the SWAP is to address both species of greatest conservation need as well as the full array of wildlife by focusing on identifying species in need, then on habitats associated with those species and geographic areas of the state with concentrations of species and the habitats that they require. To identify species/habitat associations, known locations of species were matched with data from habitat mapping in the state. High-densities of species and habitat occurrences were used to identify a series of Conservation Focus Areas (CFAs) (WVDNR, 2015). Arbuckle Creek within the area of actual contamination is located within the State-identified Gorge CFA (WVDNR, 2015). The Gorge CFA provides a “particular area, relatively small in size, important to maintenance of unique biotic communities” because the floodplains include some of the most extensive river scour prairies and woodlands in the eastern United States. The area supports many rare plant species including the globally rare Monongahela Barbara's-Buttons (*Marshallia grandiflora*). Upland and riparian habitats in the CFA support a high number of species of greatest conservation need plants (109), and the forest of the CFA is recognized as a globally significant example of the Appalachian cove hardwood/mixed mesophytic forest (WVDNR, 2015).

As depicted on **Figures 5a through 5d**, an area of a total of 933 feet of HRS-eligible palustrine emergent wetlands is located along Arbuckle Creek on both the north and south banks as documented by a wetland delineation conducted in May 2018 (Alliance Consulting, Inc., 2018b). Frontage 1 consists of 334 feet of HRS-eligible wetlands located along the southern bank of Arbuckle Creek, Frontage B consists of 79 feet located along the southern bank of Arbuckle Creek, Frontage C consists of 135 feet located along the northern bank of

Arbuckle Creek, Frontage 4 consists of 175 feet located along the southern bank of Arbuckle Creek, and Frontage 5 consists of 210 feet located along the southern bank of Arbuckle Creek (Alliance Consulting, Inc., 2018b). Frontages 6 and 10 depicted on the wetland delineation map were not included in this HRS evaluation because Frontage 6 is not along the surface water migration pathway. It is located along a drainage channel that flows into Arbuckle Creek, and Frontage 10 is an isolated wetland located within the floodplain but not adjacent to or hydraulically connected to Arbuckle Creek.

5.3 SAMPLING LOCATIONS

In June 2017, EPA collected 25 surface water and sediment samples, including two duplicates, from Arbuckle Creek as shown on Figure 5a. Two samples, SW/SD-24 and SW/SD-25, were collected upstream of the former SEC property as background samples to document conditions in the creek in an area not suspected to have been impacted by Site contaminants. The farthest downstream samples, SW/SD-17, were collected approximately 1 mile downstream from the former SEC property near the bridge crossing over the creek into the parking lot for the New River Gorge National River park. The surface water samples were collected and analyzed for PCB congeners; six of the surface water samples were also analyzed for dioxins and furans. The sediment samples were collected and analyzed for PCB-Aroclors; five of the sediment samples were also analyzed for dioxins and furans.

In December 2017, EPA collected 28 sediment samples, including one duplicate from Arbuckle Creek, as shown on Figure 5b. The samples were collected in pairs of three across a transect, with one sample being collected from each side of the creek bank and the third collected midstream. The sample locations were biased towards locations that contained elevated PCBs in the sediment samples collected in June 2017. The sediment samples were collected and analyzed for PCB-Aroclors. A background sample was not collected as part of the sampling event.

In March 2018, EPA collected seven sediment samples from Arbuckle Creek, including one duplicate sample. The samples were collected downstream of the bridge crossing over the creek into the parking lot for the New River Gorge National River park. One of the sediment samples, SD-55, was collected from just upstream of the creek from a tributary that enters the creek just

below the bridge. The sediment samples were collected and analyzed for PCB-Aroclors. A background sample was not collected as part of the sampling event.

In May 2018, EPA collected 15 sediment samples from Arbuckle Creek, including one duplicate sample. The samples were collected downstream of the bridge crossing over the creek into the parking lot for the New River Gorge National River park. An additional four sediment samples were collected from a wetland area on a residential property within the floodplain of Arbuckle Creek. The sediment samples were collected and analyzed for PCB-Aroclors. A background sample was not collected as part of the sampling event. The sediment sample locations for March and May 2018 are shown on Figure 5c.

In June 2018, EPA collected a total of 34 sediment samples, including two duplicate samples. Eight of the 36 were collected from Arbuckle Creek, including two samples collected upstream of the former SEC property to document background conditions not believed to have been impacted by Site contaminants. Thirteen sediment samples were collected from mine portal discharge channels, four sediment samples were collected from residential property in areas of standing/puddled water, and nine sediment samples were collected from areas throughout Minden that were of concern and contained standing/puddled water. Sample locations are shown on Figure 5d and a detailed description of sample locations is provided in the table in Appendix A.

Available photographic documentation logs for collected samples are provided in Appendix B and the field logbook notes are provided in Appendix C.

5.4 ANALYTICAL RESULTS

The June 2017 surface water samples were submitted to and analyzed by the assigned CLP laboratory. Analysis was conducted in accordance with EPA CLP Method HRSM01.2 for PCB congeners, dioxins, and furans, and the data were validated by EPA Region 3 ESAT according to the National Functional Guidelines for High Resolution Superfund Methods Data Review and applicable USEPA Region 3 modifications (EPA, 2014, 2016c). The surface water samples were not analyzed for PCB Aroclors comparable to the PCB analysis of the soil samples.

All sediment samples were submitted to and analyzed by the assigned CLP laboratory for PCB-Aroclors in accordance with EPA CLP Method SOM02.4 for organics and the data were validated by EPA Region 3 ESAT according to the National Functional Guidelines for Organic Superfund Methods Data Review and applicable USEPA Region 3 modifications (EPA, 2016a, 2016b, 2017a, 2017b). Additionally, the sediment samples collected in June 2017 were also submitted and analyzed for dioxins and furans.

Analytical summary tables for results detected above RDLs (i.e., adjusted CRQLs with respect to dilution factor and percent solids) are provided in Tables 11 through 20. The surface water and sediment sample analytical results were compared to EPA Region 3 Biological Technical Assistance Group (BTAG) freshwater screening criteria (EPA, 2006). Additionally, the sediment analytical results were compared to EPA RMLs for residential soil based on a 1E-04 risk level for carcinogenic analytes or compounds and a hazard quotient of 10 for non-carcinogenic analytes or compounds (EPA, 2018a). The analytical summary tables also reflect the concentrations considered to be elevated with respect to background.

The surface water samples collected in June 2017 were analyzed for PCB congeners and compared to background surface water samples (SW24 and SW25). Analytical results of samples were considered elevated if detected concentrations exceeded three times the highest total PCB congener concentration detected in the background sample (0.00045 µg/L detected in SW24). The analytical results for surface water and sediment samples collected for dioxins and furans in June 2017 were compared to the concentrations detected in background samples SW/SD-25.

The tables summarizing the detected PCB Aroclor-1260 in sediment samples were compared to background samples SD24, SD25, SD-71, and SD-72. PCBs were not detected above the RDLs in the collected background samples. Samples containing compounds or elements that were not detected above the RDL in the background sample are considered to be elevated if they were detected at a concentration equal to or greater than the background sample RDL. Therefore, detected PCBs were compared to the RDL for background SD-72 of 40U µg/kg, the highest RDL of the background samples, collected in June 2018.

Sample result qualifiers, where applicable, are included in the analytical summary data tables; however, they are not included in the following discussion of analytical results. The laboratory analytical data packages are included in Attachment 1.

Table 11 shows the cumulative total result of the PCB congeners detected in the surface water samples collected in June 2017. As shown, with the exception of the concentration of PCB congeners in sample SW-21 and SW-22 (and its duplicate sample SW-23), the concentrations of PCB congeners in the surface water samples were all elevated with respect to background (SW-24). Additionally, the concentrations of PCB congeners in the surface water samples, including the background samples, exceeded the EPA BTAG screening value for freshwater of 0.000074 µg/L. Table 12 shows the dioxins and furans for the surface water samples. The derived TEQ (mammal) value in three of the five samples was elevated with respect to background (the derived TEQ mammal for SW-25). The derived TEQ (mammal) dioxin and furan data were compared to the EPA BTAG screening value 0.0031 pg/L for 2,3,7,8-TCDD. The derived TEQs exceeded the BTAG screening value in all six samples, including the background sample.

As shown on Table 13, the majority of sediment samples collected in June 2017 from Arbuckle Creek contained PCB Aroclor-1260 at elevated concentrations with respect to background (SD-72 collected in June 2018) and at concentrations exceeding the BTAG freshwater sediment screening level of 59.8 µg/kg, but below the EPA RML of 24,000 µg/kg. However, one sample, SD-006, contained 50,000 µg/kg PCB Aroclor-1260, exceeding the EPA RML of 24,000 µg/kg. Table 14 shows the dioxins and furans for the sediment samples. The derived TEQ (mammal) value in two of the five samples was elevated with respect to background (the derived TEQ mammal for SD-25). Table 14 shows the dioxins and furans for the sediment samples. The derived TEQ (mammal) value in two of the five samples was elevated with respect to background (the derived TEQ mammal for SD-25). The derived TEQ (mammal) dioxin and furan data were compared to the EPA BTAG screening value for freshwater of 0.85 ng/kg and the EPA RML for residential soil of 477 for 2,3,7,8-TCDD. The derived TEQs exceeded the BTAG screening value in all samples except the background sample. The derived TEQs did not exceed the EPA RML.

As shown in Table 15, 12 of the 28 sediment samples collected in December 2017 contained PCB Aroclor-1260 at elevated concentrations with respect to background (SD-72 collected in June 2018); however, 5 of the 12 samples reported estimated concentrations. Seven of the 12 samples contained concentrations exceeding the EPA BTAG freshwater screening value 59.8 µg/kg; however, reported concentrations did not exceed the EPA RML of 24,000 µg/kg.

Table 16 shows the concentrations of PCB Aroclor-1260 detected in the sediment samples collected in March and May 2018. Fifteen of the 21 samples collected from Arbuckle Creek in March and May 2018 contained PCB Aroclor-1260 at elevated concentrations with respect to background (SD-72). Nine of the 15 sediment samples contained concentrations above the EPA BTAG Screening value of 59.8 µg/kg. However, six of the samples collected in March and May 2018 that showed elevated concentrations of PCBs were qualified as estimated. One sediment sample, SD-55, collected from a tributary just prior to its confluence with Arbuckle Creek, did not contain PCBs.

As shown in Table 17, 3 of the 34 sediment samples collected in June 2018 contained PCB Aroclor-1260 at elevated concentrations with respect to background (SD-72) and above the EPA BTAG Screening value of 59.8 µg/kg, ranging from estimated concentrations of 64 µg/kg to 89 µg/kg. Reported concentrations did not exceed the EPA RML of 24,000 µg/kg.

The analytical results for the pesticides detected in sediment samples are summarized in Table 18. In general, samples contained 4-dichlorodiphenyldichloroethane (DDD), 4-dichlorodiphenyltrichloroethane (DDT), 4-dichlorodiphenyldichloroethylene (DDE), Endrin ketone, Endrin aldehyde, and trans-Chlordane at concentrations exceeding applicable EPA BTAG screening values for freshwater sediment. The designated background sample was not analyzed for pesticides for comparison.

Table 19 provides a summary of the detected SVOCs and PAHs in the sediment samples collected in June 2018. The majority of the samples contained at least one compound at a concentration exceeding the applicable EPA BTAG screening value. However, 8 of the 26 sediment samples contained numerous concentrations of SVOCs and PAHs exceeding applicable

EPA BTAG screening values. The designated background sample was not analyzed for SVOCs and PAHs for comparison.

Table 20 provides a summary of the inorganics detected in the June 2018 sediment samples. Copper, iron, manganese, and nickel were detected in the majority of the sediment samples at concentrations exceeding applicable BTAG screening values. Additionally, arsenic, cadmium, cobalt, lead, selenium, and zinc were detected in at least one sediment sample exceeding applicable BTAG screening values. The designated background sample was not analyzed for inorganics for comparison.

5.5 SURFACE WATER CONCLUSIONS

A release of hazardous substances, PCBs, to the surface water migration pathway attributable to the Site has been documented. Sediment samples containing significant concentrations of site-attributable Aroclor-1260 were collected more than 1 mile downstream of the former SEC property. PCB Aroclor-1260 was detected in soil samples collected from the former SEC property as well as in soil samples collected from properties within the floodplain of Arbuckle Creek as a result of the periodic and historic flooding of Arbuckle Creek and the deposition of contaminated sediments onto the properties.

There are no drinking water targets associated with the surface water migration pathway. Arbuckle Creek is not fished for human consumption; however, the New River is a fishery within the 15-mile TDL. Identified targets within the area of actual contamination of Arbuckle Creek include the habitat for a Federal-designated endangered species, the Indiana Bat (*Myotis sodalis*) and a Federal-designated threatened species, the Northern Long-Eared Bat (*Myotis septentrionalis*). Additionally, there are 933 feet of HRS-eligible wetlands within the area of actual contamination.

6.0 SOIL EXPOSURE AND AIR MIGRATION PATHWAYS

This section provides information regarding the physical conditions of the Site and targets associated with the soil exposure and air migration pathways. The analytical results for soil samples collected at the Site are discussed in Section 3.3.

6.1 PHYSICAL CONDITIONS

The Site consists of the former SEC property, contaminated sediments within Arbuckle Creek, and properties located within the floodplain of Arbuckle Creek downstream of the former SEC property. The PCB-contaminated sediments have been deposited onto properties along the creek as a result of periodic and historic flooding. Although the former SEC property is privately owned, the property is accessible to the public and residents access the property for recreational use of driving all-terrain vehicles.

6.2 SOIL AND AIR TARGETS

Targets associated with the Site are those individuals whose residence is both on the property and within 200 feet of documented soil contamination. Parcels within the area of observed contamination that were vacant or contained unoccupied residences or buildings, such as garages, were not evaluated as targets. Surface soil samples collected from seven occupied properties contained elevated concentrations of Aroclor-1260 with respect to background. There are a total of 19 persons residing at the seven properties that contain elevated concentrations of PCBs. The soil samples collected from the occupied properties are noted on Figures 3a through 3d and Tables 1, 3, 4, and 5. Additional targets include persons who access the former SEC property for recreational use.

6.3 SAMPLING LOCATIONS AND ANALYTICAL RESULTS

Soil sample locations are discussed in detail in Section 3.3. Soil samples collected from residential properties in June 2017, December 2017, March 2018, and June 2018 were analyzed for PCB Aroclors. Eleven soil samples collected from seven properties contained elevated concentrations of PCBs with respect to background ranging from 58 µg/kg to 1,400 µg/kg. However, concentrations did not exceed the EPA RML of 24,000 µg/kg for Aroclor-1260 in residential soil.

Air samples were not collected as part of the sampling activities.

6.4 SOIL EXPOSURE AND AIR MIGRATION PATHWAY CONCLUSIONS

Surface soil samples collected from seven occupied properties contained elevated concentrations of Aroclor-1260 with respect to background. There is a total of 19 persons residing at the seven properties that contain elevated concentrations of PCBs.

7.0 SUMMARY

The Shaffer Equipment/Arbuckle Creek Area site is located in Minden, Fayette County, West Virginia. Historically, Minden was founded in the 1800s as a mining town. The SEC built and serviced electrical substations for the local coal mining industry from approximately 1970 to 1985. The substations incorporated various types of transformers, capacitors, switches, and related voltage regulation and distribution devices that utilized cooling oil that contained PCBs. SEC stored nonessential, damaged, or outdated transformers and capacitors on the approximate 1-acre property. The former SEC is situated on the southern bank of Arbuckle Creek within the creek's floodplain on the western end of the town of Minden. Arbuckle Creek flows eastward through the center of Minden. Residential, commercial, vacant, and undeveloped properties border the creek on both the north and south banks, primarily within the creek's designated floodplain. Historically, it has been reported that Arbuckle Creek floods on average about 7 times a year, and, in recent years, the creek has been known to flood approximately 4 to 5 times a year. Additionally, historic flood events occurred in the eastern portion of West Virginia in 1985, as well as specifically in Minden, in July 2001, June 2016, and June 2017.

In September 1984, WVDNR conducted an inspection of the SEC property located at the western end of the town of Minden, bordering Arbuckle Creek to the south. During the initial inspection in September 1984 and a subsequent visit in October 1984, WVDNR and EPA observed hundreds of transformers and capacitors across the property and noted most of the capacitors were resting on their side, and several had broken insulators with surrounding heavy oil spillage evident. A sample collected from this area contained Aroclor-1260 at a concentration of 260,000 ppm at the surface and 40,000 ppm in the subsurface.

EPA conducted several investigations and removal actions at the SEC property. From December 1984 to December 1987, EPA conducted a removal action which consisted of the removal and off-site disposal of 4,735 tons of soil from an approximate 1-acre area that contained PCBs at concentrations greater than 50 ppm and the removal and off-site disposal of capacitors, transformers, and numerous drums of transformer fluid. In November 1990, EPA conducted a second removal action that consisted of the excavation and off-property disposal of soil from 6 areas of the property at depths ranging from 1 inch to 4 feet bgs. From October 2001 through December 2001, the U.S. Army Corps of Engineers conducted a third removal action at the SEC property that involved the installation of an impervious barrier/cap over a portion of the remaining contaminated soil on the SEC property that consisted of a compacted clay layer.

From June 2017 through June 2018, EPA conducted several sampling assessments and collected hundreds of soil and sediment samples from the site as well as some surface water and groundwater samples. Soil samples collected from the former SEC property and from properties located within the floodplain of Arbuckle Creek up to 1 mile downstream contain elevated concentrations of PCB Aroclor-1260 with respect to background. However, with the exception of one soil sample collected from the former SEC property, concentrations did not exceed EPA's RML for Aroclor-1260 of 24,000 µg/kg.

Groundwater samples were collected from the four on site monitoring wells and from several mine outfalls. One sample collected from an on-site well contained concentrations of PCBs above the EPA MCL of 0.5 µg/L. Groundwater is not used as a source of drinking water within the 4-mile TDL of the Site.

Surface water samples collected from Arbuckle Creek contained total PCB congeners at elevated concentrations with respect to background. Sediment samples collected from Arbuckle Creek contained PCB Aroclor-1260 at elevated concentrations with respect to background up to a distance of greater than 1 mile downstream from the former SEC property. The sediment samples also reported the presence of pesticides, SVOCs, PAHs, and inorganics exceeding EPA BTAG screening values for freshwater sediment. Background samples were not analyzed for these parameters.

Targets associated with the surface water migration pathway include the habitat for a Federal-designated endangered species, the Indiana Bat (*Myotis sodalis*) and a Federal-designated threatened species, the Northern Long-Eared Bat (*Myotis septentrionalis*). Additionally, there are 933 feet of HRS-eligible wetlands within the area of actual contamination. There are no surface water intakes along the 15-mile TDL. Arbuckle Creek is not fished for human consumption; however, New River is considered a fishery subject to potential contamination.

Surface soil samples collected from seven occupied properties contained elevated concentrations of PCB Aroclor-1260 with respect to background. There are a total of 19 persons residing at the seven properties that contain elevated concentrations of PCBs. Additional targets include persons who access the former SEC property for recreational use.

REFERENCES

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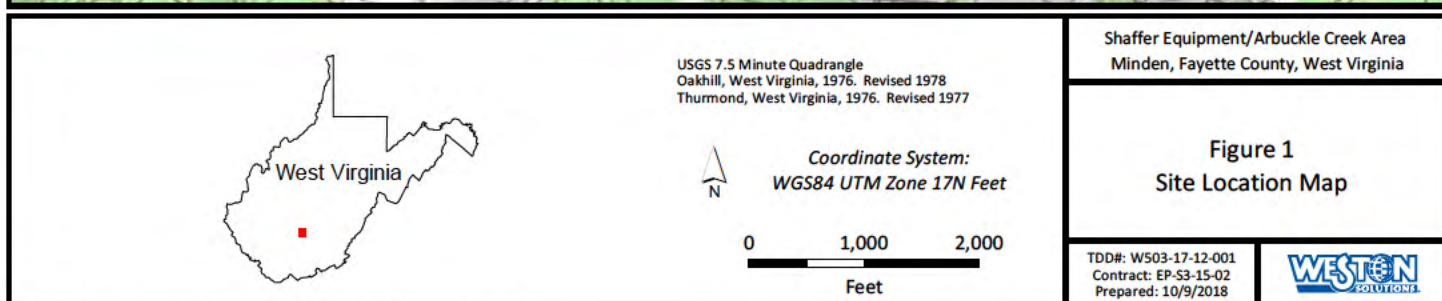
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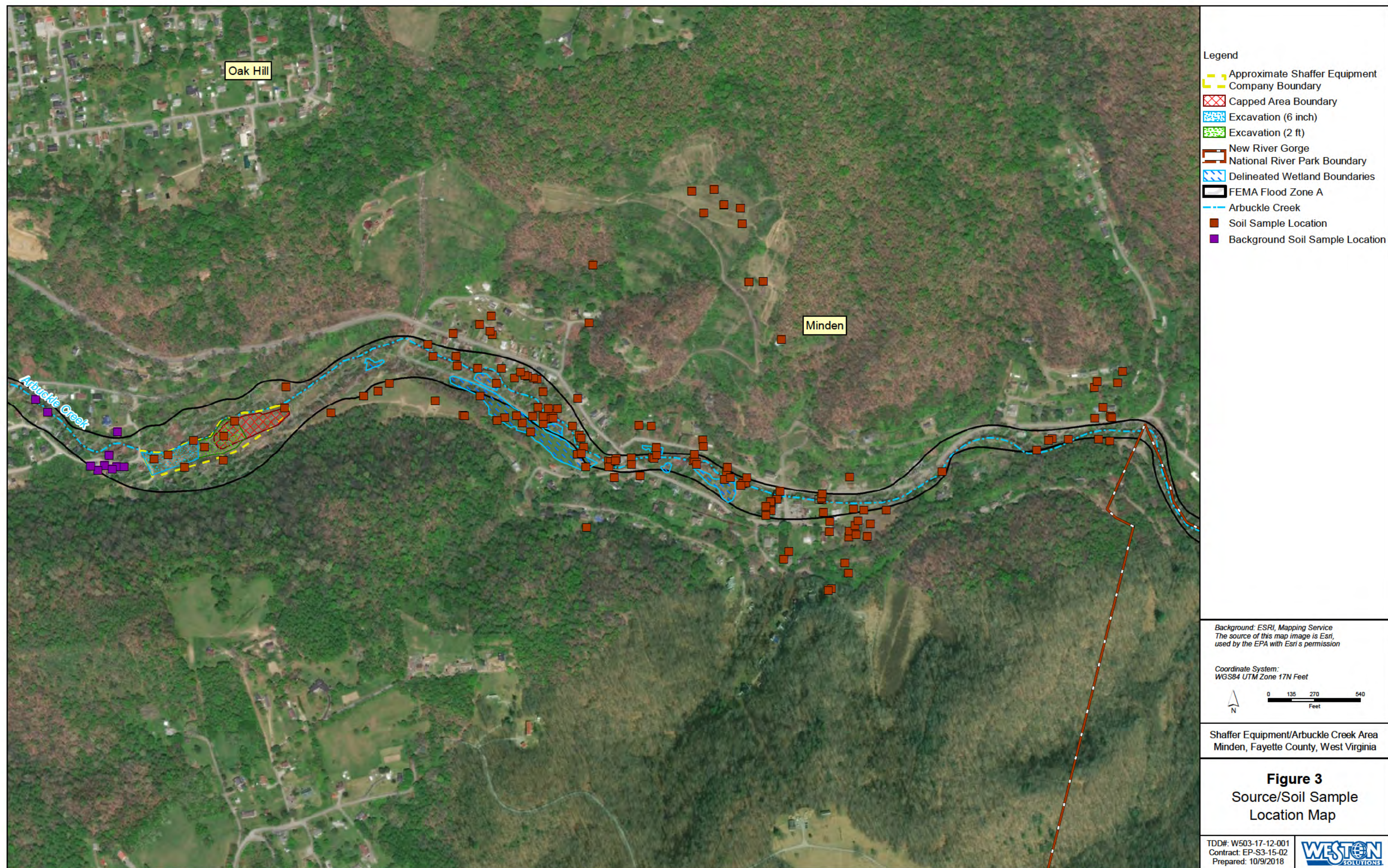
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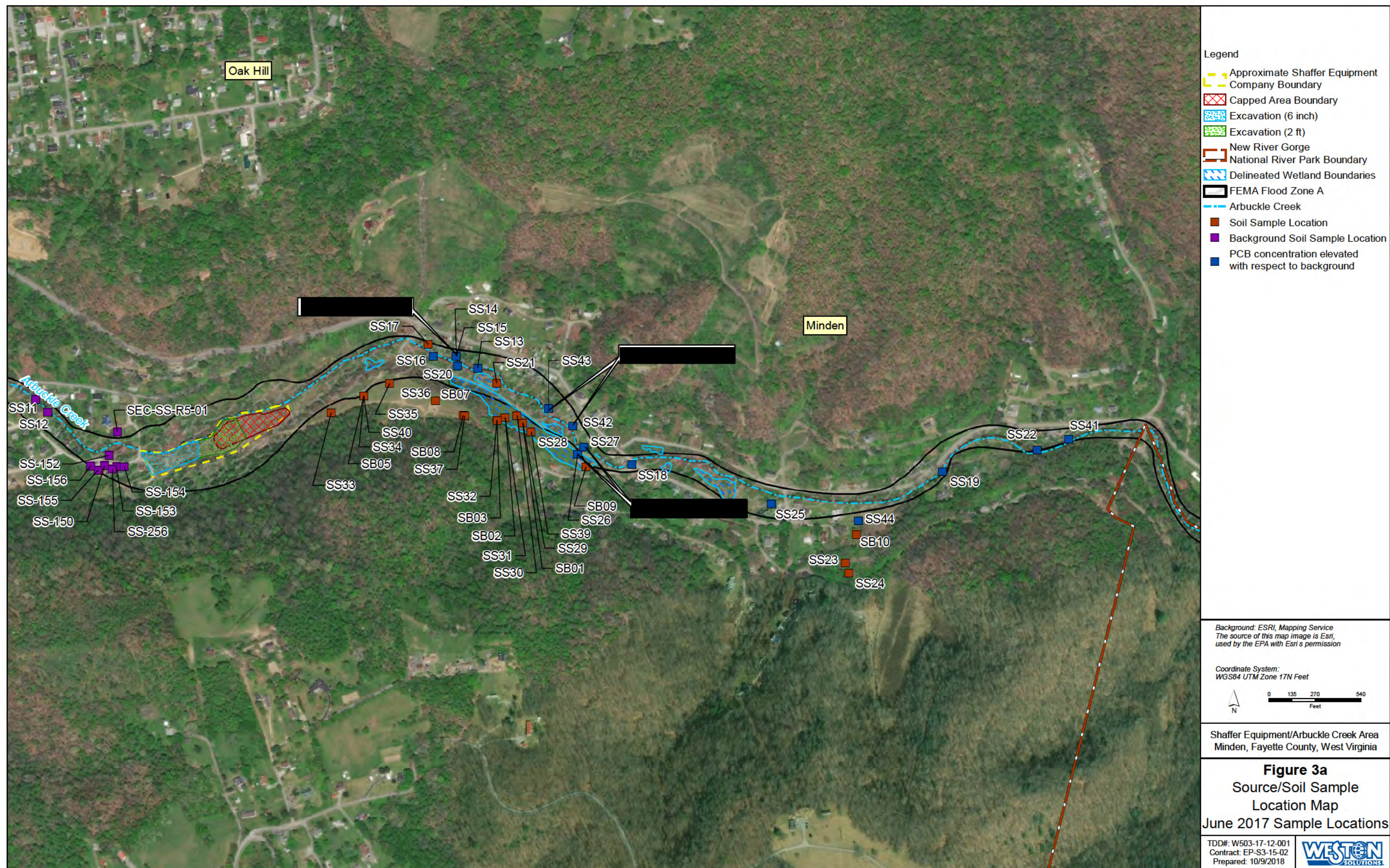


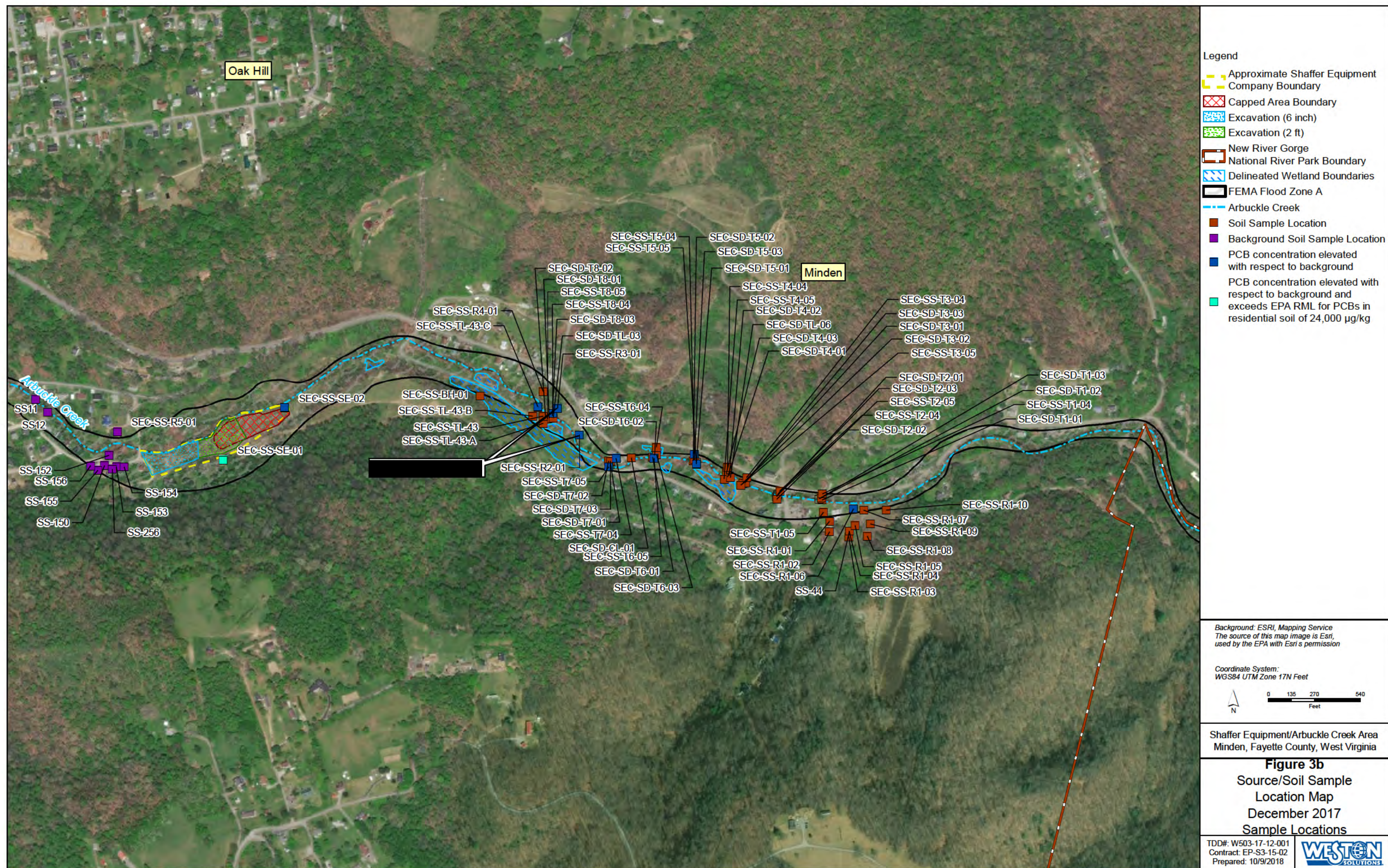
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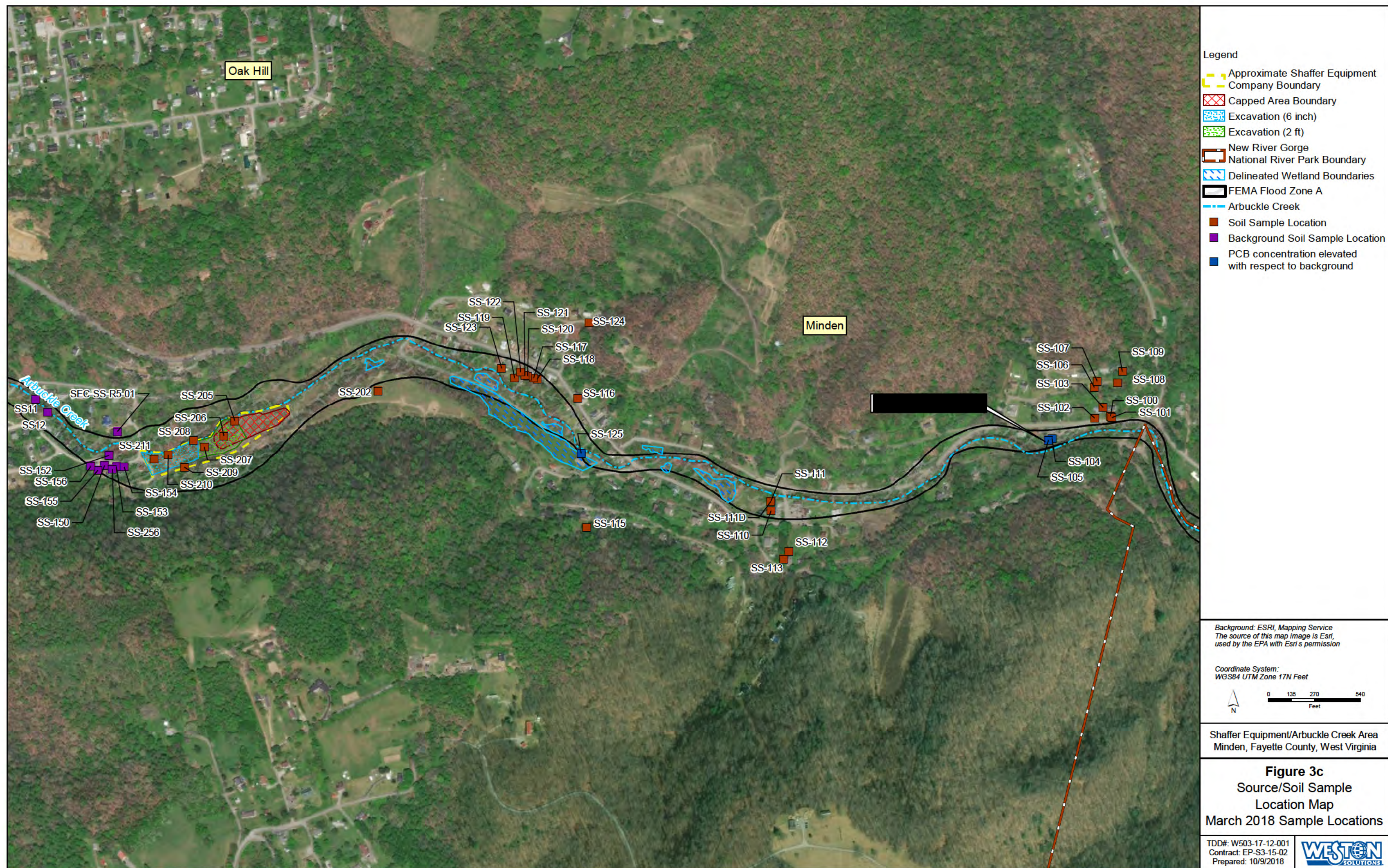


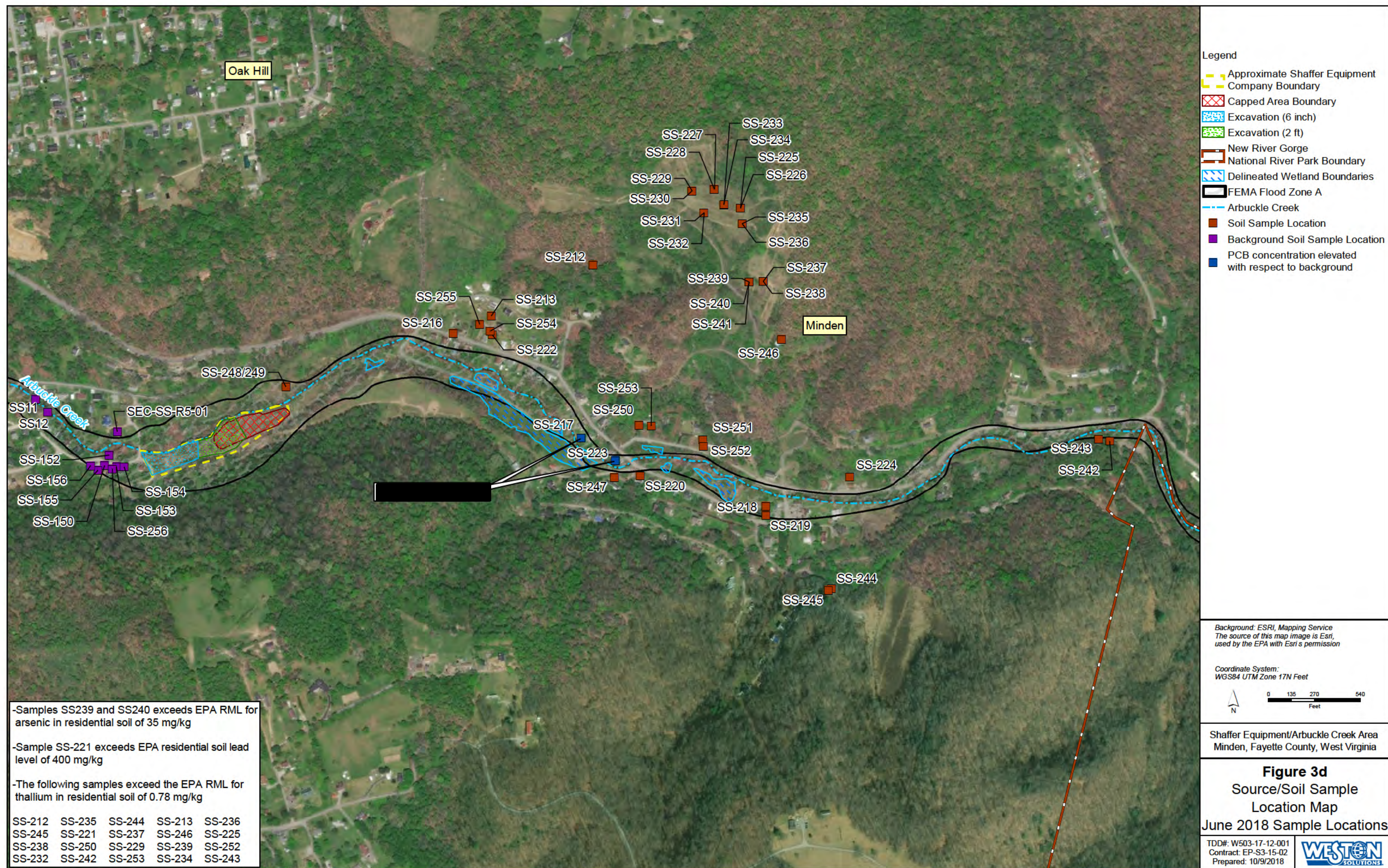








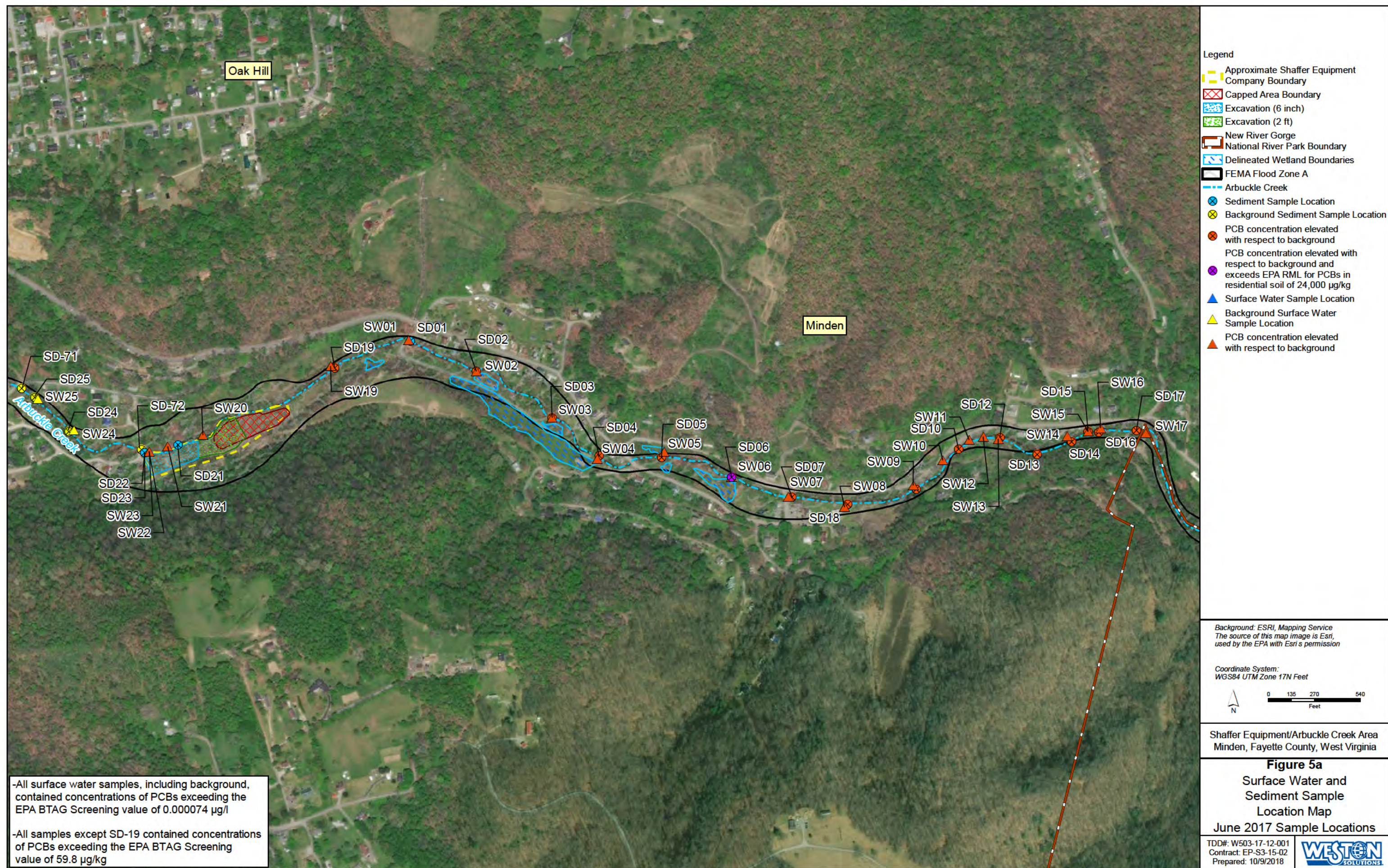


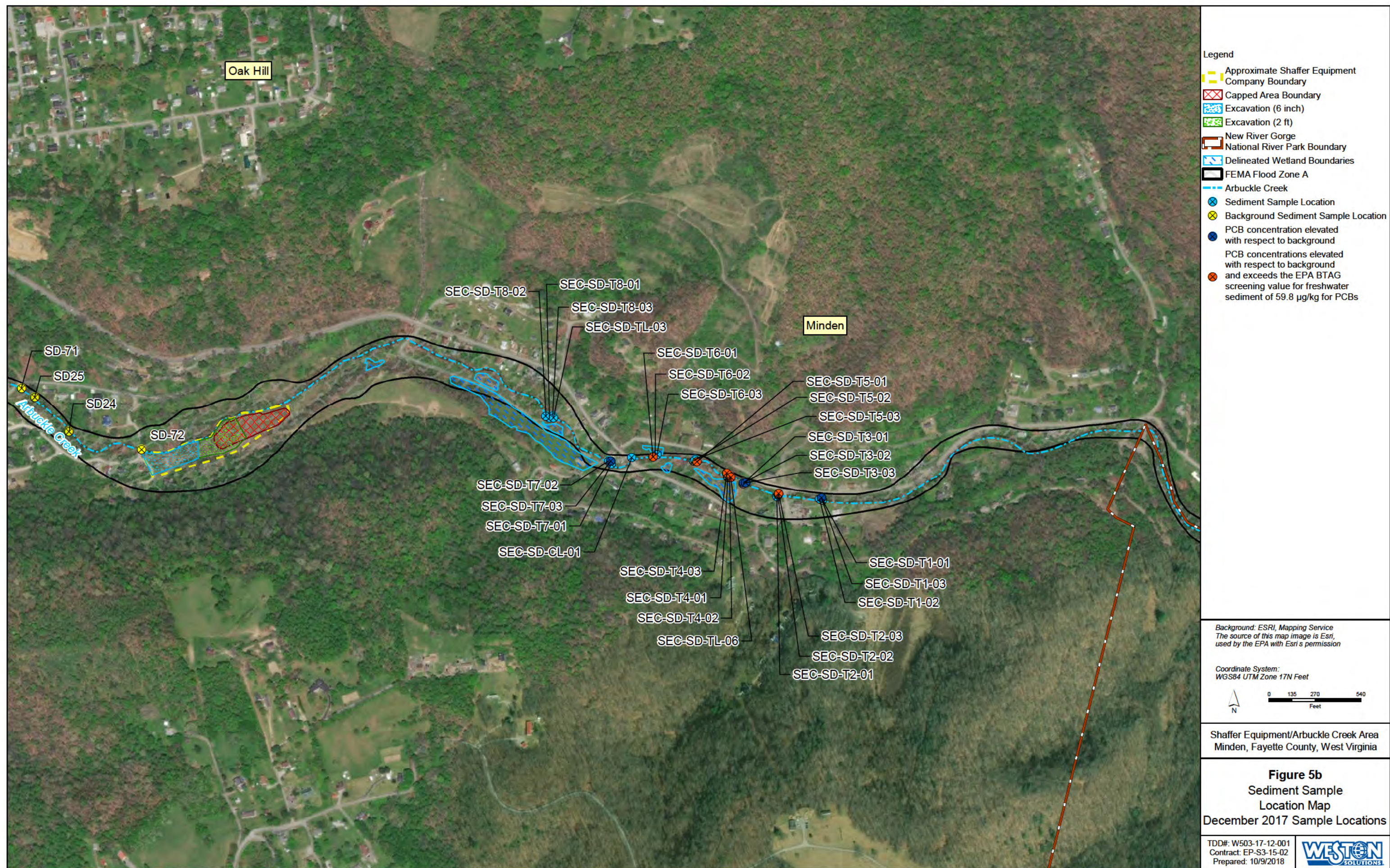


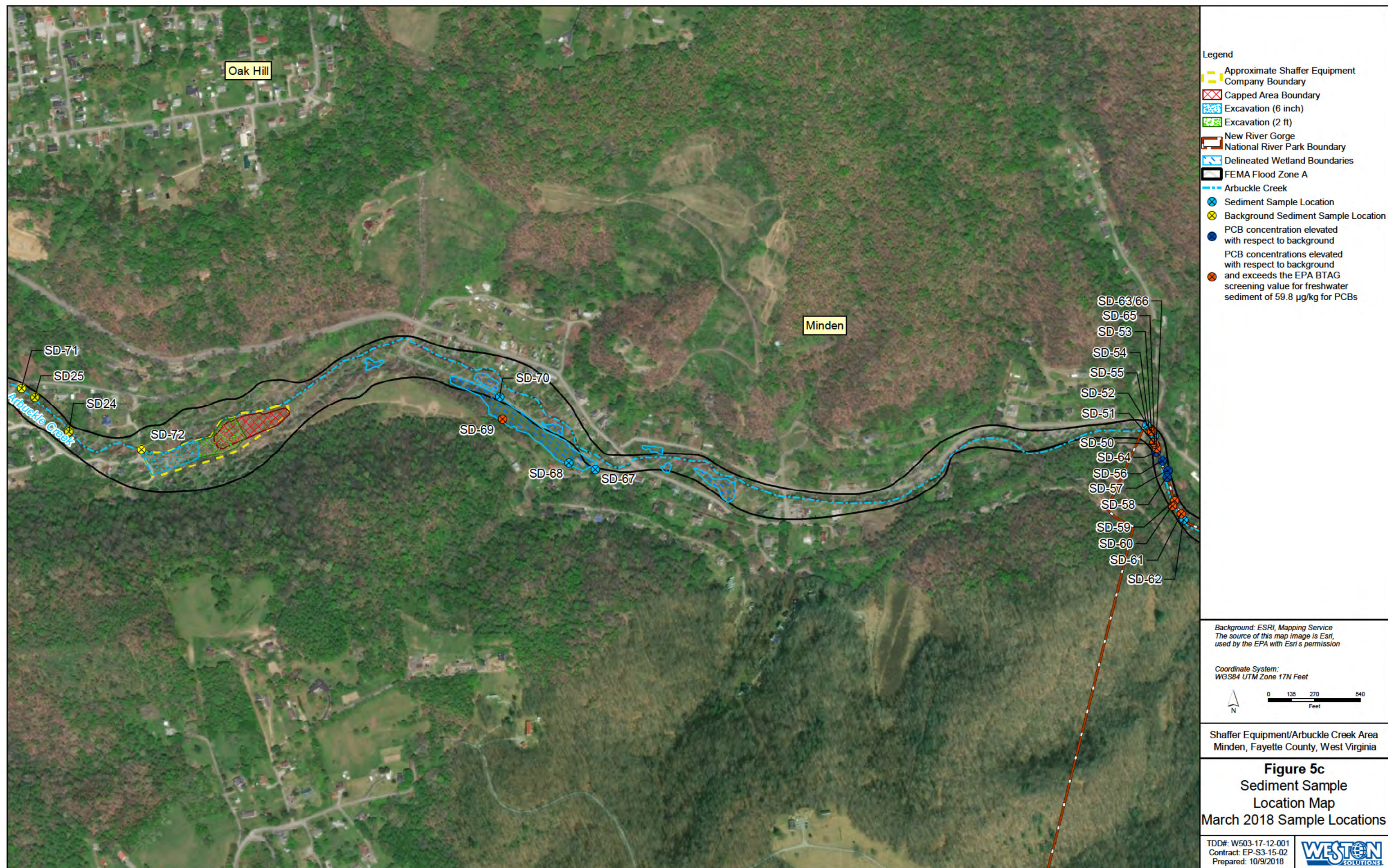


-Duplicate sample GW-02 collected from mine shaft contained thallium concentrations that exceed the EPA tap water RML of 0.2 µg/L













TABLES

Table 1
Shaffer Equipment/Arbuckle Creek Area Site
Expanded Site Inspection
June 2017 PCBs in Soil Sample

Sample Number	CLP Sample Number	Sample Date	PCB	Result	Q
SS-11	C0AD8	6/15/2017	Aroclor-1260	11	J
SS-12	C0AD9	6/15/2017	Aroclor-1260	15	J
SS-13	C0AE0	6/15/2017	Aroclor-1260	450	
SS-14	C0AE1	6/15/2017	Aroclor-1260	91	
SS-15	C0AE2	6/15/2017	Aroclor-1260	90	
SS-16	C0AE3	6/15/2017	Aroclor-1260	260	
SS-17	C0AE4	6/15/2017	Aroclor-1260	130	J
SS-18	C0AE5	6/15/2017	Aroclor-1260	340	
SS-19	C0AE6	6/15/2017	Aroclor-1260	210	
SS-20	C0AE7	6/15/2017	Aroclor-1260	160	
SS-21	C0AE8	6/15/2017	Aroclor-1260	280	
SS-22	C0AE9	6/15/2017	Aroclor-1260	200	
SS-23	C0AF0	6/15/2017	Aroclor-1260	25	J
SS-24	C0AF1	6/15/2017	Aroclor-1260	6.4	J
SS-25	C0AF2	6/15/2017	Aroclor-1260	100	
SS-26	C0AF3	6/15/2017	Aroclor-1260	660	
SS-27	C0AF4	6/15/2017	Aroclor-1260	350	
SS-28	C0AF5	6/13/2017	Aroclor-1260	460	
SS-29	C0AF6	6/13/2017	Aroclor-1260	190	
SS-30	C0AF7	6/13/2017	Aroclor-1260	270	

Sample Number	CLP Sample Number	Sample Date	PCB	Result	Q
SS-31	C0AF8	6/13/2017	Aroclor-1260	680	
SS-32	C0AF9	6/13/2017	Aroclor-1260	24	J
SS-33	C0AG0	6/13/2017	Aroclor-1260	17	J
SS-34	C0AG1	6/13/2017	Aroclor-1260	3.5	J
SS-35	C0AG2	6/13/2017	Aroclor-1260	5.2	J
SS-36	C0AG3	6/13/2017	Aroclor-1260	2	J
SS-037	C0AG4	6/13/2017	Aroclor-1260	1.8	J
SS-39	C0AG5	6/13/2017	Aroclor-1260	410	
SS-40	C0AL2	6/13/2017	Aroclor-1260	3.2	J
SS-41	C0AM0	6/14/2017	Aroclor-1260	130	
SS-42	C0AM7	6/15/2017	Aroclor-1260	230	
SS-43	C0AM8	6/15/2017	Aroclor-1260	1300	
SS-44	C0AN1	6/15/2017	Aroclor-1260	1200	
SB-01	C0AB9	6/13/2017	Aroclor-1260	52	U
SB-02	C0AC0	6/13/2017	Aroclor-1260	46	U
SB-03	C0AC1	6/13/2017	Aroclor-1260	38	U
SB-05	C0AC3	6/13/2017	Aroclor-1260	38	U
SB-07	C0AC5	6/13/2017	Aroclor-1260	37	U
SB-08	C0AC6	6/13/2017	Aroclor-1260	38	U
SB-09	C0AM9	6/15/2017	Aroclor-1260	48	U
SB-10	C0AN1	6/15/2017	Aroclor-1260	43	U

Notes:

Units are in micrograms per kilogram (µg/kg)

Results compared to EPA RML for residential soil of 24,000 µg/kg for PCB Aroclor-1260 (1E-04 risk level for carcinogens) (EPA, 2018)

Green Highlight indicates background soil samples

Gold Highlight indicates soil sample from occupied residential properties with concentrations above background

Bolded value indicates concentration elevated above background (The RDL of 48U for Samples SS-150 and SS-152 collected in March 2018)

Sample ID in parentheses indicates duplicate pair

Blue text indicates inconsistency in Sample ID between logbook notes and Laboratory data sheets

CLP = Contract Laboratory Program

J = Estimated quantity

PCB = Polychlorinated biphenyl

Q = Qualifier

RDL = Reporting Detection Limit

RML = Removal Management Level

SS = Surface soil sample

SB = Subsurface soil sample

U = Not detected

Table 2
Shaffer Equipment/Arbuckle Creek Area Site
Expanded Site Inspection
June 2017 Dioxins in Soil Samples

Sample Number	SS11		SS16		SS17		SS30		SS31		SS32	
CLP Sample Number	PC0AD8		PC0AE3		PC0AE4		PC0AF7		PC0AF8		PC0AF9	
Sample Date	6/15/2017		6/15/2017		6/15/2017		6/15/2017		6/15/2017		6/15/2017	
Analyte	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
2,3,7,8-TCDD	0.54	J	0.31	J	0.39	J	0.20	U	0.29	U	0.20	U
1,2,3,7,8-PeCDD	1.0	J	0.86	Z	0.61	J	0.17	U	0.26	U	0.23	U
1,2,3,4,7,8-HxCDD	2.0	J	0.90	J	0.40	U	0.20	U	0.31	U	0.20	U
1,2,3,6,7,8-HxCDD	4.3	J	2.3	J	1.4	J	0.35	U	0.51	U	0.51	J
1,2,3,7,8,9-HxCDD	3.5	J	2.3	J	1.2	Z	0.25	Z	0.34	U	0.38	Z
1,2,3,4,6,7,8-HpCDD	110		53		46		6.2		10		5.3	
OCDD	1000		590		990		71		130		75	
2,3,7,8-TCDF	3.0		1.3		2.7		0.33	J	0.43	Z	0.90	J
1,2,3,7,8-PeCDF	1.9	J	1.9	J	1.8	J	0.23	U	0.34	J	0.49	J
2,3,4,7,8-PeCDF	2.3	J	1.2	J	1.8	J	0.17	U	0.34	J	0.61	J
1,2,3,4,7,8-HxCDF	2.9	J	2.6	J	3.5	J	0.41	U	0.60	U	0.58	J
1,2,3,6,7,8-HxCDF	1.8	J	1.1	J	1.1	J	0.20	U	0.31	Z	0.40	J
1,2,3,7,8,9-HxCDF	0.61	J	0.36	J	0.39	J	0.14	U	0.25	U	0.25	U
2,3,4,6,7,8-HxCDF	2.5	J	1.4	J	1.1	J	0.18	Z	0.39	J	0.42	J
1,2,3,4,6,7,8-HpCDF	37		16		9.6		1.9	J	3.7	J	1.9	J
1,2,3,4,7,8,9-HpCDF	2.0	J	1.4	J	2.3	J	0.17	U	0.30	Z	0.26	Z
OCDF	88		32		38		4.2	J	8.6	J	2.9	J
Total TCDD	8.1	J	9.5	J	17	J		UJ	0.22	J	3.2	J
Total PeCDD	11	J	13	J	11	J		UJ	0.52	J	2.8	J
Total HxCDD	40	J	33	J	16	J	1.0	J	2.4	J	5.0	J
Total HpCDD	220	J	110	J	170	J	12	J	21	J	11	J
Total TCDF	21	J	10	J	36	J	1.0	J	0.88	J	10	J
Total PeCDF	28	J	20	J	19	J	1.1	J	2.3	J	5.9	J
Total HxCDF	43	J	21	J	16	J	1.7	J	4.2	J	3.2	J
Total HpCDF	92	J	37	J	27	J	4.5	J	9.0	J	1.9	J
TEQ (Mammal)	6.2		2.8		3.5		0.14		0.33		0.58	
TEQ (Bird)	9.2		4.2		6.6		0.36		0.47		1.7	
TEQ (Fish)	5.4		2.4		3.0		0.049		0.29		0.55	

Notes:

Units are in nanograms per kilogram (ng/kg)

The TEQ (mammal) results were compared to EPA RML for residential soil of 51 ng/kg for 2,3,7,8-TCDD (based on a target hazard quotient of 1; carcinogenic RML based on a target risk of 1E-04 is 477 ng/kg) (EPA, 2018)

Green Highlight indicates background soil samples

Sample ID in parentheses indicates duplicate pair

Blue text indicates inconsistency in Sample ID between logbook notes and Laboratory data sheets

CLP = Contract Laboratory Program

J = Estimated quantity

RML = Removal Management Level

TEQ = Toxic Equivalent

U = Not detected

Z = Estimated maximum possible concentration

Table 2
Shaffer Equipment/Arbuckle Creek Area Site
Expanded Site Inspection
June 2017 Dioxins in Soil Samples

Sample Number	SS02 SS33		SS34 (SS40)		SS35		SS26		SS37		SS40 (SS34)	
CLP Sample Number	PC0AG0		PC0AG1		PC0AG2		PC0AG3		PC0AG4		PC0AL2	
Sample Date	6/15/2017		6/15/2017		6/15/2017		6/15/2017		6/15/2017		6/15/2017	
Analyte	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
2,3,7,8-TCDD	0.18	U	0.19	U	0.18	U	0.20	U	0.20	U	0.19	U
1,2,3,7,8-PeCDD	0.16	U	0.19	U	0.16	U	0.18	U	0.17	U	0.17	U
1,2,3,4,7,8-HxCDD	0.34	J	0.32	U	0.23	J	0.37	J	0.20	U	0.20	U
1,2,3,6,7,8-HxCDD	0.37	J	0.32	U	0.32	U	0.46	J	0.34	U	0.33	U
1,2,3,7,8,9-HxCDD	0.46	Z	0.33	U	0.40	J	0.53	Z	0.33	J	0.28	Z
1,2,3,4,6,7,8-HpCDD	21		18		14		21		15		19	
OCDD	2200		2400		1500		1800		1100		2400	
2,3,7,8-TCDF	0.22	J	0.29	U	0.16	U	0.29	U	0.20	U	0.37	U
1,2,3,7,8-PeCDF	0.21	U	0.21	U	0.21	U	0.22	U	0.23	U	0.22	U
2,3,4,7,8-PeCDF	0.25	J	0.25	J	0.16	U	0.17	U	0.17	U	0.27	J
1,2,3,4,7,8-HxCDF	0.37	U	0.38	U	0.38	U	0.40	U	0.41	U	0.39	U
1,2,3,6,7,8-HxCDF	0.19	J	0.19	U	0.19	U	0.20	U	0.20	U	0.21	Z
1,2,3,7,8,9-HxCDF	0.19	U	0.14	U	0.15	U	0.26	U	0.14	U	0.18	U
2,3,4,6,7,8-HxCDF	0.14	U	0.19	Z	0.12	J	0.21	U	0.13	U	0.19	J
1,2,3,4,6,7,8-HpCDF	1.3	J	1.1	J	1.1	J	1.0	Z	0.65	J	1.2	J
1,2,3,4,7,8,9-HpCDF	0.15	U	0.18	U	0.19	U	0.16	U	0.16	U	0.19	U
OCDF	1.5	J	1.1	Z	1.4	J	1.1	J	0.69	J	1.0	J
Total TCDD	0.31	J		UJ	0.27	J	0.23	J		UJ	0.82	J
Total PeCDD	1.3	J	0.85	J	0.71	J	0.53	J	0.70	J	0.24	J
Total HxCDD	5.3	J	2.4	J	4.0	J	5.6	J	1.9	J	0.57	J
Total HpCDD	43	J	35	J	30	J	46	J	31	J	38	J
Total TCDF	2.0	J	2.7	J	0.49	J	0.40	J	0.26	J	1.0	J
Total PeCDF	2.7	J	2.6	J	0.89	J	1.0	J	0.41	J	1.4	J
Total HxCDF	1.3	J	0.22	J	0.69	J	0.48	J	0.47	J	1.3	J
Total HpCDF	2.1	J	1.9	J	1.1	J	0.53	J	1.0	J	2.0	J
TEQ (Mammal)	1.1		0.98		0.66		0.82		0.53		1.0	
TEQ (Bird)	0.76		0.52		0.24		0.22		0.17		0.56	
TEQ (Fish)	0.58		0.39		0.30		0.39		0.14		0.42	

Notes:

Units are in nanograms per kilogram (ng/kg)

The TEQ (mammal) results were compared to EPA RML for residential soil of 51 ng/kg for 2,3,7,8-TCDD (based on a target hazard quotient of 1; carcinogenic RML based on a target risk of 1E-04 is 477 ng/kg) (EPA, 2018)

Green Highlight indicates background soil samples

Sample ID in parentheses indicates duplicate pair

Blue text indicates inconsistency in Sample ID between logbook notes and Laboratory data sheets

CLP = Contract Laboratory Program

J = Estimated quantity

RML = Removal Management Level

TEQ = Toxic Equivalent

U = Not detected

Z = Estimated maximum possible concentration

Table 3
Shaffer Equipment/Arbuckle Creek Area Site
Expanded Site Inspection
December 2017 PCBs in Soil Samples

Sample Number:	SEC-SS-T1-04	SEC-SS-T1-05	SEC-SS-T2-04	SEC-SS-T2-05	SEC-SS-T3-04	SEC-SS-T3-05
CLP Number:	C0AA3	C0AA4	C0AA8	C0AA9	C0AB3	C0AB4
Matrix:	Soil	Soil	Soil	Soil	Soil	Soil
Sample Date:	12/12/2017	12/12/2017	12/12/2017	12/12/2017	12/12/2017	12/12/2017
Unit:	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
PCB (Aroclor 1260):	7.7 J	25 J	ND	24 J	8 J	27 J

Sample Number:	SEC-SS-T4-04	SEC-SS-T4-05	SEC-SS-T5-04	SEC-SS-T5-04-D	SEC-SS-T5-05
CLP Number:	C0AB8	C0AB9	C0AD2	C0AD3	C0AD7
Matrix:	Soil	Soil	Soil	Soil	Soil
Sample Date:	12/12/2017	12/12/2017	12/13/2017	12/13/2017	12/13/2017
Unit:	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
PCB (Aroclor 1260):	10 J	210 J	200	180	290

Sample Number:	SEC-SS-T6-04	SEC-SS-T6-05	SEC-SS-T6-05-D	SEC-SS-T7-04	SEC-SS-T7-05
CLP Number:	C0AE2	C0AE0	C0AE1	C0AE4	C0AE9
Matrix:	Soil	Soil	Soil	Soil	Soil
Sample Date:	12/13/2017	12/13/2017	12/13/2017	12/13/2017	12/13/2017
Unit:	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
PCB (Aroclor 1260):	33 J	140	240	60	59

Sample Number:	SEC-SS-T8-04	SEC-SS-T8-05	SEC-SS-R2-01	SEC-SS-R3-01	SEC-SS-R4-01	SEC-SS-R5-01
CLP Number:	C0AF6	C0AF2	C0AF9	C0AF7	C0AG1	C0AG6
Matrix:	Soil	Soil	Sediment	Soil	Soil	Soil
Sample Date:	12/13/2017	12/13/2017	12/13/2017	12/13/2017	12/13/2017	12/13/2017
Unit:	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
PCB (Aroclor 1260):	220	410	140	310	ND	ND

Notes:

Results compared to EPA RML for residential soil of 24,000 µg/kg for PCB Aroclor-1260 (1E-04 risk level for carcinogens) (EPA, 2018)

Green Highlight indicates background soil sample

Gold Highlight indicates soil sample from occupied residential properties with concentrations above background

Bolded value indicates concentration elevated above background (The RDL of 48U for Samples SS-150 and SS-152 collected in March 2018)

Red value indicates exceedance of EPA RML of 24,000 µg/kg

CLP = Contract Laboratory Program

J = Estimated quantity

RDL = Reporting Detection Limit

RML = Removal Management Level

ND = Not detected

Table 3
Shaffer Equipment/Arbuckle Creek Area Site
Expanded Site Inspection
December 2017 PCBs in Soil Samples

Sample Number:	SEC-SS-R1-01	SEC-SS-R1-02	SEC-SS-R1-03	SEC-SS-R1-04	SEC-SS-R1-05
CLP Number:	C0AC1	C0AC2	C0AC3	C0AC4	C0AC5
Matrix:	Soil	Soil	Soil	Soil	Soil
Sample Date:	12/12/2017	12/12/2017	12/12/2017	12/12/2017	12/12/2017
Unit:	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
PCB (Aroclor 1260)	ND	ND	ND	ND	ND

Sample Number:	SEC-SS-R1-06	SEC-SS-R1-07	SEC-SS-R1-08	SEC-SS-R1-09	SEC-SS-R1-10
CLP Number:	C0AC6	C0AC7	C0AC8	C0AC9	C0AD0
Matrix:	Soil	Soil	Soil	Soil	Soil
Sample Date:	12/12/2017	12/12/2017	12/12/2017	12/12/2017	12/12/2017
Unit:	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
PCB (Aroclor 1260):	64	14 J	ND	ND	20 J

Sample Number:	SEC-SS-TL-43-A	SEC-SS-TL-43-B	SEC-SS-TL-43-C	SEC-SS-TL-43
CLP Number:	C0AG9	C0AG2	C0AG4	C0AG5
Matrix:	Soil	Soil	Soil	Soil
Sample Date:	12/13/2017	12/13/2017	12/13/2017	12/13/2017
Unit:	µg/kg	µg/kg	µg/kg	µg/kg
PCB (Aroclor 1260):	21 J	8.9 J	58	120 J

Sample Number:	SEC-SS-SE-01	SEC-SS-SE-02	SEC-SS-BH-01
CLP Number:	C0AG7	C0AG8	C0AH0
Matrix:	Soil	Soil	Soil
Sample Date:	12/13/2017	12/13/2017	12/13/2017
Unit:	µg/kg	µg/kg	µg/kg
PCB (Aroclor 1260):	54,000	270	58 J
PCB (Aroclor 1254):	ND	260	ND

Notes:

Results compared to EPA RML for residential soil of 24,000 µg/kg for PCB Aroclor-1260 (1E-04 risk level for carcinogens) (EPA, 2018)

Green Highlight indicates background soil sample

Gold Highlight indicates soil sample from occupied residential properties with concentrations above background

Bolded value indicates concentration elevated above background (The RDL of 48U for Samples SS-150 and SS-152 collected in March 2018)

Red value indicates exceedance of EPA RML of 24,000 µg/kg

µg/kg = micrograms per kilogram

CLP = Contract Laboratory Program

J = Estimated quantity

RDL = Reporting Detection Limit

RML = Removal Management Level

ND = Not detected

Table 4
Shaffer Equipment/Arbuckle Creek Area Site
Expanded Site Inspection
March 2018 PCBs in Soil Samples

Sample Number	CLP Sample Number	Sample Date	PCB	Result
SS-100	C0AF3	3/20/2018	Aroclor-1260	75U
SS-101	C0AA1	3/20/2018	Aroclor-1260	69U
SS-102	C0AA2	3/20/2018	Aroclor-1260	47U
SS-103	C0AA3	3/20/2018	Aroclor-1260	57U
SS-104	C0AA4	3/20/2018	Aroclor-1260	72J
SS-105	C0AA5	3/20/2018	Aroclor-1260	67J
SS-106	C0AA6	3/20/2018	Aroclor-1260	49U
SS-107	C0AA7	3/20/2018	Aroclor-1260	47U
SS-108	C0AA8	3/20/2018	Aroclor-1260	48U
SS-109	C0AA9	3/20/2018	Aroclor-1260	48U
SS-110	C0AB0	3/20/2018	Aroclor-1260	11J
SS-111	C0AB1	3/20/2018	Aroclor-1260	89U
SS-111D	C0AB2	3/20/2018	Aroclor-1260	91U
SS-112	C0AB3	3/20/2018	Aroclor-1260	49U
SS-113	C0AB4	3/20/2018	Aroclor-1260	48U
SS-115	C0AB6	3/20/2018	Aroclor-1260	63U
SS-116	C0AB7	3/20/2018	Aroclor-1260	41U
SS-117	C0AB8	3/20/2018	Aroclor-1260	69U
SS-118	C0AB9	3/20/2018	Aroclor-1260	65U
SS-119	C0AC0	3/20/2018	Aroclor-1260	23J
SS-120	C0AC1	3/20/2018	Aroclor-1260	46U

Sample Number	CLP Sample Number	Sample Date	PCB	Result
SS-121	C0AA0	3/20/2018	Aroclor-1260	69U
SS-122	C0AC2	3/20/2018	Aroclor-1260	54U
SS-123	C0AC3	3/20/2018	Aroclor-1260	44U
SS-124	C0AC4	3/20/2018	Aroclor-1260	40U
SS-125	C0AC5	3/20/2018	Aroclor-1260	58
SS-150	C0AE6	3/20/2018	Aroclor-1260	48U
SS-151	C0AE7	3/20/2018	Aroclor-1260	47U
SS-152	C0AE8	3/20/2018	Aroclor-1260	48U
SS-153	C0AE9	3/20/2018	Aroclor-1260	46U
SS-154	C0AF0	3/20/2018	Aroclor-1260	46U
SS-155	C0AF1	3/20/2018	Aroclor-1260	46U
SS-156	C0AF2	3/20/2018	Aroclor-1260	52UJ
SS-202	C0AD5	3/20/2018	Aroclor-1260	44U
SS-205	C0AD8	3/20/2018	Aroclor-1260	46U
SS-206	C0AD9	3/20/2018	Aroclor-1260	45U
SS-206B	C0AE0	3/20/2018	Aroclor-1260	43U
SS-207	C0AE1	3/20/2018	Aroclor-1260	25J
SS-208	C0AE2	3/20/2018	Aroclor-1260	45U
SS-209	C0AE3	3/20/2018	Aroclor-1260	38J
SS-210	C0AE4	3/20/2018	Aroclor-1260	6.3J
SS-211	C0AE5	3/20/2018	Aroclor-1260	22J

Notes:

Units are in micrograms per kilogram (µg/kg)

Results compared to EPA RML for residential soil of 24,000 µg/kg for PCB Aroclor-1260 (1E-04 risk level for carcinogens) (EPA, 2018)

Green Highlight indicates background soil samples

Gold Highlight indicates soil sample from occupied residential properties with concentrations above background

Bolded value indicates concentration elevated above background (The RDL of 48U for Samples SS-150 and SS-152 collected in March 2018)

CLP = Contract Laboratory Program

J = Estimated quantity

PCB = Polychlorinated biphenyl

RDL = Reporting Detection Limit

RML = Removal Management Level

U = Not detected

Table 5
Shaffer Equipment/Arbuckle Creek Area Site
Expanded Site Inspection
June 2018 PCBs in Soil Samples

PCB		Station:	SS-212		SS-213		SS-216		SS-217		SS-218		SS-219		SS-220		SS-221		SS-222		SS-223	
		Field Sample ID:	SEC-SS-212		SEC-SS-213		SEC-SS-216		SEC-SS-217		SEC-SS-218		SEC-SS-219		SEC-SS-220		SEC-SS-221		SEC-SS-222		SEC-SS-223	
		Date:	6/27/2018		6/26/2018		6/26/2018		6/27/2018		6/27/2018		6/27/2018		6/27/2018		6/28/2018		6/27/2018		6/27/2018	
		Lab Sample ID:	COAM6		COAM8		COAN2		COAN3		COAN4		COAN5		COAN6		COAW0		COAN8		COAN9	
	Residential Soil RML	Units:	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Aroclor-1260	24000	µg/kg	41	U	44	U	39	U	1400	J	51	U	53	U	44	U	42	U	46	U	510	J

		Station:	SS-224		SS-225		SS-226		SS-227		SS-228		SS-229		SS-230		SS-231		SS-232		SS-233		SS-234	
		Field Sample ID:	SEC-SS-224		SEC-SS-225		SEC-SS-226		SEC-SS-227		SEC-SS-228		SEC-SS-229		SEC-SS-230		SEC-SS-231		SEC-SS-232		SEC-SS-233		SEC-SS-234	
		Date:	6/27/2018		6/26/2018		6/26/2018		6/26/2018		6/26/2018		6/26/2018		6/26/2018		6/26/2018		6/26/2018		6/26/2018		6/26/2018	
		Lab Sample ID:	COAP0		COAP2		COAP3		COAP4		COAP5		COAP6		COAP7		COAP8		COAP9		COAQ0		COAQ1	
	Residential Soil																							
PCB	RML	Units:	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Aroclor-1260	24000	µg/kg	39	U	41	U	38	U	40	U	37	U	40	U	37	U	40	U	37	U	40	U	40	U

		Station:	SS-235		SS-236		SS-237		SS-238		SS-239		SS-240		SS-241		SS-242		SS-243		SS-244		SS-245	
		Field Sample ID:	SEC-SS-235		SEC-SS-236		SEC-SS-237		SEC-SS-238		SEC-SS-239		SEC-SS-240		SEC-SS-241		SEC-SS-242		SEC-SS-243		SEC-SS-244		SEC-SS-245	
		Date:	6/26/2018		6/26/2018		6/26/2018		6/26/2018		6/26/2018		6/26/2018		6/26/2018		6/27/2018		6/27/2018		6/27/2018		6/27/2018	
		Lab Sample ID:	C0AQ2		C0AQ3		C0AQ4		C0AQ5		C0AQ6		C0AQ7		C0AQ8		C0AQ9		C0AR0		C0AR1		C0AR2	
	Residential Soil RML	Units:	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
PCB																								
Aroclor-1260	24000	µg/kg	39	U	38	U	39	U	38	U	37	U	37	U	36	U	47	U	39	U	64	U	110	U

PCB		Station:	SS-246		SS-247		SS-248		SS-249		SS-250		SS-251		SS-252		SS-253		SS-254		SS-255		SS-256	
		Field Sample ID:	SEC-SS-246		SEC-SS-247		SEC-SS-248		SEC-SS-249		SEC-SS-250		SEC-SS-251		SEC-SS-252		SEC-SS-253		SEC-SS-254		SEC-SS-255		SEC-SS-256	
		Date:	6/26/2018		6/27/2018		6/27/2018		6/27/2018		6/26/2018		6/26/2018		6/26/2018		6/26/2018		6/27/2018		6/27/2018		6/28/2018	
		Lab Sample ID:	C0AR3		C0AR4		C0AR5		C0AR6		C0AS1		C0AS2		C0AS3		C0AS4		C0AT4		C0AT5		C0AT9	
	Residential Soil RML	Units:	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Aroclor-1260	24000	µg/kg	39	U	89	U	38	U	39	U	94	U	82	U	48	U	53	U	43	U	40	U	39	U

Notes:

Results compared to EPA RML for residential soil of 24,000 µg/kg for PCB Aroclor-1260 (1E-04 risk level for carcinogens) (EPA, 2018)
Gold Highlight indicates soil sample from occupied residential properties with concentrations above background
Bolded value indicates concentration elevated above background (The RDL of 48U for Samples SS-150 and SS-152 collected in March 2018)
µg/kg = micrograms per kilogram
J = Estimated quantity
PCB = Polychlorinated biphenyl
RDL = Reporting Detection Limit
RML = Removal Management Level
Q = Qualifier
U = Not detected

Table 6
Shaffer Equipment/Arbuckle Creek Area Site
Expanded Site Inspection
June 2018 Pesticides in Soil Samples

Pesticide		Station:	SS-212		SS-213		SS-221		SS-225		SS-226		SS-227	
		Field Sample ID:	SEC-SS-212		SEC-SS-213		SEC-SS-221		SEC-SS-225		SEC-SS-226		SEC-SS-227	
		Date:	6/27/2018		6/26/2018		6/28/2018		6/26/2018		6/26/2018		6/26/2018	
		Lab Sample ID:	COAM6		COAM8		COAW0		COAP2		COAP3		COAP4	
	Residential Soil RML	Units:	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
4,4'-DDD	1900	µg/kg	2 3	J	6 8	J	51	J	4.1	U	9.6		4	U
4,4'-DDE	23000	µg/kg	4.1	U	6.3	J	71	J	4.1	U	4.8	J	4	U
4,4'-DDT	37000	µg/kg	1 8	J	10	J	160	J	4.1	U	3.8	R	4	U
beta-BHC	30000	µg/kg	0.34	R	0.55	R	3.6	J	0.23	R	0.44	R	0.36	R
cis-Chlordane *	35000	µg/kg	0.26	R	2 9	J	3.5	J	2.1	U	1.9	U	2.1	U
delta-BHC	NL	µg/kg	0.45	J	0.96	J	1.1	J	2.1	U	1.9	U	2.1	U
Dieldrin	3200	µg/kg	0.93	R	4.4	U	1.9	R	4.1	U	4.3	R	4	U
Endosulfan I *	470000	µg/kg	0.37	J	2 3	U	2.2	U	2.1	U	1.9	U	2.1	U
Endosulfan sulfate *	470000	µg/kg	0.87	J	3 5	J	2.6	J	0.66	J	3.8	U	4	U
Endrin	19000	µg/kg	1 5	R	2 3	R	20	J	4.1	U	3.8	R	4	U
Endrin aldehyde *	19000	µg/kg	2 3	J	4.4	U	4.2	U	4.1	U	3.4	R	0.84	J
Endrin ketone *	19000	µg/kg	3 3	J	7 8		4.5	J	0.39	J	12		0.61	J
gamma-BHC (Lindane)	21000	µg/kg	2.1	U	2 3	U	2.2	U	0.51	J	1.9	U	2.1	U
Heptachlor	13000	µg/kg	2.1	U	0.69	J	2.1	J	2.1	U	1.9	U	2.1	U
Heptachlor epoxide	1000	µg/kg	0.66	J	2.7	J+	2.8	J	2.1	U	3.8	J	0.58	J
trans-Chlordane *	35000	µg/kg	0.43	R	1 3	J	4.5	J	2.1	U	0.64	R	0.54	J

Notes:

Results compared to EPA RML for residential soil (1E-04 risk level for carcinogens and a hazard quotient of 1 for non carcinogens) (EPA, 2018)

* Indicates RML shown is for Endosulfan, Endrin, and Chlordane, respectively.

µg/kg = micrograms per kilogram

J+ = Estimated quantity; actual value is expected to be lower

J = Estimated quantity

NL = No listed value

R = The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The

analyte may or may not be present in the sample

RML = Removal Management Level

Q = Qualifier

U = Not Detected

Table 6
Shaffer Equipment/Arbuckle Creek Area Site
Expanded Site Inspection
June 2018 Pesticides in Soil Samples

Pesticide		Station:	SS-228		SS-229		SS-230		SS-231		SS-232		SS-233	
		Field Sample ID:	SEC-SS-228		SEC-SS-229		SEC-SS-230		SEC-SS-231		SEC-SS-232		SEC-SS-233	
		Date:	6/26/2018		6/26/2018		6/26/2018		6/26/2018		6/26/2018		6/26/2018	
		Lab Sample ID:	C0AP5		C0AP6		C0AP7		C0AP8		C0AP9		C0AQ0	
	Residential Soil RML	Units:	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
4,4'-DDD	1900	µg/kg	16	J	4	U	16	J	4	U	10	J	4	U
4,4'-DDE	23000	µg/kg	3.7	U	4	U	3.7	U	4	U	4.5	J	4	U
4,4'-DDT	37000	µg/kg	3.7	R	4	U	3.7	R	4	U	4.4	J	4	U
beta-BHC	30000	µg/kg	1.5	R	0.23	R	1.1	R	2.1	U	0.24	R	0.26	R
cis-Chlordane *	35000	µg/kg	1.9	U	2	U	1.9	U	2.1	U	6.1	J	2	U
delta-BHC	NL	µg/kg	0.36	R	2	U	1.9	U	0.39	J	1.9	U	0.63	J
Dieldrin	3200	µg/kg	6.6	R	4	U	6	R	4	U	3.7	U	0.44	J
Endosulfan I *	470000	µg/kg	1.9	U	2	U	1.9	U	2.1	U	1.4	R	2	U
Endosulfan sulfate *	470000	µg/kg	3.7	U	4	U	3.7	U	4	U	5.2	J	0.24	J
Endrin	19000	µg/kg	3.7	R	4	U	3.7	R	4	U	4.4	R	1.5	J
Endrin aldehyde *	19000	µg/kg	5.7	R	0.81	J	4.8	R	0.6	J	3.7	U	4	U
Endrin ketone *	19000	µg/kg	23	J	0.92	J	19	J	1.5	J	13	J	4	U
gamma-BHC (Lindane)	21000	µg/kg	2	R	0.31	J	1.6	R	2.1	U	1.9	U	0.35	J
Heptachlor	13000	µg/kg	1.9	U	2	U	1.9	U	2.1	U	1.9	U	2	U
Heptachlor epoxide	1000	µg/kg	6.9	J	0.74	J	5.4	J	0.95	J	3.6	J	2	U
trans-Chlordane *	35000	µg/kg	1.5	R	0.56	J	2.9	J	0.64	J	0.63	R	0.36	J

Notes:

Results compared to EPA RML for residential soil (1E-04 risk level for carcinogens and a hazard quotient of 1 for non carcinogens) (EPA, 2018)

* Indicates RML shown is for Endosulfan, Endrin, and Chlordane, respectively.

µg/kg = micrograms per kilogram

J+ = Estimated quantity; actual value is expected to be lower

J = Estimated quantity

NL = No listed value

R = The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The

analyte may or may not be present in the sample

RML = Removal Management Level

Q = Qualifier

U = Not Detected

Table 6
Shaffer Equipment/Arbuckle Creek Area Site
Expanded Site Inspection
June 2018 Pesticides in Soil Samples

Pesticide	Residential Soil RML	Station:	SS-234		SS-235		SS-236		SS-237		SS-238		SS-239	
		Field Sample ID:	SEC-SS-234		SEC-SS-235		SEC-SS-236		SEC-SS-237		SEC-SS-238		SEC-SS-239	
		Date:	6/26/2018		6/26/2018		6/26/2018		6/26/2018		6/26/2018		6/26/2018	
		Lab Sample ID:	C0AQ1		C0AQ2		C0AQ3		C0AQ4		C0AQ5		C0AQ6	
		Units:	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
4,4'-DDD	1900	µg/kg	11	J	3.9	U	15	J	3.9	U	13	J	17	J
4,4'-DDE	23000	µg/kg	4	U	3.9	U	3.8	U	0.57	J	4.5	J	5.7	J
4,4'-DDT	37000	µg/kg	4	R	3.9	U	3.8	R	3.9	U	6.9	J	6.6	R
beta-BHC	30000	µg/kg	0.46	R	2	U	0.8	J	0.31	R	1.3	R	1.6	R
cis-Chlordane *	35000	µg/kg	2.1	U	2	U	2	U	0.33	J	1.9	U	11	J
delta-BHC	NL	µg/kg	0.4	R	0.57	J	2	U	2	U	0.41	R	1.7	J
Dieldrin	3200	µg/kg	4.8	R	3.9	U	6.1	R	3.9	R	5.3	R	3.7	U
Endosulfan I *	470000	µg/kg	2.1	U	2	U	2	U	2	U	1.9	U	13	J
Endosulfan sulfate *	470000	µg/kg	2.5	R	3.9	U	3.8	U	3.9	U	3.8	U	21	J
Endrin	19000	µg/kg	4	R	3.9	U	3.8	R	3.9	R	3.8	R	2.9	R
Endrin aldehyde *	19000	µg/kg	3.9	R	0.27	J	4.7	R	0.97	R	5	R	2.4	R
Endrin ketone *	19000	µg/kg	12	J	0.49	J	20	J	1.9	J	18	J	18	J
gamma-BHC (Lindane)	21000	µg/kg	1.2	R	2	U	1.5	R	0.32	R	1.7	R	1.9	U
Heptachlor	13000	µg/kg	0.19	R	0.5	J	2	U	2	U	1.9	U	1.4	R
Heptachlor epoxide	1000	µg/kg	3.9	J	0.77	J	5.2	J	0.93	J	5.3	J	8.7	J
trans-Chlordane *	35000	µg/kg	0.79	R	2	U	0.96	R	1	J	0.79	R	0.71	R

Notes:

Results compared to EPA RML for residential soil (1E-04 risk level for carcinogens and a hazard quotient of 1 for non carcinogens) (EPA, 2018)

* Indicates RML shown is for Endosulfan, Endrin, and Chlordane, respectively.

µg/kg = micrograms per kilogram

J+ = Estimated quantity; actual value is expected to be lower

J = Estimated quantity

NL = No listed value

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RML = Removal Management Level

Q = Qualifier

U = Not Detected

Table 6
Shaffer Equipment/Arbuckle Creek Area Site
Expanded Site Inspection
June 2018 Pesticides in Soil Samples

Pesticide	Station:		SS-240		SS-241		SS-242		SS-243		SS-244		SS-245	
	Field Sample ID:		SEC-SS-240		SEC-SS-241		SEC-SS-242		SEC-SS-243		SEC-SS-244		SEC-SS-245	
	Date:		6/26/2018		6/26/2018		6/27/2018		6/27/2018		6/27/2018		6/27/2018	
	Lab Sample ID:		C0AQ7		C0AQ8		C0AQ9		C0AR0		C0AR1		C0AR2	
	Residential Soil RML	Units:	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
4,4'-DDD	1900	µg/kg	3.7	U	3.6	U	16	R	0.93	R	6.4	U	11	U
4,4'-DDE	23000	µg/kg	14	J	16	J	5.4	J	3	R	1.8	J	1.6	R
4,4'-DDT	37000	µg/kg	13	J	16	J	11	J	5.6	J	6.4	U	11	U
beta-BHC	30000	µg/kg	4	R	4.8	R	4.9	R	2.5	R	3.3	U	0.45	R
cis-Chlordane *	35000	µg/kg	22	J	24	J	2.4	U	1.4	J	3.3	U	1.6	R
delta-BHC	NL	µg/kg	2.4	R	2.5	R	1.7	J	0.89	J	3.3	U	5.5	U
Dieldrin	3200	µg/kg	3.7	U	4.7	R	4	R	3.9	U	6.4	U	1.5	R
Endosulfan I *	470000	µg/kg	19	J	20	J	1.7	R	0.74	J	0.59	R	1.5	J
Endosulfan sulfate *	470000	µg/kg	17	J	25	J	17	J	8.3	R	5.6	J	1	J
Endrin	19000	µg/kg	19	R	2.7	R	4.7	U	1.8	R	1.6	J	4	J
Endrin aldehyde *	19000	µg/kg	16	R	19	R	11	R	3.9	U	0.82	R	11	U
Endrin ketone *	19000	µg/kg	31	J	35	J	41	J	18	J	1.2	R	11	U
gamma-BHC (Lindane)	21000	µg/kg	1.9	U	1.6	R	0.56	R	2	U	3.3	U	5.5	U
Heptachlor	13000	µg/kg	1.9	U	1.9	U	0.49	J	0.27	R	3.3	U	0.78	J
Heptachlor epoxide	1000	µg/kg	14	J	13	J	0.93	R	0.34	J	0.83	J	5.5	U
trans-Chlordane *	35000	µg/kg	1.3	R	1.4	R	5	J	1.5	R	0.99	R	5.5	U

Notes:

Results compared to EPA RML for residential (1E-04 risk level for carcinogens and a hazard quotient of 1 for non carcinogens) (EPA, 2018)

* Indicates RML shown is for Endosulfan, Endrin, and Chlordane, respectively.

µg/kg = micrograms per kilogram

J+ = Estimated quantity; actual value is expected to be lower

J = Estimated quantity

NL = No listed value

R = The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The

analyte may or may not be present in the sample

RML = Removal Management Level

Q = Qualifier

U = Not Detected

Table 6
Shaffer Equipment/Arbuckle Creek Area Site
Expanded Site Inspection
June 2018 Pesticides in Soil Samples

Pesticide		Station:	SS-246		SS-247		SS-248		SS-249		SS-250		SS-251		SS-252		SS-253		SS-256	
		Field Sample ID:	SEC-SS-246		SEC-SS-247		SEC-SS-248		SEC-SS-249		SEC-SS-250		SEC-SS-251		SEC-SS-252		SEC-SS-253		SEC-SS-256	
		Date:	6/26/2018		6/27/2018		6/27/2018		6/27/2018		6/26/2018		6/26/2018		6/26/2018		6/26/2018		6/28/2018	
		Lab Sample ID:	COAR3		COAR4		COAR5		COAR6		COAS1		COAS2		COAS3		COAS4		COAT9	
	Residential Soil RML	Units:	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
4,4'-DDD	1900	µg/kg	4.6		8.9	U	7.8	J	7.3	J	9.4	U	8.2	U	4.8	U	5.3	U	3.9	U
4,4'-DDE	23000	µg/kg	2.4	J	2.1	R	2.1	R	2.4	J	23	J	3.4	J	3	J	2.2	J	1.2	J
4,4'-DDT	37000	µg/kg	5.6		13	J	2.2	R	2.7	R	16	J	8.2	U	4.8		11		3.9	U
beta-BHC	30000	µg/kg	0.3	R	0.98	R	0.47	R	0.35	R	0.48	R	4.2	U	0.32	R	0.36	R	2	U
cis-Chlordane *	35000	µg/kg	2	U	5.8	J	2	R	1.9	R	1.6	R	1.3	R	0.44	R	1.8	R	2	U
delta-BHC	NL	µg/kg	2	U	4.5	J	0.4	R	0.94	J	1.2	J	1.2	R	0.37	J	0.34	J	0.35	J
Dieldrin	3200	µg/kg	3.9	U	8.9	U	3.8	U	3.9	U	14	J	8.2	R	4.8	R	5.4	J	3.9	U
Endosulfan I *	470000	µg/kg	0.99	R	4.6	U	2.7	J	2	U	1.4	J	0.2	R	0.4	R	2.7	U	2	U
Endosulfan sulfate *	470000	µg/kg	7.3		8.5	J	7.5	J	6.4	J	13	J	2.5	R	1.2	J	2.9	J	2.9	J
Endrin	19000	µg/kg	3.9	U	12	J	17	J	14	J	9.4	R	8.2	R	4.8	R	5.3	R	1.1	R
Endrin aldehyde *	19000	µg/kg	3.9	U	9.2	R	8.9	J	7.3	J	9.4	U	10	J	1.6	J	2.2	J	0.38	R
Endrin ketone *	19000	µg/kg	11		1.2	R	11	J	9.2	J	24	J	7.4	J	2.5	J	9.2		1.4	J
gamma-BHC (Lindane)	21000	µg/kg	0.87	R	2.2	J	2	U	2	U	2	J	1	R	0.46	R	0.92	J	2	U
Heptachlor	13000	µg/kg	2	U	4.6	U	0.95	R	0.88	J	4.9	U	0.8	J	0.55	J	2.7	U	0.61	J
Heptachlor epoxide	1000	µg/kg	1.5	J	0.42	R	2.2	R	2.1	J	1.2	R	3.2	J	0.32	R	1.1	J	0.64	J
trans-Chlordane *	35000	µg/kg	1.2	J	0.31	R	4.5	J	3.6	J	3.8	J	3.8	R	2.5	R	2.7	J	0.75	J

Notes:

Results compared to EPA RML for residential soil (1E-04 risk level for carcinogens and a hazard quotient of 1 for non carcinogens) (EPA, 2018)

* Indicates RML shown is for Endosulfan, Endrin, and Chlordane, respectively.

µg/kg = micrograms per kilogram

J+ = Estimated quantity; actual value is expected to be lower

J = Estimated quantity

NL = No listed value

R = The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The

analyte may or may not be present in the sample

RML = Removal Management Level

Q = Qualifier

U = Not Detected

Table 7
Shaffer Equipment/Arbuckle Creek Area Site
Expanded Site Inspection
June 2018 SVOCs and PAHs in Soil Samples

		Station:	SS-212		SS-213		SS-221		SS-225		SS-226	
		Field Sample ID:	SEC-SS-212		SEC-SS-213		SEC-SS-221		SEC-SS-225		SEC-SS-226	
		Date:	6/27/2018		6/26/2018		6/28/2018		6/26/2018		6/26/2018	
		Lab Sample ID:	C0AM6		C0AM8		C0AW0		C0AP2		C0AP3	
		Residential Soil RML	Units:	Result	Q	Result	Q	Result	Q	Result	Q	Result
SVOC												
1,1'-Biphenyl	47000	ug/kg	210	U	230	U	220	U	210	U	240	
2-Methylnaphthalene	240000	ug/kg	210	U	230	U	220	U	210	U	490	
3-Nitroaniline	NL	ug/kg	57	J	440	U	420	U	410	U	380	U
4-Chloroaniline	250000	ug/kg	410	U	440	U	420	U	410	U	380	U
4-Methylphenol	6300000	ug/kg	410	U	440	U	420	U	410	U	380	U
Acenaphthene	3600000	ug/kg	210	U	230	U	220	U	210	U	200	U
Acenaphthylene	NL	ug/kg	210	U	230	U	120	J	210	U	200	U
Acetophenone	7800000	ug/kg	410	U	440	U	420	U	410	U	380	U
Anthracene	18000000	ug/kg	210	U	230	U	87	J	210	U	200	U
Benzaldehyde	7800000	ug/kg	410	U	440	U	420	U	410	U	380	U
Benzo(a)anthracene	110000	ug/kg	210	U	230	U	310		210	U	200	U
Benzo(a)pyrene	11000	ug/kg	210	U	230	U	390		210	U	200	U
Benzo(b)fluoranthene	110000	ug/kg	210	U	120	J	680		210	U	81	J
Benzo(g,h,i)perylene	NL	ug/kg	210	U	230	U	370		210	U	200	U
Benzo(k)fluoranthene	1100000	ug/kg	210	U	230	U	200	J	210	U	200	U
Bis(2-ethylhexyl)phthalate	1300000	ug/kg	210	U	230	U	550		210	U	200	U
Butylbenzylphthalate	13000000	ug/kg	210	U	230	U	280		210	U	200	U
Carbazole	NL	ug/kg	410	U	440	UJ	420	UJ	410	UJ	380	UJ
Chrysene	11000000	ug/kg	210	U	130	J	370		210	U	260	
Dibenzo(a,h)anthracene	11000	ug/kg	210	U	230	U	88	J	210	U	200	U
Dibenzofuran	73000	ug/kg	210	U	230	U	220	U	210	U	310	
Fluoranthene	2400000	ug/kg	410	U	180	J	740		410	U	130	J
Fluorene	2400000	ug/kg	210	U	230	U	220	U	210	U	200	U
Indeno(1,2,3-cd)pyrene	110000	ug/kg	210	U	230	U	350		210	U	200	U
Naphthalene	130000	ug/kg	210	U	230	U	220	U	210	U	610	
Phenanthrene	NL	ug/kg	78	J	130	J	330		210	U	1200	
Pyrene	1800000	ug/kg	210	U	120	J	650		210	U	82	J
PAHs by SIM												
2-Methylnaphthalene	240000	ug/kg	31		37		16		4.1	U	330	J
Acenaphthene	3600000	ug/kg	3.1	J	4.4	U	9.2		4.1	U	7.7	
Acenaphthylene	NL	ug/kg	4.1	U	5.8		150		4.1	U	3.8	U
Anthracene	18000000	ug/kg	10		10		130		4.1	U	12	
Benzo(a)anthracene	110000	ug/kg	24		38		350		3.2	J	41	
Benzo(a)pyrene	11000	ug/kg	24		31		430	J	3.2	J	9	
Benzo(b)fluoranthene	110000	ug/kg	48		110		650	J	4.6		63	
Benzo(g,h,i)perylene	NL	ug/kg	15		20		340		4.1	U	13	
Benzo(k)fluoranthene	1100000	ug/kg	12		28		190		4.1	U	4.1	
Chrysene	11000000	ug/kg	54		140		400	J	3.3	J	250	J
Dibenzo(a,h)anthracene	11000	ug/kg	5.2		6.9		55		4.1	U	12	
Fluoranthene	2400000	ug/kg	49		190		740	J	9.6		120	
Fluorene	2400000	ug/kg	2.7	J	4.4	U	23		4.1	U	7.8	
Indeno(1,2,3-cd)pyrene	110000	ug/kg	17		24		400	J	2.5	J	4.7	
Naphthalene	130000	ug/kg	16		25		15		4.1	U	540	J
Pentachlorophenol	100000	ug/kg	8.3	U	9	U	1.7	J	8.4	U	1.2	J
Phenanthrene	NL	ug/kg	70		140		320		4.1	U	1100	J
Pyrene	1800000	ug/kg	30		110		460	J	4.1	U	61	

Notes:

Results compared to EPA RML for residential soil (1E-04 risk level for carcinogens and a hazard quotient of 1 for non carcinogens) (EPA, 2018)

µg/kg = micrograms per kilogram

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NL = No listed value

PAH = Polycyclic Aromatic Hydrocarbon

R = The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.

RML = Removal Management Level

Q = Qualifier

SIM = Selective Ion Monitoring

SVOC = Semivolatile Organic Compound

U = Not Detected

UJ = The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise

Table 7
Shaffer Equipment/Arbuckle Creek Area Site
Expanded Site Inspection
June 2018 SVOCs and PAHs in Soil Samples

SVOC	Station:		SS-227		SS-228		SS-229		SS-230		SS-231	
	Field Sample ID:		SEC-SS-227		SEC-SS-228		SEC-SS-229		SEC-SS-230		SEC-SS-231	
	Date:		6/26/2018		6/26/2018		6/26/2018		6/26/2018		6/26/2018	
	Lab Sample ID:		C0AP4		C0AP5		C0AP6		C0AP7		C0AP8	
	Residential Soil RML	Units:	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
1,1'-Biphenyl	47000	ug/kg	210	U	140	J	200	U	100	J	210	U
2-Methylnaphthalene	240000	ug/kg	210	U	490		200	U	270		210	U
3-Nitroaniline	NL	ug/kg	400	U	370	U	400	U	370	U	400	U
4-Chloroaniline	250000	ug/kg	400	U	370	U	400	U	370	U	400	U
4-Methylphenol	6300000	ug/kg	400	U	370	U	400	U	370	U	400	U
Acenaphthene	3600000	ug/kg	210	U	190	U	200	U	190	U	210	U
Acenaphthylene	NL	ug/kg	210	U	190	U	200	U	190	U	210	U
Acetophenone	7800000	ug/kg	400	U	52	J	400	U	370	U	400	U
Anthracene	18000000	ug/kg	210	U	190	U	200	U	190	U	210	U
Benzaldehyde	7800000	ug/kg	400	U	370	U	400	U	370	U	400	U
Benzo(a)anthracene	110000	ug/kg	210	U	59	J	200	U	190	U	210	U
Benzo(a)pyrene	11000	ug/kg	210	U	190	U	200	U	190	U	210	U
Benzo(b)fluoranthene	110000	ug/kg	210	U	110	J	200	U	110	J	210	U
Benzo(g,h,i)perylene	NL	ug/kg	210	U	190	U	200	U	190	U	210	U
Benzo(k)fluoranthene	1100000	ug/kg	210	U	190	U	200	U	190	U	210	U
Bis(2-ethylhexyl)phthalate	1300000	ug/kg	210	U	190	U	200	U	190	U	210	U
Butylbenzylphthalate	13000000	ug/kg	210	U	190	U	200	U	190	U	210	U
Carbazole	NL	ug/kg	400	UJ	370	UJ	400	UJ	370	UJ	400	UJ
Chrysene	11000000	ug/kg	210	U	320		200	U	330		210	U
Dibenzo(a,h)anthracene	11000	ug/kg	210	U	190	U	200	U	190	U	210	U
Dibenzofuran	73000	ug/kg	210	U	130	J	200	U	87	J	210	U
Fluoranthene	2400000	ug/kg	400	U	150	J	400	U	140	J	400	U
Fluorene	2400000	ug/kg	210	U	190	U	200	U	190	U	210	U
Indeno(1,2,3-cd)pyrene	110000	ug/kg	210	U	190	U	200	U	190	U	210	U
Naphthalene	130000	ug/kg	210	U	420		200	U	210		210	U
Phenanthrene	NL	ug/kg	210	U	910		200	U	730		210	U
Pyrene	1800000	ug/kg	210	U	97	J	200	U	94	J	210	U

2-Methylnaphthalene	240000	ug/kg	1 5	J	380	J	2	J	210		1.2	J
Acenaphthene	3600000	ug/kg	4	U	8		4	U	7		4	U
Acenaphthylene	NL	ug/kg	4	U	3.7	U	4	U	3.7	U	4	U
Anthracene	18000000	ug/kg	4	U	3.7	U	4	U	7.9		4	U
Benzo(a)anthracene	110000	ug/kg	4	U	55		4	U	58		4	U
Benzo(a)pyrene	11000	ug/kg	4	U	19		4	U	16		4	U
Benzo(b)fluoranthene	110000	ug/kg	4	U	100		2 2	J	93		4	U
Benzo(g,h,i)perylene	NL	ug/kg	4	U	17		4	U	18		4	U
Benzo(k)fluoranthene	1100000	ug/kg	4	U	7.5		4	U	6.8		4	U
Chrysene	11000000	ug/kg	2.6	J	340	J	3 5	J	320	J	3.1	J
Dibenzo(a,h)anthracene	11000	ug/kg	4	U	14		4	U	18		4	U
Fluoranthene	2400000	ug/kg	2 3	J	150		2 3	J	130		1.7	J
Fluorene	2400000	ug/kg	4	U	11		4	U	9.3		4	U
Indeno(1,2,3-cd)pyrene	110000	ug/kg	4	U	6.9		4	U	6.2		4	U
Naphthalene	130000	ug/kg	4	U	410	J	4	U	200		4	U
Pentachlorophenol	100000	ug/kg	8 2	U	7.4	U	8	U	7.6	U	8.1	U
Phenanthrene	NL	ug/kg	6		870	J	6.7		670	J	5.4	
Pyrene	1800000	ug/kg	4	U	88		4	U	80		4	U

Notes:

Results compared to EPA RML for residential soil (1E-04 risk level for carcinogens and a hazard quotient of 1 for non carcinogens) (EPA, 2018)

µg/kg = micrograms per kilogram

J = Estimated quantity

NL = No listed value

PAH = Polycyclic Aromatic Hydrocarbon

R = The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.

RML = Removal Management Level

Q = Qualifier

SIM = Selective Ion Monitoring

SVOC = Semivolatile Organic Compound

U = Not Detected

UJ = The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise

Table 7
Shaffer Equipment/Arbuckle Creek Area Site
Expanded Site Inspection
June 2018 SVOCs and PAHs in Soil Samples

SVOC		Station:	SS-232		SS-233		SS-234		SS-235		SS-236		SS-237	
		Field Sample ID:	SEC-SS-232		SEC-SS-233		SEC-SS-234		SEC-SS-235		SEC-SS-236		SEC-SS-237	
		Date:	6/26/2018		6/26/2018		6/26/2018		6/26/2018		6/26/2018		6/26/2018	
		Lab Sample ID:	C0AP9		C0AQ0		C0AQ1		C0AQ2		C0AQ3		C0AQ4	
	Residential Soil RML	Units:	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
1,1'-Biphenyl	47000	ug/kg	190	U	200	U	53	J	200	U	100	J	200	U
2-Methylnaphthalene	240000	ug/kg	62	J	200	U	120	J	200	U	250		200	U
3-Nitroaniline	NL	ug/kg	370	U	400	U	400	U	380	U	380	U	390	U
4-Chloroaniline	250000	ug/kg	370	U	400	U	400	U	380	U	380	U	390	U
4-Methylphenol	6300000	ug/kg	370	U	400	U	400	U	380	U	380	U	390	U
Acenaphthene	3600000	ug/kg	190	U	200	U	210	U	200	U	200	U	200	U
Acenaphthylene	NL	ug/kg	190	U	200	U	210	U	200	U	200	U	200	U
Acetophenone	7800000	ug/kg	370	U	400	U	400	U	380	U	380	U	390	U
Anthracene	18000000	ug/kg	190	U	200	U	210	U	200	U	200	U	200	U
Benzaldehyde	7800000	ug/kg	370	U	32	J	400	U	380	U	380	U	390	U
Benzo(a)anthracene	110000	ug/kg	190	U	200	U	210	U	200	U	59	J	200	U
Benzo(a)pyrene	11000	ug/kg	190	U	200	U	210	U	200	U	200	U	200	U
Benzo(b)fluoranthene	110000	ug/kg	62	J	200	U	75	J	200	U	120	J	200	U
Benzo(g,h,i)perylene	NL	ug/kg	190	U	200	U	210	U	200	U	200	U	200	U
Benzo(k)fluoranthene	1100000	ug/kg	190	U	200	U	210	U	200	U	200	U	200	U
Bis(2-ethylhexyl)phthalate	1300000	ug/kg	190	U	200	U	210	U	200	U	200	U	200	U
Butylbenzylphthalate	13000000	ug/kg	190	U	200	U	210	U	200	U	200	U	200	U
Carbazole	NL	ug/kg	370	UJ	400	UJ	400	UJ	380	UJ	380	UJ	390	UJ
Chrysene	11000000	ug/kg	140	J	200	U	240		200	U	340		200	U
Dibenzo(a,h)anthracene	11000	ug/kg	190	U	200	U	210	U	200	U	200	U	200	U
Dibenzofuran	73000	ug/kg	190	U	200	U	210	U	200	U	110	J	200	U
Fluoranthene	2400000	ug/kg	370	U	400	U	92	J	380	U	150	J	390	U
Fluorene	2400000	ug/kg	190	U	200	U	210	U	200	U	200	U	200	U
Indeno(1,2,3-cd)pyrene	110000	ug/kg	190	U	200	U	210	U	200	U	200	U	200	U
Naphthalene	130000	ug/kg	190	U	200	U	92	J	200	U	250		200	U
Phenanthrene	NL	ug/kg	210		200	U	500		200	U	1000		200	U
Pyrene	1800000	ug/kg	190	U	200	U	210	U	200	U	89	J	200	U

2-Methylnaphthalene	240000	ug/kg	49		4	U	84		1.3	J	160		15	
Acenaphthene	3600000	ug/kg	3.7	U	4	U	5.2		3.8	U	6.5		0.87	J
Acenaphthylene	NL	ug/kg	3.7	U	4	U	4	U	3.8	U	3.8	U	3.9	U
Anthracene	18000000	ug/kg	3.8		4	U	4.6		3.8	U	8.9		3.9	U
Benzo(a)anthracene	110000	ug/kg	19		4	U	31		3.8	U	54		5.4	
Benzo(a)pyrene	11000	ug/kg	9.2		4	U	7.7		3.8	U	13		3.6	J
Benzo(b)fluoranthene	110000	ug/kg	53		2.6	J	62		2.2	J	90		10	
Benzo(g,h,i)perylene	NL	ug/kg	13		4	U	10		3.8	U	13		2.6	J
Benzo(k)fluoranthene	1100000	ug/kg	4.5		4	U	4	U	3.8	U	6.1		3.9	U
Chrysene	11000000	ug/kg	150		5.6		220	J	5.8		310	J	22	
Dibenzo(a,h)anthracene	11000	ug/kg	9.7		4	U	11		3.8	U	14		3.9	U
Fluoranthene	2400000	ug/kg	48		3.1	J	83		2.4	J	130		12	
Fluorene	2400000	ug/kg	3.7	U	4	U	6		3.8	U	7.8		3.9	U
Indeno(1,2,3-cd)pyrene	110000	ug/kg	7.1		4	U	4.2		3.8	U	5.2		2.2	J
Naphthalene	130000	ug/kg	40		4	U	81		3.8	U	210		10	
Pentachlorophenol	100000	ug/kg	7.5	U	8.1	U	8.1	U	7.7	U	7.7	U	7.9	U
Phenanthrene	NL	ug/kg	210		8.8		440	J	10		860	J	45	
Pyrene	1800000	ug/kg	29		2.8	J	47		3.8	U	70		7.5	

Notes:

Results compared to EPA RML for residential soil (1E-04 risk level for carcinogens and a hazard quotient of 1 for non carcinogens) (EPA, 2018)

ug/kg = micrograms per kilogram

J = Estimated quantity

NL = No listed value

PAH = Polycyclic Aromatic Hydrocarbon

R = The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.

RML = Removal Management Level

Q = Qualifier

SIM = Selective Ion Monitoring

SVOC = Semivolatile Organic Compound

U = Not Detected

UJ = The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise

Table 7
Shaffer Equipment/Arbuckle Creek Area Site
Expanded Site Inspection
June 2018 SVOCs and PAHs in Soil Samples

SVOC	Residential Soil RML	Station:	SS-238		SS-239		SS-240		SS-241		SS-242		SS-243	
		Field Sample ID:	SEC-SS-238		SEC-SS-239		SEC-SS-240		SEC-SS-241		SEC-SS-242		SEC-SS-243	
		Date:	6/26/2018		6/26/2018		6/26/2018		6/26/2018		6/27/2018		6/27/2018	
		Lab Sample ID:	C0AQ5		C0AQ6		C0AQ7		C0AQ8		C0AQ9		C0AR0	
		Units:	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
1,1'-Biphenyl	47000	ug/kg	87	J	81	J	110	J	120	J	64	J	200	U
2-Methylnaphthalene	240000	ug/kg	200		80	J	89	J	91	J	220	J	97	J
3-Nitroaniline	NL	ug/kg	370	U	370	U	360	U	360	U	460	U	390	U
4-Chloroaniline	250000	ug/kg	370	UJ	370	U	360	UJ	360	UJ	110	J	390	U
4-Methylphenol	6300000	ug/kg	370	U	370	U	360	U	360	U	460	U	55	J
Acenaphthene	3600000	ug/kg	190	U	190	U	190	U	190	U	270		53	J
Acenaphthylene	NL	ug/kg	190	U	190	U	190	U	190	U	1700		720	
Acetophenone	7800000	ug/kg	370	U	370	U	360	U	360	U	460	U	390	U
Anthracene	18000000	ug/kg	190	U	190	U	190	U	190	U	1500		400	
Benzaldehyde	7800000	ug/kg	370	U	370	U	360	U	360	U	460	U	390	U
Benzo(a)anthracene	110000	ug/kg	190	U	190	U	190	U	190	U	4800		1100	
Benzo(a)pyrene	11000	ug/kg	190	U	190	U	190	U	190	U	5700		1500	
Benzo(b)fluoranthene	110000	ug/kg	89	J	66	J	82	J	86	J	10000		3000	
Benzo(g,h,i)perylene	NL	ug/kg	190	U	190	U	190	U	190	U	3100		1000	
Benzo(k)fluoranthene	1100000	ug/kg	190	U	190	U	190	U	190	U	3100		1000	
Bis(2-ethylhexyl)phthalate	1300000	ug/kg	190	U	190	U	190	U	190	U	240	U	200	U
Butylbenzylphthalate	13000000	ug/kg	190	U	190	U	190	U	190	U	240	U	200	U
Carbazole	NL	ug/kg	370	UJ	370	UJ	360	UJ	360	UJ	360	J	100	J
Chrysene	11000000	ug/kg	280		220		280		320		5700		1400	
Dibenzo(a,h)anthracene	11000	ug/kg	190	U	190	U	190	U	190	U	880		350	
Dibenzofuran	73000	ug/kg	77	J	190	U	190	U	190	U	300		120	J
Fluoranthene	2400000	ug/kg	100	J	70	J	100	J	110	J	9200		1700	
Fluorene	2400000	ug/kg	190	U	190	U	190	U	190	U	290		200	U
Indeno(1,2,3-cd)pyrene	110000	ug/kg	190	U	190	U	190	U	190	U	3500		1200	
Naphthalene	130000	ug/kg	220		74	J	60	J	61	J	290		120	J
Phenanthrene	NL	ug/kg	630		480		710		790		1600		430	
Pyrene	1800000	ug/kg	91	J	190	U	190	U	190	U	6800		1600	
2-Methylnaphthalene	240000	ug/kg	140		56		57		58				94	
Acenaphthene	3600000	ug/kg	5.6		3.7	U	3.6	U	3.6	U			44	
Acenaphthylene	NL	ug/kg	3.7	U	3.7	U	3.6	U	3.6	U			730	J
Anthracene	18000000	ug/kg	12		3.7	U	3.6	U	3.6	U			530	J
Benzo(a)anthracene	110000	ug/kg	44		13		12		13				1200	J
Benzo(a)pyrene	11000	ug/kg	11		3.7		4.7		4.2				1400	J
Benzo(b)fluoranthene	110000	ug/kg	78		62		73		84				2400	J
Benzo(g,h,i)perylene	NL	ug/kg	5.4		10		9.7		9.9				1000	J
Benzo(k)fluoranthene	1100000	ug/kg	5.8		3.7	U	3.6	U	3.6	U			710	J
Chrysene	11000000	ug/kg	270		210	J	240	J	310	J			1300	J
Dibenzo(a,h)anthracene	11000	ug/kg	5.9		11		11		13				390	J
Fluoranthene	2400000	ug/kg	110		70		78		95				1400	J
Fluorene	2400000	ug/kg	5.9		3.7	U	3.6	U	3.6	U			42	
Indeno(1,2,3-cd)pyrene	110000	ug/kg	3.7	U	3.8		4.6		4				1400	J
Naphthalene	130000	ug/kg	220		72		49		49				110	
Pentachlorophenol	100000	ug/kg	7.6	U	7.6	U	7.3	U	7.4	U			17	
Phenanthrene	NL	ug/kg	600	J	450	J	520	J	630	J			370	J
Pyrene	1800000	ug/kg	55		28		33		37				1100	J

Notes:

Results compared to EPA RML for residential soil (1E-04 risk level for carcinogens and a hazard quotient of 1 for non carcinogens) (EPA, 2018)

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SVOC = Semivolatile Organic Compound

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Table 7
Shaffer Equipment/Arbuckle Creek Area Site
Expanded Site Inspection
June 2018 SVOCs and PAHs in Soil Samples

SVOC		Station:	SS-244		SS-245		SS-246		SS-247		SS-248		SS-249	
		Field Sample ID:	SEC-SS-244		SEC-SS-245		SEC-SS-246		SEC-SS-247		SEC-SS-248		SEC-SS-249	
		Date:	6/27/2018		6/27/2018		6/26/2018		6/27/2018		6/27/2018		6/27/2018	
		Lab Sample ID:	C0AR1		C0AR2		C0AR3		C0AR4		C0AR5		C0AR6	
	Residential Soil RML	Units:	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
1,1'-Biphenyl	47000	ug/kg	330	U	540	U	200	U	460	U	200	U	200	U
2-Methylnaphthalene	240000	ug/kg	330	U	540	U	200	U	460	U	200	U	200	U
3-Nitroaniline	NL	ug/kg	640	U	1100	U	390	U	900	U	380	U	390	U
4-Chloroaniline	250000	ug/kg	640	U	1100	U	390	UJ	900	U	380	U	390	U
4-Methylphenol	6300000	ug/kg	640	U	1100	U	390	U	490	J	380	U	390	U
Acenaphthene	3600000	ug/kg	330	U	540	U	200	U	460	U	200	U	200	U
Acenaphthylene	NL	ug/kg	330	U	540	U	200	U	460	U	200	U	200	U
Acetophenone	7800000	ug/kg	640	U	1100	R	390	U	900	U	380	U	390	U
Anthracene	18000000	ug/kg	330	U	540	U	200	U	460	U	200	U	200	U
Benzaldehyde	7800000	ug/kg	640	U	1100	U	390	U	130	J	380	U	390	U
Benzo(a)anthracene	110000	ug/kg	330	U	540	U	200	U	460	U	73	J	200	U
Benzo(a)pyrene	11000	ug/kg	330	U	540	U	200	U	460	U	86	J	200	U
Benzo(b)fluoranthene	110000	ug/kg	110	J	540	U	200	U	130	J	210		80	J
Benzo(g,h,i)perylene	NL	ug/kg	330	U	540	U	200	U	460	U	67	J	200	U
Benzo(k)fluoranthene	1100000	ug/kg	330	U	540	U	200	U	460	U	200	U	200	U
Bis(2-ethylhexyl)phthalate	1300000	ug/kg	330	U	540	U	200	U	230	J	200	U	200	U
Butylbenzylphthalate	13000000	ug/kg	330	U	540	U	200	U	460	U	200	U	200	U
Carbazole	NL	ug/kg	640	UJ	1100	UJ	390	UJ	900	UJ	380	UJ	390	UJ
Chrysene	11000000	ug/kg	330	U	540	U	200	U	460	U	180	J	130	J
Dibenzo(a,h)anthracene	11000	ug/kg	330	U	540	U	200	U	460	U	200	U	200	U
Dibenzofuran	73000	ug/kg	330	U	540	U	200	U	460	U	200	U	200	U
Fluoranthene	2400000	ug/kg	130	J	1100	U	390	U	900	U	130	J	66	J
Fluorene	2400000	ug/kg	330	U	540	U	200	U	460	U	200	U	200	U
Indeno(1,2,3-cd)pyrene	110000	ug/kg	330	U	540	U	200	U	460	U	69	J	200	U
Naphthalene	130000	ug/kg	330	U	540	U	200	U	460	U	200	U	200	U
Phenanthrene	NL	ug/kg	330	U	540	U	200	U	460	U	130	J	120	J
Pyrene	1800000	ug/kg	110	J	540	U	200	U	460	U	100	J	200	U
2-Methylnaphthalene	240000	ug/kg	33	J	11	U	6.8		24		26		20	
Acenaphthene	3600000	ug/kg	22	J	11	U	1.1	J	2.5	J	65		5	
Acenaphthylene	NL	ug/kg	17		15	J	3.9	U	27		37		85	
Anthracene	18000000	ug/kg	20		28	J	3.9	U	25		32		7.4	
Benzo(a)anthracene	110000	ug/kg	70		11	U	4.9		64		80		31	
Benzo(a)pyrene	11000	ug/kg	78		11	U	2	J	77		86		27	
Benzo(b)fluoranthene	110000	ug/kg	100		7.4	J	6.3		120		180		78	
Benzo(g,h,i)perylene	NL	ug/kg	50		11	U	3.9	U	58		62		23	
Benzo(k)fluoranthene	1100000	ug/kg	28		11	U	3.9	U	33		53		12	
Chrysene	11000000	ug/kg	69		58	J	12		74		160		130	
Dibenzo(a,h)anthracene	11000	ug/kg	15		11	U	3.9	U	16		29		14	
Fluoranthene	2400000	ug/kg	150		14		21		84		110		62	
Fluorene	2400000	ug/kg	25	J	55	J	1.2	J	9	U	7.8		7.6	
Indeno(1,2,3-cd)pyrene	110000	ug/kg	58		11	U	3.9	U	64		82		19	
Naphthalene	130000	ug/kg	29	J	11	U	5.7		19		13		82	
Pentachlorophenol	100000	ug/kg	13	U	21	U	7.9	U	18	U	7.7	U	79	U
Phenanthrene	NL	ug/kg	45		11	U	22		35		120		120	
Pyrene	1800000	ug/kg	85		10	J	6.2		68		83		36	

Notes:

Results compared to EPA RML for residential soil (1E-04 risk level for carcinogens and a hazard quotient of 1 for non carcinogens) (EPA, 2018)

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Table 7
Shaffer Equipment/Arbuckle Creek Area Site
Expanded Site Inspection
June 2018 SVOCs and PAHs in Soil Samples

SVOC		Station:	SS-250		SS-251		SS-252		SS-253		SS-256	
		Field Sample ID:	SEC-SS-250		SEC-SS-251		SEC-SS-252		SEC-SS-253		SEC-SS-256	
		Date:	6/26/2018		6/26/2018		6/26/2018		6/26/2018		6/28/2018	
		Lab Sample ID:	C0AS1		C0AS2		C0AS3		C0AS4		C0AT9	
	Residential Soil RML	Units:	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
1,1'-Biphenyl	47000	ug/kg	480	U	420	U	240	U	270	U	200	U
2-Methylnaphthalene	240000	ug/kg	140	J	420	U	240	U	270	U	200	U
3-Nitroaniline	NL	ug/kg	930	U	820	U	470	U	530	U	390	U
4-Chloroaniline	250000	ug/kg	930	UJ	820	U	470	U	530	U	390	U
4-Methylphenol	6300000	ug/kg	930	U	820	U	470	U	530	U	390	U
Acenaphthene	3600000	ug/kg	480	U	420	U	240	U	270	U	200	U
Acenaphthylene	NL	ug/kg	480	U	240	J	240	U	270	U	200	U
Acetophenone	7800000	ug/kg	930	U	820	U	470	U	530	U	390	U
Anthracene	18000000	ug/kg	480	U	420	U	240	U	270	U	200	U
Benzaldehyde	7800000	ug/kg	930	U	820	U	470	U	530	U	390	U
Benzo(a)anthracene	110000	ug/kg	350	J	650		240	U	85	J	76	J
Benzo(a)pyrene	11000	ug/kg	390	J	880		240	U	90	J	73	J
Benzo(b)fluoranthene	110000	ug/kg	810		1500		240	U	150	J	130	J
Benzo(g,h,i)perylene	NL	ug/kg	260	J	860		240	U	270	U	200	U
Benzo(k)fluoranthene	1100000	ug/kg	190	J	400	J	240	U	270	U	200	U
Bis(2-ethylhexyl)phthalate	1300000	ug/kg	160	J	420	U	240	U	270	U	95	J
Butylbenzylphthalate	13000000	ug/kg	480	U	420	U	240	U	270	U	200	U
Carbazole	NL	ug/kg	930	UJ	320	J	470	UJ	530	UJ	390	UJ
Chrysene	11000000	ug/kg	640		960		240	U	130	J	93	J
Dibenzo(a,h)anthracene	11000	ug/kg	480	U	270	J	240	U	270	U	200	U
Dibenzofuran	73000	ug/kg	480	U	420	U	240	U	270	U	200	U
Fluoranthene	2400000	ug/kg	870	J	1900		470	U	180	J	160	J
Fluorene	2400000	ug/kg	480	U	420	U	240	U	270	U	200	U
Indeno(1,2,3-cd)pyrene	110000	ug/kg	250	J	780		240	U	270	U	200	U
Naphthalene	130000	ug/kg	480	U	420	U	240	U	270	U	200	U
Phenanthrene	NL	ug/kg	590		1400		100	J	160	J	78	J
Pyrene	1800000	ug/kg	780		1600		240	U	140	J	120	J

2-Methylnaphthalene	240000	ug/kg	140		35		11		55		9.1	
Acenaphthene	3600000	ug/kg	19		13		1.6	J	4.7	J	3.9	U
Acenaphthylene	NL	ug/kg	95		280		4.7	U	5.3	U	10	
Anthracene	18000000	ug/kg	120		150		4.7	U	20		18	
Benzo(a)anthracene	110000	ug/kg	370		710	J	21		81		82	
Benzo(a)pyrene	11000	ug/kg	390		930	J	21		95		80	
Benzo(b)fluoranthene	110000	ug/kg	670		1300	J	49		150		110	
Benzo(g,h,i)perylene	NL	ug/kg	130		690		14		40		43	
Benzo(k)fluoranthene	1100000	ug/kg	190		430		10		42		34	
Chrysene	11000000	ug/kg	590		980	J	59		130		96	
Dibenzo(a,h)anthracene	11000	ug/kg	58		260		5.7		14		14	
Fluoranthene	2400000	ug/kg	860		1900	J	47		180		150	
Fluorene	2400000	ug/kg	28		58		4.7	U	5	J	3.9	
Indeno(1,2,3-cd)pyrene	110000	ug/kg	270		810	J	16		53		51	
Naphthalene	130000	ug/kg	91		44		9.1		41		6	
Pentachlorophenol	100000	ug/kg	5.4	J	3.1	J	1.2	J	11	U	8	U
Phenanthrene	NL	ug/kg	550		1300	J	91		140		77	
Pyrene	1800000	ug/kg	480		1100	J	29		110		97	

Notes:

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Table 8
Shaffer Equipment/Arbuckle Creek Area Site
Expanded Site Inspection
June 2018 Inorganics in Soil Samples

	Residential Soil RML	Station:	SS-212		SS-213		SS-221		SS-225		SS-226		SS-227	
		Field Sample ID:	SEC-SS-212		SEC-SS-213		SEC-SS-221		SEC-SS-225		SEC-SS-226		SEC-SS-227	
		Date:	6/27/2018		6/26/2018		6/28/2018		6/26/2018		6/26/2018		6/26/2018	
		Lab Sample ID:	MC0AM6		MC0AM8		MC0AW0		MC0AP2		MC0AP3		MC0AP4	
		Units:	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Aluminum	77000	mg/kg	4120		7040	J	5710		8330	J	5470	J	6430	J
Arsenic	35	mg/kg	8.5		10.2		14.3		5.4		23.9		5.5	
Barium	15000	mg/kg	40.9		78.2		155		50.9		84.3		43.5	
Beryllium	160	mg/kg	0.95		1.7		0.76		0.72		1.2		0.53	
Cadmium	71	mg/kg	0.21	J	0.44	J	1.7		0.52	U	0.37	J	0.52	U
Calcium	NL	mg/kg	369	J	1460		6320		541		456	J	564	
Chromium*	120000	mg/kg	23.7		15.1		19		14		19.5		14.3	
Cobalt	23	mg/kg	6.9		13.5		8.6		14		6.2		2.3	J
Copper	3100	mg/kg	15.6		40.2		37.7		22.6		36.4		9.2	
Iron	55000	mg/kg	53800		27700		18900		22900		24400		18800	
Lead**	400	mg/kg	21		80.4		527		17.1		13.7		10.7	
Magnesium	NL	mg/kg	438	J	1430		749		1250		969		341	J
Manganese	1800	mg/kg	451		904		384		217		96.8		56.4	
Nickel	1500	mg/kg	18.7		41.1		11.2		15.8		15.4		5.6	
Potassium	NL	mg/kg	709		1170		723		1360		1390		815	
Selenium	390	mg/kg	3.8	U	3.6	U	4.1	U	3.6	U	3.5	U	3.6	U
Silver	390	mg/kg	1.1	U	1	U	1.2	U	1	U	1	U	1	U
Sodium	NL	mg/kg	542	U	514	U	579	U	516	U	504	U	519	U
Thallium	0.78	mg/kg	1.4	J	2.2	J	0.97	J	0.88	J	0.7	J	2.6	U
Vanadium	390	mg/kg	5.8		9.8		11.8		14.3		11.9		13.4	
Zinc	23000	mg/kg	53.2		183		471		59.5		34.5		23.2	

Notes:

Results compared to EPA RML for residential soil (1E-04 risk level for carcinogens and a hazard quotient of 1 for non carcinogens) (EPA, 2018)

* The RML for chromium is based on toxicity data for chromium III, the more common form.

** There is no RML for lead; analytical results compared to the EPA recommended soil lead level for residential soil of 400 mg/kg

Red value indicates exceedance of EPA RML

mg/kg = milligrams per kilogram

J = Estimated quantity

NL = No listed value

RML = Removal Management Level

Q = Qualifier

U = Not Detected

Table 8
Shaffer Equipment/Arbuckle Creek Area Site
Expanded Site Inspection
June 2018 Inorganics in Soil Samples

	Residential Soil RML	Station:	SS-228		SS-229		SS-230		SS-231		SS-232		SS-233	
		Field Sample ID:	SEC-SS-228		SEC-SS-229		SEC-SS-230		SEC-SS-231		SEC-SS-232		SEC-SS-233	
		Date:	6/26/2018		6/26/2018		6/26/2018		6/26/2018		6/26/2018		6/26/2018	
		Lab Sample ID:	MC0AP5		MC0AP6		MC0AP7		MC0AP8		MC0AP9		MC0AQ0	
		Units:	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Aluminum	77000	mg/kg	4620	J	10000		4840		7400	J	3460	J	7490	J
Arsenic	35	mg/kg	24.8		7.5		23.3		5.6		21.6		10	
Barium	15000	mg/kg	80.7		49		89.3		48.3		71.3		46.3	
Beryllium	160	mg/kg	1.4		1		1.3		1.1		1.6		0.71	
Cadmium	71	mg/kg	0.41	J	0.17	J	0.34	J	0.15	J	0.32	J	0.24	J
Calcium	NL	mg/kg	475	J	430	J	442	J	586		440	J	742	
Chromium*	120000	mg/kg	36.5		19.6	J	11.4	J	17		11.9		23.8	
Cobalt	23	mg/kg	4.8	J	7.5		6.3		16.7		6.3		5.1	J
Copper	3100	mg/kg	44.5		24.2		40.1		18.4		34.1		18	
Iron	55000	mg/kg	19100		50300	J	19500	J	44500		15800		41500	
Lead**	400	mg/kg	13.7		14.8		14.1		13.2		14.2		12.3	
Magnesium	NL	mg/kg	751		528		1310		1000		1140		696	
Manganese	1800	mg/kg	74		150		88.1		328		65.7		130	
Nickel	1500	mg/kg	24.6		10.3		14.4		14.9		16		11.3	
Potassium	NL	mg/kg	1210		1140		1300		1020		869		890	
Selenium	390	mg/kg	3.5	U	3.7	UJ	3.7	UJ	3.5	U	1.2	J	3.7	U
Silver	390	mg/kg	1	U	1.1	U	1.1	U	1	U	1	U	0.31	J
Sodium	NL	mg/kg	311	J	531	U	530	U	502	U	516	U	533	U
Thallium	0.78	mg/kg	2.5	U	0.96	J	0.77	J	1.2	J	2.6	U	0.73	J
Vanadium	390	mg/kg	13.5		13.7		12.5		13.1		18.8		21.5	
Zinc	23000	mg/kg	28.9		35		35.5		61.4		29.9		50	

Notes:

Results compared to EPA RML for residential soil (1E-04 risk level for carcinogens and a hazard quotient of 1 for non carcinogens) (EPA, 2018)

* The RML for chromium is based on toxicity data for chromium III, the more common form.

** There is no RML for lead; analytical results compared to the EPA recommended soil lead level for residential soil of 400 mg/kg

Red value indicates exceedance of EPA RML

mg/kg = milligrams per kilogram

J = Estimated quantity

NL = No listed value

RML = Removal Management Level

Q = Qualifier

U = Not Detected

Table 8
Shaffer Equipment/Arbuckle Creek Area Site
Expanded Site Inspection
June 2018 Inorganics in Soil Samples

	Residential Soil RML	Station:	SS-234		SS-235		SS-236		SS-237		SS-238		SS-239	
		Field Sample ID:	SEC-SS-234		SEC-SS-235		SEC-SS-236		SEC-SS-237		SEC-SS-238		SEC-SS-239	
		Date:	6/26/2018		6/26/2018		6/26/2018		6/26/2018		6/26/2018		6/26/2018	
		Lab Sample ID:	MC0AQ1		MC0AQ2		MC0AQ3		MC0AQ4		MC0AQ5		MC0AQ6	
		Units:	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Aluminum	77000	mg/kg	5860		8800		5510		5110		4660		2240	
Arsenic	35	mg/kg	24		8.4		26.4		5		18.8		50.9	
Barium	15000	mg/kg	78.8		54.9		84.2		82.3		81.5		65.4	
Beryllium	160	mg/kg	1		0.89		1.4		0.93		1.1		1.4	
Cadmium	71	mg/kg	0.4	J	0.17	J	0.45	J	0.14	J	0.34	J	0.83	
Calcium	NL	mg/kg	784		867		942		491	J	415	J	1630	
Chromium*	120000	mg/kg	12.7	J	15.1	J	10.8	J	9.3	J	23.4	J	11.8	J
Cobalt	23	mg/kg	8.5		8.7		6.8		8.2		8		13	
Copper	3100	mg/kg	33.3		23.6		41.6		9.3		28		83.4	
Iron	55000	mg/kg	25300	J	26800	J	18500	J	25500	J	14800	J	100000	J
Lead**	400	mg/kg	15.3		16.1		16.9		25.2		19.8		10.5	
Magnesium	NL	mg/kg	957		1370		1120		240	J	676		421	J
Manganese	1800	mg/kg	136		202		120		674		264		149	
Nickel	1500	mg/kg	13.5		13.4		15.3		7.1		17.8		21.6	
Potassium	NL	mg/kg	1360		1220		1370		525		982		762	
Selenium	390	mg/kg	3.7	UJ	3.9	UJ	1.7	J-	3.7	UJ	3.5	UJ	3.6	UJ
Silver	390	mg/kg	1.1	U	1.1	U	0.98	U	1.1	U	1	U	1	U
Sodium	NL	mg/kg	526	U	560	U	260	J	527	U	189	J	202	J
Thallium	0.78	mg/kg	0.86	J	0.79	J	0.78	J	1.7	J	1	J	0.91	J
Vanadium	390	mg/kg	12.9		15.6		11.9		10		10.8		5.1	U
Zinc	23000	mg/kg	36		54.2		35.5		26.6		29.1		69.2	

Notes:

Results compared to EPA RML for residential soil (1E-04 risk level for carcinogens and a hazard quotient of 1 for non carcinogens) (EPA, 2018)

* The RML for chromium is based on toxicity data for chromium III, the more common form.

** There is no RML for lead; analytical results compared to the EPA recommended soil lead level for residential soil of 400 mg/kg

Red value indicates exceedance of EPA RML

mg/kg = milligrams per kilogram

J = Estimated quantity

NL = No listed value

RML = Removal Management Level

Q = Qualifier

U = Note Detected

Table 8
Shaffer Equipment/Arbuckle Creek Area Site
Expanded Site Inspection
June 2018 Inorganics in Soil Samples

	Residential Soil RML	Station:	SS-240		SS-241		SS-242		SS-243		SS-244		SS-245	
		Field Sample ID:	SEC-SS-240		SEC-SS-241		SEC-SS-242		SEC-SS-243		SEC-SS-244		SEC-SS-245	
		Date:	6/26/2018		6/26/2018		6/27/2018		6/27/2018		6/27/2018		6/27/2018	
		Lab Sample ID:	MC0AQ7		MC0AQ8		MC0AQ9		MC0AR0		MC0AR1		MC0AR2	
		Units:	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Aluminum	77000	mg/kg	2380		2550		4450		7620		2960		194	
Arsenic	35	mg/kg	36.7		29.2		10.5		6.7		9.6		5.4	
Barium	15000	mg/kg	81.3		61.4		68.2		72.2		449		140	
Beryllium	160	mg/kg	1.5		1.1		0.74		0.83		0.32	J	1.1	U
Cadmium	71	mg/kg	0.53		0.41	J	0.37	J	0.23	J	0.54	J	0.51	J
Calcium	NL	mg/kg	1110		812		10600		79500		5200		2460	
Chromium*	120000	mg/kg	13.1	J	8.9	J	13.3		11.9		14.7		2.3	U
Cobalt	23	mg/kg	5.8		4.5	J	7.7		9.9		152		10.8	
Copper	3100	mg/kg	39.2		31.6		31.7		22.1		23.7		1.9	J
Iron	55000	mg/kg	21600	J	16800	J	26400		21700		182000		300000	
Lead**	400	mg/kg	12.6		10.1		63.9		32.7		27.2		4.9	
Magnesium	NL	mg/kg	547		745		1040		1890		789	J	1130	U
Manganese	1800	mg/kg	40.7		70.8		245		373		25100		1430	
Nickel	1500	mg/kg	15.9		10.9		13.9		11.1		44.3		15.4	
Potassium	NL	mg/kg	979		791		715		592	J	946	J	1130	U
Selenium	390	mg/kg	2.2	J-	3.5	UJ	4.4	U	4.3	U	8.6	U	7.9	U
Silver	390	mg/kg	1	U	1	U	1.2	U	1.2	U	2.4	U	2.3	U
Sodium	NL	mg/kg	157	J	337	J	622	U	611	U	1220	U	1130	U
Thallium	0.78	mg/kg	2.5	U	2.5	U	0.89	J	1.1	J	3.6	J	4.2	J
Vanadium	390	mg/kg	18.1		10.9		8.8		13.7		12.2	U	11.3	U
Zinc	23000	mg/kg	28.9		30.4		75.2		44.3		183		193	

Notes:

Results compared to EPA RML for residential soil (1E-04 risk level for carcinogens and a hazard quotient of 1 for non carcinogens) (EPA, 2018)

* The RML for chromium is based on toxicity data for chromium III, the more common form.

** There is no RML for lead; analytical results compared to the EPA recommended soil lead level for residential soil of 400 mg/kg

Red value indicates exceedance of EPA RML of 24,000 µg/kg

mg/kg = milligrams per kilogram

J = Estimated quantity

NL = No listed value

RML = Removal Management Level

Q = Qualifier

U = Note Detected

Table 8
Shaffer Equipment/Arbuckle Creek Area Site
Expanded Site Inspection
June 2018 Inorganics in Soil Samples

	Residential Soil RML	Station:	SS-246		SS-247		SS-248		SS-249		SS-250		SS-251		SS-252		SS-253		SS-256	
		Field Sample ID:	SEC-SS-246		SEC-SS-247		SEC-SS-248		SEC-SS-249		SEC-SS-250		SEC-SS-251		SEC-SS-252		SEC-SS-253		SEC-SS-256	
		Date:	6/26/2018		6/27/2018		6/27/2018		6/27/2018		6/26/2018		6/26/2018		6/26/2018		6/26/2018		6/28/2018	
		Lab Sample ID:	MC0AR3		MC0AR4		MC0AR5		MC0AR6		MC0AS1		MC0AS2		MC0AS3		MC0AS4		MC0AT9	
		Units:	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Aluminum	77000	mg/kg	3970	J	5970		1970		1720		7470	J	8620	J	6480	J	6840	J	6280	
Arsenic	35	mg/kg	7.8		5.6		12.9		15.4		15.5		9.2		9.8		8.9		3.9	
Barium	15000	mg/kg	50		117		43.3		44.1		151		80.8		58.9		123		59	
Beryllium	160	mg/kg	0.87		1.2	J	1.3		2		1.7		2.8		1.6		1		0.38	J
Cadmium	71	mg/kg	0.17	J	0.5	J	0.23	J	0.28	J	0.98		0.83	J	0.51	J	1.1		0.3	J
Calcium	NL	mg/kg	672		4020		1380		1500		2800		1560		2740		1660		5980	
Chromium*	120000	mg/kg	9.3		36.7		8.1		7.8		14.8		15.2		15.8		11.8		13	
Cobalt	23	mg/kg	22.7		6.4	J	3.9	J	4	J	11.7		12.3	J	31.4		21.7		3.6	J
Copper	3100	mg/kg	8.6		43		23.9		16.3		48.8		95		33.1		43.8		12.6	
Iron	55000	mg/kg	12200		15000		9110		13100		18900		13100		54900		16300		10400	
Lead**	400	mg/kg	40.4		103		9.9		10.6		213		376		79.9		114		63.1	
Magnesium	NL	mg/kg	505	J	1190	J	523	J	483	J	898		1020	J	1770		1010		938	
Manganese	1800	mg/kg	444		167		48.9		116		347		129		1110		1100		127	
Nickel	1500	mg/kg	12.5		34.6		9		9.7		23.6		26.1		48.8		31.5		10.9	
Potassium	NL	mg/kg	774		1820		708		627		955		1080	J	1210		954		371	J
Selenium	390	mg/kg	3.7	U	8.9	U	3.8	U	3.5	U	5.4	U	8.9	U	4.5	U	5.6	U	3.5	U
Silver	390	mg/kg	1.1	U	2.5	U	1.1	U	1	U	0.19	J	2.5	U	1.3	U	0.25	J	1	U
Sodium	NL	mg/kg	533	U	1270	U	407	J	527		776	U	1270	U	638	U	802	U	500	U
Thallium	0.78	mg/kg	1.2	J	6.3	U	2.7	U	2.5	U	1.1	J	6.3	U	3	J	2.5	J	2.5	U
Vanadium	390	mg/kg	6.5		11.4	J	11.9		11.3		17.2		14.8		13.1		14.5		10.6	
Zinc	23000	mg/kg	40.2		226		25.5		22.3		275		124		221		260		65.8	

Notes:

Results compared to EPA RML for residential soil (1E-04 risk level for carcinogens and a hazard quotient of 1 for non carcinogens) (EPA, 2018)

* The RML for chromium is based on toxicity data for chromium III, the more common form.

** There is no RML for lead; analytical results compared to the EPA recommended soil lead level for residential soil of 400 mg/kg

Red value indicates exceedance of EPA RML of 24,000 µg/kg

mg/kg = milligrams per kilogram

J = Estimated quantity

NL = No listed value

RML = Removal Management Level

Q = Qualifier

U = Note Detected

Table 9
Shaffer Equipment/Arbuckle Creek Area Site
Expanded Site Inspection
June 2017 PCBs and Dioxins in Soil Samples

Sample Number	CLP Sample Number	Sample Date	Location	Matrix	Analyte	Result	Q
GW-001	PC0AG6	6/12/2017	MW1	Ground Water	Total PCB	3.7	J
GW-002	PC0AG7	6/13/2017	MW2	Ground Water	Total PCB	0.078	J
GW-003	PC0AG8	6/12/2017	MW3	Ground Water	Total PCB	0.039	J
GW-004	PC0AG9	6/12/2017	MW4	Ground Water	Total PCB	0.2	J
GW-005	PC0AH0	6/12/2017	Mine Outfall	Ground Water	Total PCB	0.00014	J
GW-006	PC0AH1	6/12/2017	Mine Outfall	Ground Water	Total PCB	0.000041	J
GW-007	PC0AH2	6/12/2017	Mine Outfall	Ground Water	Total PCB	0.00019	J

Notes:

Units are in micrograms per liter (µg/L)

Results compared to EPA MCL of 0.5 µg/L for PCBs (EPA, 2009) and the EPA RML for tapwater of 0.78 µg/L (1E-04 risk level for carcinogens and a hazard quotient of 1 for non carcinogens) (EPA, 2018)

Red value indicates exceedance of MCL and RML

µg/L = micrograms per liter

J = Reported value is an estimated concentration; actual value may be higher or lower than reported

MCL = Maximum Contaminant Level

PCB = Polychlorinated biphenyl

Q = Qualifier

RML Removal Management Level

Table 9
Shaffer Equipment/Arbuckle Creek Area Site
Expanded Site Inspection
June 2017 PCBs and Dioxins in Soil Samples

Field Sample ID:	MW3		Mine Outfall		Mine Outfall		Mine Outfall	
Date:	6/12/2017		6/12/2017		6/12/2017		6/12/2017	
Lab Sample ID:	PC0AG8		PC0AH0		PC0AH1		PC0AH2	
Analyte	Result	Q	Result	Q	Result	Q	Result	Q
2,3,7,8-TCDD	0.98	UJ	0.49	U	0.47	U	0.74	UJ
1,2,3,7,8-PeCDD	51	U	1.2	U	1.1	U	1.3	U
1,2,3,4,7,8-HxCDD	51	U	0.63	U	0.61	U	0.98	UJ
1,2,3,6,7,8-HxCDD	51	U	0.74	U	0.71	U	0.98	UJ
1,2,3,7,8,9-HxCDD	51	U	1.4	U	1.4	U	1.6	U
1,2,3,4,6,7,8-HpCDD	51	U	1.4	U	1.3	U	1.6	U
OCDD	100	U	3.8	U	3.7	U	120	U
2,3,7,8-TCDF	1.2	UJ	0.44	U	0.42	UJ	0.78	UJ
1,2,3,7,8-PeCDF	51	U	0.71	U	0.68	U	0.81	U
2,3,4,7,8-PeCDF	51	U	0.80	U	0.77	U	0.92	U
1,2,3,4,7,8-HxCDF	51	U	1.1	U	1.0	U	1.2	U
1,2,3,6,7,8-HxCDF	51	U	1.1	U	1.0	U	1.2	U
1,2,3,7,8,9-HxCDF	51	U	0.87	Z	49	U	1.1	UJ
2,3,4,6,7,8-HxCDF	2.0	Z	1.4	U	1.4	U	1.6	U
1,2,3,4,6,7,8-HpCDF	51	U	1.6	U	1.5	U	1.8	U
1,2,3,4,7,8,9-HpCDF	1.5	UJ	1.4	U	1.3	U	1.6	U
OCDF	100	U	3.0	U	2.9	U	3.5	U
Total TCDD		UJ		UJ		UJ		UJ
Total PeCDD	1.6	J		UJ		UJ		UJ
Total HxCDD	3.4	J		UJ		UJ		UJ
Total HpCDD	12	J		UJ		UJ		UJ
Total TCDF		UJ		UJ		UJ		UJ
Total PeCDF	8.3	J		UJ		UJ		UJ
Total HxCDF	22	J		UJ		UJ		UJ
Total HpCDF	56	J		UJ		UJ		UJ
TEQ (Mammal)	3.8		0.0		0.0		0.0016	
TEQ (Bird)	5.6		0.0		0.0		0.00053	
TEQ (Fish)	4.1		0.0		0.0		0.00053	

Notes:

Units are in picograms per liter (pg/L)

The TEQ (mammal) results were compared to the EPA MCL of 30 pg/L (EPA, 2009) and the EPA RML for tapwater of 12 pg/L (EPA, 2018) for 2,3,7,8-TCDD (1E 04 risk level for carcinogens)

CLP = Contract Laboratory Program

J = Estimated quantity

RML = Removal Management Level

TEQ = Toxic Equivalency

U = Not detected

UJ = The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise

Z = Estimated maximum possible concentration

Table 10
Shaffer Equipment/Arbuckle Creek Area Site
Expanded Site Inspection
June 2018 Results for Groundwater Samples

			Station:	GW-01		GW-02	
			Field Sample ID:	SEC-GW-01		SEC-GW-02	
			Date:	6/27/2018		6/27/2018	
			Lab Sample ID:	COAR9		COAS0	
		Tapwater					
SVOCs	MCL	RML	Units:	Result	Q	Result	Q
Benzo(a)anthracene	NL	3	µg/L	0.035	J	0.019	J
Benzo(a)pyrene	0.2	2.5	µg/L	0.027	J	0.012	J
Benzo(b)fluoranthene	NL	25	µg/L	0.044	J	0.025	J
Benzo(g,h,i)perylene	NL	NL	µg/L	0.014	J	ND	
Chrysene	NL	2500	µg/L	0.056	J	0.036	J
Fluoranthene	NL	800	µg/L	0.068	J	0.038	J
Indeno(1,2,3-cd)pyrene	NL	25	µg/L	0.018	J	ND	
Phenanthrene	NL	NL	µg/L	0.085	J	0.057	J
Pyrene	NL	120	µg/L	0.057	J	ND	
PCB							
Aroclor-1260	0.5	0.78	µg/L	ND		ND	

			Station:	GW-01		GW-02	
			Field Sample ID:	SEC-GW-01		SEC-GW-02	
			Date:	6/27/2018		6/27/2018	
			Lab Sample ID:	MCOAR9		MCOAS0	
		Tapwater					
Inorganic	MCL	RML	Units:	Result	Q	Result	Q
Aluminum	NL	20000	µg/L	143		738	
Arsenic	10	5.2	µg/L	1		2.4	
Barium	2000	3800	µg/L	40.2		68.7	
Calcium	NL	NL	µg/L	19900	J	21500	J
Chromium*	100	22,000	µg/L	1.1	J	1.7	J
Cobalt	NL	6	µg/L	ND		1.7	
Copper	1300	800	µg/L	3.5		12.7	
Iron	NL	14000	µg/L	450		2970	
Lead*	15	15	µg/L	1.3		8.9	
Magnesium	NL	NL	µg/L	2780		3040	
Manganese	NL	430	µg/L	22.3	J	93.6	J
Nickel	NL	390	µg/L	1.3		4.5	
Potassium	NL	NL	µg/L	4600		4760	
Sodium	NL	NL	µg/L	4360		4380	
Thallium	2	0.2	µg/L	ND		0.25	J
Vanadium	NL	86	µg/L	ND		1.1	J
Zinc	NL	6000	µg/L	4.1		24.7	

Notes:

Results compared to EPA MCLs (EPA, 2009) and EPA RMLs for tapwater (1E-04 risk level for carcinogens a hazard quotient of 1 for non carcinogens) (EPA, 2018)

* The RML for chromium is based on toxicity data for chromium III, the more common form.

**There is no RML for lead in drinking water; however, EPA's current standard for lead in drinking water is 15 .

Bolded value indicates exceedance of RML

µg/L = micrograms per liter

J = Reported value is an estimated concentration; actual value may be higher or lower than reported

MCL = Maximum Contaminant Level

ND = Not Detected

NL = No listed value

PCB = Polychlorinated biphenyl

Q = Qualifier

RML Removal Management Level

SVOC = Semivolatile organic compound

Table 11
Shaffer Equipment/Arbuckle Creek Area Site
Expanded Site Inspection
June 2017 PCBs in Surface Water Samples

Sample Number	CLP Sample Number	Sample Date	Analyte	Result	Q
SW-001	PC0AH9	6/14/2017	Total PCB	0.0018	J
SW-002	PC0AJ0	6/14/2017	Total PCB	0.0027	J
SW-003	PC0AK8	6/14/2017	Total PCB	0.0094	J
SW-004	PC0AJ2	6/14/2017	Total PCB	0.0064	J
SW-005	PC0AJ3	6/14/2017	Total PCB	0.004	J
SW-006	PC0AJ4	6/14/2017	Total PCB	0.0055	J
SW-007	PC0AJ5	6/14/2017	Total PCB	0.0035	J
SW-008 (SW-018)	PC0AJ6	6/14/2017	Total PCB	0.0035	J
SW-009	PC0AJ7	6/14/2017	Total PCB	0.0032	J
SW-010	PC0AK9	6/14/2017	Total PCB	0.006	J
SW-011	PC0AJ9	6/14/2017	Total PCB	0.005	J
SW-012	PC0AK0	6/14/2017	Total PCB	0.0035	J
SW-013	PC0AK1	6/14/2017	Total PCB	0.003	J
SW-014	PC0AK2	6/14/2017	Total PCB	0.0031	J
SW-015	PC0AK3	6/14/2017	Total PCB	0.0037	J
SW-016	PC0AK4	6/14/2017	Total PCB	0.0048	J
SW-017	PC0AL0	6/14/2017	Total PCB	0.0052	J
SW-018 (SW-008)	PC0AK6	6/14/2017	Total PCB	0.003	J
SW-019 SW-006	PC0AK7	6/14/2017	Total PCB	0.0024	J
SW-020	PC0AL9	6/14/2017	Total PCB	0.018	J
SW-021	PC0AL8	6/14/2017	Total PCB	0.00088	J
SW-022 (SW-023)	PC0AL6	6/14/2017	Total PCB	0.00054	J
SW-023 (SW-022)	PC0AL7	6/14/2017	Total PCB	0.00054	J
SW-024	PC0AL5	6/14/2017	Total PCB	0.00045	J
SW-025	PC0AL4	6/14/2017	Total PCB	0.00043	J

Notes:

Units are in micrograms per liter (µg/l)

Results represent total PCB cogener detections in sample

Results compared to EPA BTAG screening value for freshwater of 0.000074 µg/l (EPA, 2006)

Green Highlight indicates background surface water sample

Bolded value indicates 3X background (3x analytical result for SW-24)

Red value indicates exceedance of EPA BTAG screening value

Sample IDs in parentheses indicates duplicate pair

Blue text indicates inconsistency in Sample ID between logbook notes and Laboratory data sheets

BTAG = Biological Technical Assistance Group

CLP = Contract Laboratory Program

J = Estimated quantity

PCB = Polychlorinated byphenyl

Table 12
Shaffer Equipment/Arbuckle Creek Area Site
Expanded Site Investigation
June 2017 Dioxins in Surface Water Samples

CLP Sample Number:	PC0AH9		PC0AJ2		PC0AJ6		PC0AJ7		PC0AK4		PC0AL4	
Sample #:	SW-001		SW-004		SW-008		SW-009		SW-016		SW-025	
Units:	pg/L		pg/L		pg/L		pg/L		pg/L		pg/L	
Date Sampled:	6/14/2017		6/14/2017		6/14/2017		6/14/2017		6/14/2017		6/14/2017	
Parameter	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
1,2,3,4,6,7,8-HpCDD	49	U	50	U	50	U	52	U	49	U	51	U
1,2,3,4,6,7,8-HpCDF	1.5	U	1.6	U	1.6	U	1.6	U	49	U	1.6	U
1,2,3,4,7,8,9-HpCDF	1.3	U	1.3	U	1.3	U	1.4	U	1.3	U	1.4	U
1,2,3,4,7,8-HxCDD	0.61	U	0.62	U	0.66	UJ	0.65	U	1.4	UJ	0.64	U
1,2,3,4,7,8-HxCDF	1	U	1	U	1	U	1.1	U	49	U	1.1	U
1,2,3,6,7,8-HxCDD	0.71	U	0.73	U	0.73	U	0.76	U	1.3	UJ	0.75	U
1,2,3,6,7,8-HxCDF	1	U	1.1	U	1.1	U	1.1	U	49	U	1.1	U
1,2,3,7,8,9-HxCDD	1.4	U	1.4	U	1.4	U	1.5	U	49	U	1.4	U
1,2,3,7,8,9-HxCDF	49	U	50	U	50	U	0.67	U	49	U	0.66	U
1,2,3,7,8-PeCDD	1.1	U	1.1	U	1.2	U	1.2	U	49	U	1.2	U
1,2,3,7,8-PeCDF	0.68	U	0.7	U	0.7	U	0.73	U	49	U	0.71	U
2,3,4,6,7,8-HxCDF	1.4	U	1.4	U	1.4	U	1.5	U	1.4	U	1.4	U
2,3,4,7,8-PeCDF	0.77	U	0.79	U	0.79	U	0.83	U	49	U	0.81	U
2,3,7,8-TCDD	0.47	U	0.48	U	0.59	UJ	0.5	U	1.3	UJ	0.49	U
2,3,7,8-TCDF	0.42	U	0.43	U	0.55	UJ	0.45	U	1.4	UJ	0.44	U
OCDD	98	U	100	U	100	U	100	U	98	U	100	U
OCDF	2.9	U	3	U	100	U	3.1	U	98	U	3.1	U
TEQ (Mammal)	0.099		0.1		0.0064		0.0051		2.3		0.024	
TEQ (Bird)	0.073		0.08		0.0021		0.0017		3.1		0.0038	
TEQ (Fish)	0.073		0.08		0.0021		0.0017		2.4		0.0038	

Notes:

pg/L = picograms per liter

The TEQ (mammal) results were compared to the EPA BTAG screening value 0.0031 pg/L for 2,3,7,8-TCDD (EPA, 2009)

Green Highlight indicates background surface water sample

Bolded value indicates 3X background (3x analytical result for SW-24)

Red value indicates exceedance of EPA BTAG screening value

BTAG = Biological Technical Assistance Group

CLP = Contract Laboratory Program

RML = Removal Management Level

TEQ = Toxic Equivalent

U = Not detected

UJ = The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise

Z = Estimated maximum possible concentration

Table 13
Shaffer Equipment/Arbuckle Creek Area Site
Expanded Site Inspection
June 2017 PCBs in Sediment Samples

Sample Number	CLP Sample Number	Sample Date	PCB	Result	Q
SD-001	C0AA0	6/14/2017	Aroclor-1260	32	J
SD-002	C0AA1	6/14/2017	Aroclor-1260	140	
SD-003	C0AA2	6/14/2017	Aroclor-1260	6200	
SD-004	C0AA3	6/14/2017	Aroclor-1260	350	
SD-005	C0AA4	6/14/2017	Aroclor-1260	230	
SD-006	C0AA5	6/14/2017	Aroclor-1260	50000	C
SD-007	C0AA6	6/14/2017	Aroclor-1260	85	
SD-008 (SD-018)	C0AA7	6/14/2017	Aroclor-1260	120	
SD-009	C0AA8	6/14/2017	Aroclor-1260	130	
SD-010	C0AA9	6/14/2017	Aroclor-1260	300	
SD-011	C0AAB0	6/14/2017	Aroclor-1260	980	J+
SD-012	C0AAB1	6/14/2017	Aroclor-1260	130	
SD-013	C0AAB2	6/14/2017	Aroclor-1260	180	J+
SD-014	C0AAB3	6/14/2017	Aroclor-1260	340	
SD-015	C0AAB4	6/14/2017	Aroclor-1260	61	
SD-016	C0AAB5	6/14/2017	Aroclor-1260	70	
SD-017	C0AAB6	6/14/2017	Aroclor-1260	190	
SD-018 (SD-008)	C0AAB7	6/14/2017	Aroclor-1260	86	
SD-019	C0AAB8	6/14/2017	Aroclor-1260	50	
SD-020	C0AM1	6/14/2017	Aroclor-1260	270	J+
SD-021	C0AM2	6/14/2017	Aroclor-1260	43	U
SD-022	C0AM3	6/14/2017	Aroclor-1260	7.5	J
SD-023	C0AM4	6/14/2017	Aroclor-1260	9.1	J
SD-024	C0AM5	6/14/2017	Aroclor-1260	6.4	J
SD-025	C0AM6	6/14/2017	Aroclor-1260	39	U

Notes:

Units are in micrograms per kilogram (µg/kg)

Results compared to EPA BTAG screening value for total PCBs in freshwater sediment of 59.8 µg/kg (EPA, 2006) and to EPA RML for residential soil of 24,000 µg/kg for PCB Aroclor-1260 (1E-04 risk level for carcinogens) (EPA, 2018)

Green Highlight indicates background sediment sample

Bolded value indicates concentration elevated above background (The RDL of 40U for Sample SD-72 collected in June 2018)

Red value indicates exceedance of EPA BTAG screening value

Yellow highlight indicates exceedance of EPA RML

Sample ID in parentheses indicates duplicate pair

BTAG = Biological Technical Assistance Group

C = The target Pesticide or Aroclor analyte identification has been confirmed by Gas Chromatography/Mass Spectrometry (GC/MS). This qualifier may be added to other qualifiers

CLP = Contract Laboratory Program

J = Estimated quantity

J+ = Estimated quantity; the result may be biased high.

PCB = Polychlorinated biphenyls

Q = Qualifier

RML = Removal Management Level

U = Not detected above the sample quantitation limit

Table 14
Shaffer Equipment/Arbuckle Creek Area Site
Expanded Site Inspection
June 2017 Dioxins in Sediment Samples

CLP Sample Number:	C0AA0		PC0AA3		PC0AA8		PC0AB2		C0AB4		C0AB6		PC0AM6	
Sample #:	SD-001		SD-004		SD-009		SD-013		SD-015		SD-017		SD-025	
Units:	ng/kg		ng/kg		ng/kg		ng/kg		ng/kg		ng/kg		ng/kg	
Date Sampled:	6/14/2017		6/14/2017		6/14/2017		6/14/2017		6/14/2017		6/14/2017		6/14/2017	
Parameter	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
1,2,3,4,6,7,8-HpCDD	3	J	100.00		27		25		8.8		78		14	
1,2,3,4,6,7,8-HpCDF	1.5	J	30.00		11		9.6		3.3	J	28		6.7	
1,2,3,4,7,8,9-HpCDF	0.17	Z	2.10	J	0.57	J	0.67	J	0.26	Z	1.5	J	0.34	Z
1,2,3,4,7,8-HxCDD	0.2	U	1.30	J	0.38	J	0.46	J	0.41	J	1.1	J	0.26	Z
1,2,3,4,7,8-HxCDF	0.46	J	2.90	J	0.92	Z	0.7	Z	0.74	J	2.4	J	0.44	J
1,2,3,6,7,8-HxCDD	0.35	U	3.50	J	0.99	J	1.1	Z	1.4	J	3.1	J	0.62	J
1,2,3,6,7,8-HxCDF	0.21	U	1.50	J	0.71	J	0.54	J	0.33	Z	1.7	J	0.33	Z
1,2,3,7,8,9-HxCDD	0.24	U	2.90	J	0.97	J	0.97	J	0.72	J	2.1	J	0.61	Z
1,2,3,7,8,9-HxCDF	0.17	U	0.55	J	0.18	U	0.19	U	0.15	J	0.48	J	0.21	U
1,2,3,7,8-PeCDD	0.18	U	0.82	J	0.35	Z	0.32	J	0.46	J	0.64	J	0.25	J
1,2,3,7,8-PeCDF	0.23	U	1.40	J	0.41	J	0.34	J	0.37	J	1	J	0.22	U
2,3,4,6,7,8-HxCDF	0.19	Z	2.00	J	0.87	J	0.65	J	0.35	J	2	J	0.54	J
2,3,4,7,8-PeCDF	0.2	J	1.60	J	0.72	J	0.46	Z	0.4	J	1.8	J	0.42	J
2,3,7,8-TCDD	0.2	U	0.46	J	0.19	U	0.19	U	0.19	U	0.41	J	0.2	U
2,3,7,8-TCDF	0.39	J	1.50		0.6	J	0.56	Z	0.47	J	1.5		0.32	U
OCDD	35		1100.00		500		270		90		1200		190	
OCDF	2.5	J	71.00		23		22		7.2	J	59		13	
TEQ (Mammal)	0.2		5.10		1.2		1		1.2		4.5		0.81	
TEQ (Bird)	0.66		5.80		1.8		0.74		1.6		5.9		0.88	
TEQ (Fish)	0.19		4.20		0.97		0.85		1.1		3.8		0.67	

Notes:

Units are in nanograms per kilogram (ng/kg)

The TEQ (mammal) results were compared to the EPA BTAG screening value for freshwater sediment of 0.85 ng/kg (EPA, 2006) and the EPA RML for residential soil of 477 ng/kg for 2,3,7,8-TCDD (based on a 1E-04 risk level for carcinogens; noncarcinogenic RML based on a THQ of 10 is 511 ng/kg) (EPA, 2018)

Green Highlight indicates background soil samples

Bolded value indicates concentration elevated above background (The TEQ (Mammal) for sample SD-25)

Red value indicates exceedance of EPA BTAG screening value

BTAG = Biological Technical Assistance Group

CLP = Contract Laboratory Program

J = Estimated quantity

RML = Removal Management Level

THQ = Target Hazard Quotient

TEQ = Toxic Equivalent

U = Not detected

Z = Estimated maximum possible concentration

Table 15
Shaffer Equipment/Arbuckle Creek Area Site
Expanded Site Inspection
December 2017 PCBs in Sediment Samples

Sample Number:	SEC-SD-T1-01	SEC-SD-T1-02	SEC-SD-T1-03	SEC-SD-T2-01	SEC-SD-T2-02	SEC-SD-T2-03
CLP Number:	C0AA0	C0AA1	C0AA2	C0AA5	C0AA6	C0AA7
Matrix:	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment
Sample Date:	12/12/2017	12/12/2017	12/12/2017	12/12/2017	12/12/2017	12/12/2017
Unit:	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
PCB (Aroclor 1260):	37 J	31 J	50	21 J	55	160

Sample Number:	SEC-SD-T3-01	SEC-SD-T3-01-D	SEC-SD-T3-02	SEC-SD-T3-03
CLP Number:	C0AB0	C0AC0	C0AB1	C0AB2
Matrix:	Sediment	Sediment	Sediment	Sediment
Sample Date:	12/12/2017	12/12/2017	12/12/2017	12/12/2017
Unit:	µg/kg	µg/kg	µg/kg	µg/kg
PCB (Aroclor 1260):	15 J	7.5 J	55	41 J

Sample Number:	SEC-SD-T4-01	SEC-SD-T4-02	SEC-SD-T4-03	SEC-SD-T5-01	SEC-SD-T5-02	SEC-SD-T5-03
CLP Number:	C0AB5	C0AB6	C0AB7	C0AD4	C0AD5	C0AD6
Matrix:	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment
Sample Date:	12/12/2017	12/12/2017	12/12/2017	12/13/2017	12/13/2017	12/13/2017
Unit:	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
PCB (Aroclor 1260):	1,800	62 J	62 J	440 J	38J	30 J

Notes:

µg/kg = micrograms per kilogram

Results compared to EPA BTAG value for freshwater sediment of 59.8 µg/kg (EPA, 2006) and to EPA RML for residential soil of 24,000 µg/kg for PCBs (1E-04 risk level for carcinogens) (EPA, 2018)

Bolded value indicates concentration elevated above background (The RDL of 40U for Sample SD-72 collected in June 2018)

Red value indicates exceedance of EPA BTAG value

BTAG = Biological Technical Assistance Group

CLP = Contract Laboratory Program

J = Estimated quantity

PCB = Polychlorinated biphenyls

RML = Removal Management Level

Table 15
Shaffer Equipment/Arbuckle Creek Area Site
Expanded Site Inspection
December 2017 PCBs in Sediment Samples

Sample Number:	SEC-SD-T6-01	SEC-SD-T6-02	SEC-SD-T6-03	SEC-SD-T7-01	SEC-SD-T7-02	SEC-SD-T7-03
CLP Number:	C0AD8	C0AD9	C0AE3	C0AE5	C0AE6	C0AE8
Matrix:	Sediment	Sediment	Sediment	Sediment	Sediment	Sediment
Sample Date:	12/13/2017	12/13/2017	12/13/2017	12/13/2017	12/13/2017	12/13/2017
Unit:	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
PCB (Aroclor 1260):	78	35 J	22 J	25 J	31 J	41 J

Sample Number:	SEC-SD-T8-01	SEC-SD-T8-02	SEC-SD-T8-03	SEC-SD-CL-01
CLP Number:	C0AF3	C0AF5	C0AF4	C0AF8
Matrix:	Sediment	Sediment	Sediment	Sediment
Sample Date:	12/13/2017	12/13/2017	12/13/2017	12/13/2017
Unit:	µg/kg	µg/kg	µg/kg	µg/kg
PCB (Aroclor 1260):	27 J	36 J	39 J	32 J

Sample Number:	SEC-SD-TL-03	SEC-SD-TL-06
CLP Number:	C0AF7	C0AF0
Matrix:	Sediment	Sediment
Sample Date:	12/13/2017	12/13/2017
Unit:	ppm	ppm
PCB (Aroclor 1260):	25 J	180

Notes:

µg/kg = micrograms per kilogram

Results compared to EPA BTAG screening value for total PCBs in freshwater sediment of 59.8 µg/kg (EPA, 2006) and to EPA RML for residential soil of 24,000 µg/kg for PCB Aroclor-1260 (1E-04 risk level for carcinogens) (EPA, 2018)

Bolded value indicates concentration elevated above background (The RDL of 40U for Sample SD-72 collected in June 2018)

Red value indicates exceedance of EPA BTAG screening value

BTAG = Biological Technical Assistance Group

CLP = Contract Laboratory Program

J = Estimated quantity

PCB = Polychlorinated biphenyls

RML = Removal Management Level

Table 16
Shaffer Equipment/Arbuckle Creek Area Site
Expanded Site Inspection
March and May 2018 PCBs in Sediment Samples

Sample Number	CLP Sample Number	Sample Date	Analyte	Result
SD-50	C0AC6	3/20/2018	Aroclor-1260	34J
SD-51	C0AC7	3/20/2018	Aroclor-1260	100
SD-51B	C0AC8	3/20/2018	Aroclor-1260	44
SD-52	C0AC9	3/20/2018	Aroclor-1260	37J
SD-53	C0AD0	3/20/2018	Aroclor-1260	100
SD-54	C0AD1	3/20/2018	Aroclor-1260	52
SD-55	C0AD2	3/20/2018	Aroclor-1260	46U
SEC-SD-56	C0AG8	5/15/2018	Aroclor-1260	45J
SEC-SD-57	C0AG9	5/15/2018	Aroclor-1260	45
SEC-SD-58	C0AH0	5/15/2018	Aroclor-1260	55J
SEC-SD-59	C0AH1	5/15/2018	Aroclor-1260	140
SEC-SD-60	C0AH2	5/15/2018	Aroclor-1260	61J
SEC-SD-61	C0AH3	5/15/2018	Aroclor-1260	71
SEC-SD-62	C0AH4	5/15/2018	Aroclor-1260	29J
SEC-SD-63 (SEC-SD-66)	C0AH5	5/15/2018	Aroclor-1260	110J
SEC-SD-64	C0AH6	5/15/2018	Aroclor-1260	41J
SEC-SD-65	C0AH7	5/15/2018	Aroclor-1260	70
SEC-SD-66 (SEC-SD-63)	C0AH8	5/15/2018	Aroclor-1260	80J
SEC-SD-67	C0AH9	5/16/2018	Aroclor-1260	99U
SEC-SD-68	C0AJ0	5/16/2018	Aroclor-1260	15J
SEC-SD-69	C0AJ1	5/16/2018	Aroclor-1260	78
SEC-SD-70	C0AJ2	5/16/2018	Aroclor-1260	200UJ

Notes:

Units are in micrograms per kilogram (µg/kg)

Results compared to EPA BTAG screening value for total PCBs in freshwater sediment of 59.8 µg/kg (EPA, 2006) and to EPA RML for residential soil of 24,000 µg/kg for PCB Aroclor-1260 (1E-04 risk level for carcinogens) (EPA, 2018)

Bolded value indicates concentration elevated above background (The RDL of 40U for Sample SD-72 collected in June 2018)

Red value indicates exceedance of EPA BTAG screening value

Sample numbers in parenthesis indicate duplicate pairs.

Pink highlight indicates sample collected from tributary just prior to confluence with Arbuckle Creek

BTAG = Biological Technical Assistance Group

CLP = Contract Laboratory Program

J = Estimated quantity

PCB = Polychlorinated biphenyls

RML = Removal Management Level

U = Not detected

Table 17
Shaffer Equipment/Arbuckle Creek Area Site
Expanded Site Inspection
June 2018 PCBs in Sediment Samples

	Station:	SD-100		SD-101		SD-102		SD-103		SD-104		SD-105		SD-106	
	Field Sample ID:	SEC-SD-100		SEC-SD-101		SEC-SD-102		SEC-SD-103		SEC-SD-104		SEC-SD-105		SEC-SD-106	
	Date:	6/27/2018		6/27/2018		6/27/2018		6/28/2018		6/28/2018		6/28/2018		6/28/2018	
	Lab Sample ID:	COAS9		COAT2		COAT3		COAT6		COAT7		COAT8		COAW1	
	Units:	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Aroclor-1260	ug/kg	58	U	40	U	41	U	47	U	42	U	43	U	51	U

	Station:	SD-71		SD-72		SD-73		SD-74		SD-75		SD-76		SD-77	
	Field Sample ID:	SEC-SD-71		SEC-SD-72		SEC-SD-73		SEC-SD-74		SEC-SD-75		SEC-SD-76		SEC-SD-77	
	Date:	6/26/2018		6/26/2018		6/26/2018		6/26/2018		6/26/2018		6/26/2018		6/26/2018	
	Lab Sample ID:	COAK2		COAJ5		COAJ6		COAJ7		COAJ8		COAJ9		COAK0	
	Units:	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Aroclor-1260	ug/kg	38	J	40	U	28	J	40	J	64	J	89	J	69	J

	Station:	SD-78		SD-79		SD-80		SD-81		SD-82		SD-83		SD-84	
	Field Sample ID:	SEC-SD-78		SEC-SD-79		SEC-SD-80		SEC-SD-81		SEC-SD-82		SEC-SD-83		SEC-SD-84	
	Date:	6/26/2018		6/27/2018		6/27/2018		6/26/2018		6/26/2018		6/27/2018		6/27/2018	
	Lab Sample ID:	COAK1		COAK4		COAK5		COAK6		COAK7		COAK8		COAK9	
	Units:	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Aroclor-1260	ug/kg	39	J	48	U	54	U	120	U	140	U	41	U	48	U

Notes:

µg/kg = micrograms per kilogram

Results compared to EPA BTAG screening value for total PCBs in freshwater sediment of 59.8 µg/kg (EPA, 2006) and to EPA RML for residential soil of 24,000 µg/kg for PCB Aroclor-1260 (1E-04 risk level for carcinogens) (EPA, 2018)

Bolded value indicates concentration elevated above background (The RDL of 40U for Sample SD-72 collected in June 2018)

Red value indicates exceedance of EPA BTAG screening value

BTAG = Biological Technical Assistance Group

CLP = Contract Laboratory Program

J = Estimated quantity

PCB = Polychlorinated biphenyls

Q = Qualifier

RML = Removal Management Level

Table 17
Shaffer Equipment/Arbuckle Creek Area Site
Expanded Site Inspection
June 2018 PCBs in Sediment Samples

	Station:	SD-85		SD-86		SD-87		SD-88		SD-90		SD-91		SD-92	
	Field Sample ID:	SEC-SD-85		SEC-SD-86		SEC-SD-87		SEC-SD-88		SEC-SD-90		SEC-SD-91		SEC-SD-92	
	Date:	6/27/2018		6/27/2018		6/28/2018		6/27/2018		6/26/2018		6/26/2018		6/27/2018	
	Lab Sample ID:	C0AL0		C0AL1		C0AL2		C0AL3		C0AL5		C0AL6		C0AL7	
	Units:	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Aroclor-1260	ug/kg	100	U	58	U	44	U	38	U	120	U	90	U	64	U

	Station:	SD-93		SD-95		SD-96		SD-97		SD-98		SD-99	
	Field Sample ID:	SEC-SD-93		SEC-SD-95		SEC-SD-96		SEC-SD-97		SEC-SD-98		SEC-SD-99	
	Date:	6/27/2018		6/27/2018		6/26/2018		6/26/2018		6/26/2018		6/27/2018	
	Lab Sample ID:	C0AL8		C0AM0		C0AM1		C0AM2		C0AS5		C0AS8	
	Units:	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Aroclor-1260	ug/kg	89	U	43	U	43	U	47	U	46	U	49	U

Notes:

µg/kg = micrograms per kilogram

Results compared to EPA BTAG screening value for total PCBs in freshwater sediment of 59.8 µg/kg (EPA, 2006) and to EPA RML for residential soil of 24,000 µg/kg for PCB Aroclor-1260 (1E-04 risk level for carcinogens) (EPA, 2018)

Bolded value indicates concentration elevated above background (The RDL of 40U for Sample SD-72 collected in June 2018)

Red value indicates exceedance of EPA BTAG screening value

BTAG = Biological Technical Assistance Group

CLP = Contract Laboratory Program

J = Estimated quantity

PCB = Polychlorinated biphenyls

RML = Removal Management Level

Q = Qualifier

Table 18
Shaffer Equipment/Arbuckle Creek Area Site
Expanded Site Inspection
June 2018 Pesticides in Sediment Samples

			Station:	SD-100		SD-101		SD-102		SD-103		SD-104		SD-105	
			Field Sample ID:	SEC-SD-100		SEC-SD-101		SEC-SD-102		SEC-SD-103		SEC-SD-104		SEC-SD-105	
			Date:	6/27/2018		6/27/2018		6/27/2018		6/28/2018		6/28/2018		6/28/2018	
			Lab Sample ID:	COAS9		COAT2		COAT3		COAT6		COAT7		COAT8	
Pesticide	BTAG	RML	Units:	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
4,4'-DDD	4.88	19000	µg/kg	5.8	U	4	U	4.1	U	0.63	R	4.2	U	4.3	U
4,4'-DDE	3.16	198000	µg/kg	4.7	J	0.47	R	0.46	J	0.76	R	0.42	J	1.1	R
4,4'-DDT	4.16	189000	µg/kg	12	J	4	U	0.5	R	4.7	U	4.2	U	13	J
Aldrin	2	3930	µg/kg	1.6	J	0.38	J	2.1	U	2.4	U	2.2	U	2.2	U
alpha-BHC	6	8610	µg/kg	3	U	2.1	U	2.1	U	2.4	U	2.2	U	2.2	U
cis-Chlordane*	3.24	170000	µg/kg	3	U	2.1	U	2.1	U	2.4	U	2.2	U	2.2	U
delta-BHC	6400	NL	µg/kg	1.2	R	2.1	U	2.1	U	0.63	J	2.2	U	0.83	J
Dieldrin	1.9	3390	µg/kg	5.8	U	4	U	4.1	U	0.67	J	4.2	U	0.88	R
Endosulfan I	2.9	470000	µg/kg	3	U	0.46	J	0.37	J	2.4	U	2.2	U	0.34	R
Endosulfan II	14	4700000	µg/kg	5.8	U	4	U	4.1	U	4.7	U	4.2	U	0.45	R
Endosulfan sulfate	5.4	470000	µg/kg	11	J	0.56	R	0.28	J	1.6	J	0.54	J	1.9	J
Endrin	2.22	19000	µg/kg	4.7	R	0.25	R	4.1	U	0.46	R	0.93	J	8.2	R
Endrin aldehyde*	2.22	19000	µg/kg	5.8	U	0.57	R	0.24	R	0.7	R	0.58	R	4.3	U
Endrin ketone*	2.22	19000	µg/kg	5.8	U	0.61	R	0.48	J	0.55	J	0.43	J	1.3	R
gamma-BHC (Lindane)	2.37	56800	µg/kg	3	U	2.1	U	2.1	U	2.4	U	2.2	U	2.2	U
Heptachlor	68	13000	µg/kg	1	R	2.1	U	2.1	U	2.4	U	2.2	U	0.32	J
Heptachlor epoxide	2.47	1000	µg/kg	3	U	2.1	U	0.27	J	1	J	0.58	J	0.84	J
Methoxychlor	18.7	3160000	µg/kg	18	R	21	U	21	U	1.5	R	1.5	J	1.8	R
trans-Chlordane*	3.24	35000	µg/kg	6	R	2.1	U	2.1	U	0.52	J	1.2	J	4.1	J

Notes:

Results compared to EPA BTAG screening value for freshwater sediment (EPA, 2006) and to EPA RML for residential soil (1E-04 risk level for carcinogens a hazard quotient of 10 for non carcinogens) (EPA, 2018)

* Value in tables reflects the RML for Endrin, Endosulfan, Chlordane, respectively.

µg/kg = microgram per kilogram

Red value indicates exceedance of EPA BTAG screening value

BTAG = Biological Technical Assistance Group

CLP = Contract Laboratory Program

J = Estimated quantity

NL = No listed value

R = The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The

RML = Removal Management Level

Q = Qualifier

U = Not detected

Table 18
Shaffer Equipment/Arbuckle Creek Area Site
Expanded Site Inspection
June 2018 Pesticides in Sediment Samples

Pesticide	BTAG RML		Station:	SD-106		SD-79		SD-80		SD-81		SD-82		SD-83	
			Field Sample ID:	SEC-SD-106		SEC-SD-79		SEC-SD-80		SEC-SD-81		SEC-SD-82		SEC-SD-83	
			Date:	6/28/2018		6/27/2018		6/27/2018		6/26/2018		6/26/2018		6/27/2018	
			Lab Sample ID:	COAW1		COAK4		COAK5		COAK6		COAK7		COAK8	
			Units:	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
4,4'-DDD	4.88	19000	ug/kg	5.1	U	4.8	U	5.4	U	12	R	14	U	4.1	J
4,4'-DDE	3.16	198000	ug/kg	8.6		0.97	R	1.6	R	3.6	J	4.3	J	4.1	U
4,4'-DDT	4.16	189000	ug/kg	13	J	4.8	U	5.4	U	12	U	14	U	4.1	U
Aldrin	2	3930	ug/kg	0.45	J	2.5	U	0.68	J	6.1	U	7.1	U	2.1	U
alpha-BHC	6	8610	ug/kg	2.6	U	2.5	U	1.4	J	6.1	U	7.1	U	2.1	U
cis-Chlordane*	3.24	170000	ug/kg	1.3	J	0.83	J	2.8	U	6.1	U	1.1	R	0.56	J
delta-BHC	6400	NL	ug/kg	0.75	J	2.5	U	2.8	U	6.1	U	7.1	U	0.62	J
Dieldrin	1.9	3390	ug/kg	0.82	R	0.54	J	0.86	J	12	R	14	U	4.1	U
Endosulfan I	2.9	470000	ug/kg	2.8	U	2.5	U	2.8	U	1.2	J	1.2	J	0.27	R
Endosulfan II	14	4700000	ug/kg	0.71	R	4.8	U	5.4	U	12	U	14	U	0.64	R
Endosulfan sulfate	5.4	470000	ug/kg	1.3	R	1.3	J	0.82	J	3.4	R	14	J	1.7	J
Endrin	2.22	19000	ug/kg	8.7	R	0.6	R	1.4	J	12	U	14	R	4.1	U
Endrin aldehyde*	2.22	19000	ug/kg	5.1	U	0.16	R	5.4	U	6.9	R	6.3	J	1.4	J
Endrin ketone*	2.22	19000	ug/kg	10		4.8	U	1	J	6.4	J	7.7	J	2.9	J
gamma-BHC (Lindane)	2.37	56800	ug/kg	2.6	U	2.5	U	0.48	J	6.1	U	3.5	J	2.1	U
Heptachlor	68	13000	ug/kg	2.6	U	2.5	U	2.8	U	1	J	7.1	U	0.36	J
Heptachlor epoxide	2.47	1000	ug/kg	1.2	J	0.89	J	1	R	1.3	J	1.7	J	0.72	J
Methoxychlor	18.7	3160000	ug/kg	1.5	R	1.9	J	4.3	J	61	U	71	U	1.1	R
trans-Chlordane*	3.24	35000	ug/kg	3.3	J	0.69	J	2.6	J	1.8	R	5.3	J	2.1	U

Notes:

Results compared to EPA BTAG screening value for freshwater sediment (EPA, 2006) and to EPA RML for residential soil (1E-04 risk level for carcinogens a hazard quotient of 10 for non carcinogens) (EPA, 2018)

* Value in tables reflects the RML for Endrin, Endosulfan, Chlordane, respectively.

µg/kg = microgram per kilogram

Red value indicates exceedance of EPA BTAG screening value

BTAG = Biological Technical Assistance Group

CLP = Contract Laboratory Program

J = Estimated quantity

NL = No listed value

R = The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The

RML = Removal Management Level

Q = Qualifier

U = Not detected

Table 18
Shaffer Equipment/Arbuckle Creek Area Site
Expanded Site Inspection
June 2018 Pesticides in Sediment Samples

Pesticide	BTAG	RML	Station:	SD-84		SD-85		SD-86		SD-87		SD-88		SD-90	
			Field Sample ID:	SEC-SD-84		SEC-SD-85		SEC-SD-86		SEC-SD-87		SEC-SD-88		SEC-SD-90	
			Date:	6/27/2018		6/27/2018		6/27/2018		6/28/2018		6/27/2018		6/26/2018	
			Lab Sample ID:	COAK9		COAL0		COAL1		COAL2		COAL3		COAL5	
			Units:	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
4,4'-DDD	4.88	19000	ug/kg	1.2	R	10	U	10	R	4.4	U	3.8	U	12	R
4,4'-DDE	3.16	198000	ug/kg	0.96	R	10	J	7.9	J	2.9	R	3.8	U	6.6	J
4,4'-DDT	4.16	189000	ug/kg	2.7	J	4.9	J	12	J	4.4	U	2.4	J	56	J
Aldrin	2	3930	ug/kg	2.5	U	5.2	U	3	U	0.75	J	2	U	3.8	R
alpha-BHC	6	8610	ug/kg	2.5	U	5.2	U	1.2	J	2.3	U	2	U	6.1	U
cis-Chlordane*	3.24	170000	ug/kg	2.5	U	4.9	J	3	U	4.3		2	U	14	
delta-BHC	6400	NL	ug/kg	2.5	U	5.2	R	0.94	R	1.3	J	0.24	J	1.7	R
Dieldrin	1.9	3390	ug/kg	0.53	R	2.9	R	5.6	R	4.4	U	3.8	U	4.3	R
Endosulfan I	2.9	470000	ug/kg	2.5	U	1.3	R	2.2	R	0.81	J	0.85	J	4.2	R
Endosulfan II	14	4700000	ug/kg	0.38	R	1.1	R	3.9	R	0.42	R	0.17	R	12	
Endosulfan sulfate	5.4	470000	ug/kg	1.1	R	10	U	32	J	2.9	J	3.8	U	29	J
Endrin	2.22	19000	ug/kg	0.44	R	2.5	R	5.8	U	4.8	R	1.3	R	18	R
Endrin aldehyde*	2.22	19000	ug/kg	1.8	R	5.4	J	23	J	4.4	U	2	R	30	J
Endrin ketone*	2.22	19000	ug/kg	1.1	J	7.4	J	77	J	1.3	R	3.8	U	14	
gamma-BHC (Lindane)	2.37	56800	ug/kg	2.5	U	5.2	U	3	U	2.3	U	2	U	6.1	U
Heptachlor	68	13000	ug/kg	0.52	R	5.2	U	1.7	R	0.44	J	2	U	2.3	J
Heptachlor epoxide	2.47	1000	ug/kg	2.5	U	1.5	J	1.6	J	0.84	R	0.58	J	1.4	R
Methoxychlor	18.7	3160000	ug/kg	25	U	4.4	R	64	R	1.7	R	20	U	41	J
trans-Chlordane*	3.24	35000	ug/kg	0.67	R	5.2	U	15	J	4.1	R	2	U	2.6	J

Notes:

Results compared to EPA BTAG screening value for freshwater sediment (EPA, 2006) and to EPA RML for residential soil (1E-04 risk level for carcinogens a hazard quotient of 10 for non carcinogens) (EPA, 2018)

* Value in tables reflects the RML for Endrin, Endosulfan, Chlordane, respectively.

µg/kg = microgram per kilogram

Red value indicates exceedance of EPA BTAG screening value

BTAG = Biological Technical Assistance Group

CLP = Contract Laboratory Program

J = Estimated quantity

NL = No listed value

R = The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The

RML = Removal Management Level

Q = Qualifier

U = Not detected

Table 18
Shaffer Equipment/Arbuckle Creek Area Site
Expanded Site Inspection
June 2018 Pesticides in Sediment Samples

Pesticide	BTAG RML		Station:	SD-91		SD-92		SD-93		SD-95		SD-96		SD-97		SD-98		SD-99	
			Field Sample ID:	SEC-SD-91		SEC-SD-92		SEC-SD-93		SEC-SD-95		SEC-SD-96		SEC-SD-97		SEC-SD-98		SEC-SD-99	
			Date:	6/26/2018		6/27/2018		6/27/2018		6/27/2018		6/26/2018		6/26/2018		6/26/2018		6/27/2018	
			Lab Sample ID:	COAL6		COAL7		COAL8		COAM0		COAM1		COAM2		COAS5		COAS8	
			Units:	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
4,4'-DDD	4.88	19000	ug/kg	9	U	8.4	J	8.9	U	6.6		4.3	U	5.9	J	4.6	U	0.4	R
4,4'-DDE	3.16	198000	ug/kg	4.9	J	6.4	U	8.9	U	4.3	U	4.6	J	4.8	J	0.7	J	4.9	U
4,4'-DDT	4.16	189000	ug/kg	9	U	3.4	J	13		26		8.1		8.7	J	4.6	U	4.9	U
Aldrin	2	3930	ug/kg	1.2	J	3.3	U	4.6	U	0.58	J	0.5	R	2.4	U	0.25	J	2.5	U
alpha-BHC	6	8610	ug/kg	1.1	J	3.3	U	4.6	U	2.2	U	2.2	U	2.4	U	2.4	U	2.5	U
cis-Chlordane*	3.24	170000	ug/kg	4.6	U	3.3	U	4.6	U	2.2	U	2.2	J	2.3	J	0.64	R	2.5	U
delta-BHC	6400	NL	ug/kg	0.97	J	0.7	J	4.6	U	0.63	J	0.73	J	1.1	J	2.4	U	0.63	J
Dieldrin	1.9	3390	ug/kg	0.31	R	6.3	R	8.9	U	13		4.3	U	4.7	U	4.6	U	4.9	U
Endosulfan I	2.9	470000	ug/kg	4.6	U	2.1	J	0.97	J	2.2	U	2.2	U	1.6	R	0.52	R	2.5	U
Endosulfan II	14	4700000	ug/kg	9	U	0.96	J	2.4	R	0.73	R	4.3	U	4.7	U	4.6	U	4.9	U
Endosulfan sulfate	5.4	470000	ug/kg	9	U	1.6	R	6.2	J	5.6	R	3.9	J	3.4	J	0.79	J	4.9	U
Endrin	2.22	19000	ug/kg	1.4	J	4	R	3.6	R	4.4	R	1	R	2.2	R	4.6	R	0.32	R
Endrin aldehyde*	2.22	19000	ug/kg	9	U	12	J	2	R	13		1.9	R	6.3	J	4.6	U	0.33	R
Endrin ketone*	2.22	19000	ug/kg	6	J	8.5		1.9	R	30		5.7		7.3	J	4.6	U	4.9	U
gamma-BHC (Lindane)	2.37	56800	ug/kg	4.6	U	0.71	R	0.67	J	0.58	R	2.2	U	2.4	U	0.9	J	2.5	U
Heptachlor	68	13000	ug/kg	4.6	U	3.3	U	1.4	J	0.33	R	0.91	J	0.73	J	0.24	R	2.5	U
Heptachlor epoxide	2.47	1000	ug/kg	1.1	J	2.3	J	1.6	J	1.8	R	0.68	R	1	J	0.62	J	0.45	J
Methoxychlor	18.7	3160000	ug/kg	3.4	R	6.5	R	33	J	4.7	R	3.8	R	5.4	R	24	U	25	U
trans-Chlordane*	3.24	35000	ug/kg	0.57	R	0.39	R	5.2	R	3.3	R	0.94	J	1.1	J	1.7	R	2.5	U

Notes:

Results compared to EPA BTAG screening value for freshwater sediment (EPA, 2006) and to EPA RML for residential soil (1E-04 risk level for carcinogens a hazard quotient of 10 for non carcinogens) (EPA, 2018)

* Value in tables reflects the RML for Endrin, Endosulfan, Chlordane, respectively.

µg/kg = microgram per kilogram

Red value indicates exceedance of EPA BTAG screening value

BTAG = Biological Technical Assistance Group

CLP = Contract Laboratory Program

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NL = No listed value

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U = Not detected

Table 19
Shaffer Equipment/Arbuckle Creek Area Site
Expanded Site Inspection
June 2018 SVOCs and PAHs in Sediment Samples

SVOCs			Station:	SD-100		SD-101		SD-102		SD-103		SD-104		SD-105	
			Field Sample ID	SEC-SD-100		SEC-SD-101		SEC-SD-102		SEC-SD-103		SEC-SD-104		SEC-SD-105	
			Date:	6/27/2018		6/27/2018		6/27/2018		6/28/2018		6/28/2018		6/28/2018	
			Lab Sample ID:	COAS9		COAT2		COAT3		COAT6		COAT7		COAT8	
	BTAG	RML	Units:	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
2-Methylnaphthalene	20.2	2390000	ug/kg	300	U	210	U	210	U	240	U	210	U	220	U
3-Nitroaniline	NL	NL	ug/kg	580	U	400	U	410	U	470	U	410	U	420	U
4-Methylphenol	670	63200000	ug/kg	580	U	400	U	410	U	470	U	410	U	420	U
Acenaphthene	6.7	35900000	ug/kg	270	J	210	U	210	U	240	U	210	U	180	J
Acenaphthylene	5.9	NL	ug/kg	1900		210	U	210	U	240	U	210	U	120	J
Anthracene	57.2	179000000	ug/kg	2100		210	U	210	U	240	U	210	U	130	J
Benzo(a)anthracene	108	113000	ug/kg	5400		210	U	210	U	240	U	210	U	430	
Benzo(a)pyrene	150	11500	ug/kg	4300		210	U	210	U	240	U	210	U	410	
Benzo(b)fluoranthene	NL	115000	ug/kg	6300		210	U	210	U	240	U	210	U	820	
Benzo(g,h,i)perylene	170	NL	ug/kg	1800		210	U	210	U	240	U	210	U	220	
Benzo(k)fluoranthene	240	1150000	ug/kg	2200		210	U	210	U	240	U	210	U	230	
Bis(2-ethylhexyl)phthalate	180	3880000	ug/kg	300	U	210	U	210	U	240	U	210	U	420	
Carbazole	NL	NL	ug/kg	200	J	400	U	410	U	470	U	410	U	420	U
Chrysene	166	11500000	ug/kg	4500		210	U	210	U	240	U	210	U	470	
Dibenzo(a,h)anthracene	33	11500	ug/kg	590		210	U	210	U	240	U	210	U	63	J
Dibenzofuran	415	23900000	ug/kg	300		210	U	210	U	240	U	210	U	91	J
Fluoranthene	423	23900000	ug/kg	15000		71	J	410	U	470	U	410	U	1200	
Fluorene	77.4	115000	ug/kg	890		210	U	210	U	240	U	210	U	130	J
Indeno(1,2,3-cd)pyrene	17	382000	ug/kg	2200		210	U	210	U	240	U	210	U	240	
Naphthalene	176	382000	ug/kg	300	U	210	U	210	U	240	U	210	U	77	J
Phenanthrene	NL	NL	ug/kg	8500		60	J	210	U	240	U	210	U	320	
Pyrene	195	17900000	ug/kg	8200		210	U	210	U	240	U	210	U	890	
PAHs by SIM															
2-Methylnaphthalene	20.2	2390000	ug/kg	--		11		4.9		5.5		4.1	U	63	
Acenaphthene	6.7	35900000	ug/kg	--		2.4	J	0.6	J	4.7	U	4.1	U	190	
Acenaphthylene	5.9	NL	ug/kg	--		7.3		1.1	J	4.7	U	1.5	J	150	
Anthracene	57.2	179000000	ug/kg	--		8.8		1.6	J	0.96	J	1.2	J	190	
Benzo(a)anthracene	108	113000	ug/kg	--		28		4	J	3.4	J	2.8	J	510	J
Benzo(a)pyrene	150	11500	ug/kg	--		23		3.1	J	4.7	U	2.7	J	500	J
Benzo(b)fluoranthene	NL	115000	ug/kg	--		37		7.1		8.4		6.9		810	J
Benzo(g,h,i)perylene	170	NL	ug/kg	--		14		3.4	J	2.4	J	3	J	310	
Benzo(k)fluoranthene	240	1150000	ug/kg	--		10		4.1	U	4.7	U	4.1	U	250	
Chrysene	166	11500000	ug/kg	--		36		9.3		12		4.8		510	J
Dibenzo(a,h)anthracene	33	11500	ug/kg	--		4.5		4.1	U	4.7	U	4.1	U	61	
Fluoranthene	423	23900000	ug/kg	--		61		9.1		8.6		4.1		1200	J
Fluorene	77.4	23900000	ug/kg	--		8.3		1.2	J	1.6	J	4.1	U	150	
Indeno(1,2,3-cd)pyrene	17	115000	ug/kg	--		15		2.8	J	4.7	U	3.1	J	390	J
Naphthalene	176	382000	ug/kg	--		4.4		2.2	J	4.7	U	4.1	U	86	
Pentachlorophenol	504	102000	ug/kg	--		8.2	U	8.3	U	9.5	U	8.4	U	2.8	J
Phenanthrene	NL	NL	ug/kg	--		52		14		17		3.5	J	350	
Pyrene	195	17900000	ug/kg	--		35		6.1		7.7		3.9	J	830	J

Notes:

Results compared to EPA BTAG screening value for freshwater sediment (EPA, 2006) and to EPA RML for residential soil (1E-04 risk level for carcinogens a hazard quotient of 10 for non carcinogens) (EPA, 2018)

µg/kg = microgram per kilogram

Red value indicates exceedance of EPA BTAG screening value

BTAG = Biological Technical Assistance Group

CLP = Contract Laboratory Program

J = Estimated quantity

NL = No listed value

RML = Removal Management Level

Q = Qualifier

U = Not detected

Table 19
Shaffer Equipment/Arbuckle Creek Area Site
Expanded Site Inspection
June 2018 SVOCs and PAHs in Sediment Samples

SVOCs			Station:	SD-106		SD-79		SD-80		SD-81		SD-82		SD-83	
			Field Sample ID:	SEC-SD-106		SEC-SD-79		SEC-SD-80		SEC-SD-81		SEC-SD-82		SEC-SD-83	
			Date:	6/28/2018		6/27/2018		6/27/2018		6/26/2018		6/26/2018		6/27/2018	
			Lab Sample ID:	COAW1		COAK4		COAK5		COAK6		COAK7		COAK8	
	BTAG	RML	Units:	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
2-Methylnaphthalene	20.2	2390000	ug/kg	260	U	240	U	280	U	610	U	710	U	210	U
3-Nitroaniline	NL	NL	ug/kg	510	U	470	U	540	U	1200	U	1400	U	410	U
4-Methylphenol	670	63200000	ug/kg	510	U	470	U	520	J	1200	U	1400	U	410	U
Acenaphthene	6.7	35900000	ug/kg	260	U	240	U	280	U	610	U	710	U	210	U
Acenaphthylene	5.9	NL	ug/kg	260	U	240	U	280	U	610	U	710	U	210	U
Anthracene	57.2	179000000	ug/kg	260	U	240	U	280	U	610	U	710	U	210	U
Benzo(a)anthracene	108	113000	ug/kg	330		240	U	280	U	360	J	600	J	210	U
Benzo(a)pyrene	150	11500	ug/kg	370		240	U	280	U	380	J	630	J	210	U
Benzo(b)fluoranthene	NL	115000	ug/kg	660		240	U	280	U	600	J	960		210	U
Benzo(g,h,i)perylene	170	NL	ug/kg	200	J	240	U	280	U	220	J	380	J	210	U
Benzo(k)fluoranthene	240	1150000	ug/kg	180	J	240	U	280	U	610	U	350	J	210	U
Bis(2-ethylhexyl)phthalate	180	3880000	ug/kg	1200		240	U	280	U	610	U	710	U	210	U
Carbazole	NL	NL	ug/kg	510	UJ	470	UJ	540	UJ	1200	UJ	1400	UJ	410	U
Chrysene	166	11500000	ug/kg	410		240	U	280	U	410	J	660	J	210	U
Dibenzo(a,h)anthracene	33	11500	ug/kg	260	U	240	U	280	U	610	U	710	U	210	U
Dibenzofuran	415	23900000	ug/kg	260	U	240	U	280	U	610	U	710	U	210	U
Fluoranthene	423	23900000	ug/kg	900		470	U	540	U	1000	J	1700		410	U
Fluorene	77.4	115000	ug/kg	260	U	240	U	280	U	610	U	710	U	210	U
Indeno(1,2,3-cd)pyrene	17	382000	ug/kg	210	J	240	U	280	U	230	J	390	J	210	U
Naphthalene	176	382000	ug/kg	260	U	240	U	280	U	610	U	710	U	210	U
Phenanthrene	NL	NL	ug/kg	380		240	U	280	U	520	J	800		210	U
Pyrene	195	17900000	ug/kg	610		240	U	280	U	620		1100		210	U
PAHs by SIM															
2-Methylnaphthalene	20.2	2390000	ug/kg	17		4.7	U	5.4	U	14		15		17	
Acenaphthene	6.7	35900000	ug/kg	13		4.7	U	5.4	U	19		25		1.4	J
Acenaphthylene	5.9	NL	ug/kg	44		4.7	U	4	J	77		120		4.1	U
Anthracene	57.2	179000000	ug/kg	69		0.78	J	7.1		110		170		4.1	U
Benzo(a)anthracene	108	113000	ug/kg	390		3.8	J	21		340		610		15	
Benzo(a)pyrene	150	11500	ug/kg	430	J	4.3	J	18		370		650		4.1	U
Benzo(b)fluoranthene	NL	115000	ug/kg	620	J	8.2		25		480		840		11	
Benzo(g,h,i)perylene	170	NL	ug/kg	290		4.3	J	9.4		160		390		2.6	J
Benzo(k)fluoranthene	240	1150000	ug/kg	180		4.7	U	7.6		140		220		4.1	U
Chrysene	166	11500000	ug/kg	450	J	8.3		20		350		600		4.1	U
Dibenzo(a,h)anthracene	33	11500	ug/kg	56		4.7	U	3	J	50		73		4.1	U
Fluoranthene	423	23900000	ug/kg	950	J	8.3		46		860		1500	J	7.2	
Fluorene	77.4	23900000	ug/kg	24		4.7	U	0.97	J	40		59		6.9	
Indeno(1,2,3-cd)pyrene	17	115000	ug/kg	350		4.4	J	12		270		480		4.1	U
Naphthalene	176	382000	ug/kg	12		4.7	U	5.4	U	19		20		2.1	J
Pentachlorophenol	504	102000	ug/kg	2.4	J	9.6	U	11	U	24	U	28	U	8.4	U
Phenanthrene	NL	NL	ug/kg	410		5.7		22		440		710		30	
Pyrene	195	17900000	ug/kg	540	J	6.3		28		480		840		6.2	

Notes:

Results compared to EPA BTAG screening value for freshwater sediment (EPA, 2006) and to EPA RML for residential soil (1E-04 risk level for carcinogens a hazard quotient of 10 for non carcinogens) (EPA, 2018)

ug/kg = microgram per kilogram

Red value indicates exceedance of EPA BTAG screening value

BTAG = Biological Technical Assistance Group

CLP = Contract Laboratory Program

J = Estimated quantity

NL = No listed value

RML = Removal Management Level

Q = Qualifier

U = Not detected

Table 19
Shaffer Equipment/Arbuckle Creek Area Site
Expanded Site Inspection
June 2018 SVOCs and PAHs in Sediment Samples

			Station:	SD-84		SD-85		SD-86		SD-87		SD-88		SD-90	
			Field Sample ID:	SEC-SD-84		SEC-SD-85		SEC-SD-86		SEC-SD-87		SEC-SD-88		SEC-SD-90	
			Date:	6/27/2018		6/27/2018		6/27/2018		6/28/2018		6/27/2018		6/26/2018	
			Lab Sample ID:	COAK9		COAL0		COAL1		COAL2		COAL3		COAL5	
SVOCs	BTAG	RML	Units:	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
2-Methylnaphthalene	20.2	2390000	ug/kg	250	U	520	U	140	J	230	U	190	U	610	U
3-Nitroaniline	NL	NL	ug/kg	480	U	1000	U	570	U	440	U	380	U	1200	U
4-Methylphenol	670	63200000	ug/kg	480	U	1000	U	480	J	440	U	380	U	1200	U
Acenaphthene	6.7	35900000	ug/kg	250	U	520	U	350		140	J	190	U	610	U
Acenaphthylene	5.9	NL	ug/kg	250	U	520	U	3500		160	J	72	J	610	U
Anthracene	57.2	179000000	ug/kg	250	U	520	U	3900		180	J	80	J	610	U
Benzo(a)anthracene	108	113000	ug/kg	250	U	520	U	11000		580		240		610	U
Benzo(a)pyrene	150	11500	ug/kg	250	U	520	U	9600		580		210		610	U
Benzo(b)fluoranthene	NL	115000	ug/kg	250	U	520	U	14000		1100		320		610	U
Benzo(g,h,i)perylene	170	NL	ug/kg	250	U	520	U	4600		300		100	J	610	U
Benzo(k)fluoranthene	240	1150000	ug/kg	250	U	520	U	5100		280		97	J	610	U
Bis(2-ethylhexyl)phthalate	180	3880000	ug/kg	250	U	520	U	290	U	230	U	190	U	610	U
Carbazole	NL	NL	ug/kg	480	U	1000	U	460	J	440	U	380	U	1200	U
Chrysene	166	11500000	ug/kg	250	U	520	U	9900		630		220		610	U
Dibenzo(a,h)anthracene	33	11500	ug/kg	250	U	520	U	1400		85	J	190	U	610	U
Dibenzofuran	415	23900000	ug/kg	250	U	520	U	490		67	J	190	U	610	U
Fluoranthene	423	23900000	ug/kg	480	U	1000	U	26000		1500		530		1200	U
Fluorene	77.4	115000	ug/kg	250	U	520	U	1100		110	J	190	U	610	U
Indeno(1,2,3-cd)pyrene	17	382000	ug/kg	250	U	520	U	5300		340		120	J	610	U
Naphthalene	176	382000	ug/kg	250	U	520	U	150	J	230	U	190	U	610	U
Phenanthrene	NL	NL	ug/kg	250	U	520	U	13000		410		240		610	U
Pyrene	195	17900000	ug/kg	250	U	520	U	16000		1000		340		610	U
PAHs by SIM															
2-Methylnaphthalene	20.2	2390000	ug/kg	2.1	J	4.3	J	--		41		3.6	J	12	U
Acenaphthene	6.7	35900000	ug/kg	0.52	J	2.4	J	--		130		5.7		12	U
Acenaphthylene	5.9	NL	ug/kg	4.8	U	7.1	J	--		170		83		2.6	J
Anthracene	57.2	179000000	ug/kg	3.1	J	8.7	J	--		200		87		4.1	J
Benzo(a)anthracene	108	113000	ug/kg	12		33		--		600	J	240		21	
Benzo(a)pyrene	150	11500	ug/kg	10		32		--		610	J	210		8.3	J
Benzo(b)fluoranthene	NL	115000	ug/kg	18		59		--		910	J	280		18	
Benzo(g,h,i)perylene	170	NL	ug/kg	7		31		--		380	J	110		12	U
Benzo(k)fluoranthene	240	1150000	ug/kg	4.8	U	16		--		300		94		12	U
Chrysene	166	11500000	ug/kg	18		48		--		590	J	200		17	
Dibenzo(a,h)anthracene	33	11500	ug/kg	4.8	U	8.1	J	--		100		4.2		12	U
Fluoranthene	423	23900000	ug/kg	25		73		--		1200	J	480	J	160	
Fluorene	77.4	23900000	ug/kg	4.8	U	3.2	J	--		120		21		12	U
Indeno(1,2,3-cd)pyrene	17	115000	ug/kg	7.2		34		--		470	J	130		12	U
Naphthalene	176	382000	ug/kg	1.1	J	3.4	J	--		50		3.1	J	12	U
Pentachlorophenol	504	102000	ug/kg	9.8	U	21	U	--		4.8	J	0.9	J	24	U
Phenanthrene	NL	NL	ug/kg	16		41		--		370	J	210		20	
Pyrene	195	17900000	ug/kg	16		51		--		850	J	280		18	

Notes:

Results compared to EPA BTAG screening value for freshwater sediment (EPA, 2006) and to EPA RML for residential soil (1E-04 risk level for carcinogens a hazard quotient of 10 for non carcinogens) (EPA, 2018)

ug/kg = microgram per kilogram

Red value indicates exceedance of EPA BTAG screening value

BTAG = Biological Technical Assistance Group

CLP = Contract Laboratory Program

J = Estimated quantity

NL = No listed value

RML = Removal Management Level

Q = Qualifier

U = Not detected

Table 19
Shaffer Equipment/Arbuckle Creek Area Site
Expanded Site Inspection
June 2018 SVOCs and PAHs in Sediment Samples

SVOCs	BTAG RML		Station:	SD-91		SD-92		SD-93		SD-95		SD-96		SD-97		SD-98		SD-99	
			Field Sample ID:	SEC-SD-91		SEC-SD-92		SEC-SD-93		SEC-SD-95		SEC-SD-96		SEC-SD-97		SEC-SD-98		SEC-SD-99	
			Date:	6/26/2018		6/27/2018		6/27/2018		6/27/2018		6/26/2018		6/26/2018		6/26/2018		6/27/2018	
			Lab Sample ID:	COAL6		COAL7		COAL8		COAM0		COAM1		COAM2		COAS5		COAS8	
			Units:	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
2-Methylnaphthalene	20.2	2390000	ug/kg	460	U	330	U	460	U	220	U	220	U	240	U	240	U	250	U
3-Nitroaniline	NL	NL	ug/kg	900	U	640	U	250	J	420	U	440	U	470	U	460	U	490	U
4-Methylphenol	670	63200000	ug/kg	900	U	640	U	1700		420	U	440	U	470	U	460	U	490	U
Acenaphthene	6.7	35900000	ug/kg	460	U	330	U	460	U	220	U	220	U	240	U	240	U	250	U
Acenaphthylene	5.9	NL	ug/kg	460	U	330	U	460	U	220	U	220	U	240	U	240	U	250	U
Anthracene	57.2	179000000	ug/kg	460	U	330	U	460	U	220	U	220	U	240	U	240	U	250	U
Benzo(a)anthracene	108	113000	ug/kg	460	U	120	J	460	U	78	J	220	U	73	J	240	U	250	U
Benzo(a)pyrene	150	11500	ug/kg	460	U	330	U	460	U	66	J	220	U	240	U	240	U	250	U
Benzo(b)fluoranthene	NL	115000	ug/kg	460	U	160	J	240	J	120	J	110	J	190	J	240	U	250	U
Benzo(g,h,i)perylene	170	NL	ug/kg	460	U	330	U	460	U	220	U	220	U	240	U	240	U	250	U
Benzo(k)fluoranthene	240	1150000	ug/kg	460	U	330	U	460	U	220	U	220	U	240	U	240	U	250	U
Bis(2-ethylhexyl)phthalate	180	3880000	ug/kg	460	U	330	U	240	J	220	U	220	U	240	U	2200		250	U
Carbazole	NL	NL	ug/kg	900	U	640	U	900	U	420	U	440	U	470	U	460	U	490	U
Chrysene	166	11500000	ug/kg	460	U	140	J	150	J	130	J	100	J	210	J	240	U	250	U
Dibenzo(a,h)anthracene	33	11500	ug/kg	460	U	330	U	460	U	220	U	220	U	240	U	240	U	250	U
Dibenzofuran	415	23900000	ug/kg	460	U	330	U	460	U	220	U	220	U	240	U	240	U	250	U
Fluoranthene	423	23900000	ug/kg	900	U	240	J	210	J	190	J	120	J	370	J	77	J	490	U
Fluorene	77.4	115000	ug/kg	460	U	330	U	180	J	220	U	220	U	240	U	240	U	250	U
Indeno(1,2,3-cd)pyrene	17	382000	ug/kg	460	U	330	U	460	U	220	U	220	U	240	U	240	U	250	U
Naphthalene	176	382000	ug/kg	460	U	330	U	460	U	220	U	220	U	240	U	240	U	250	U
Phenanthrene	NL	NL	ug/kg	170	J	190	J	460	U	170	J	130	J	120	J	94	J	250	U
Pyrene	195	17900000	ug/kg	460	U	170	J	160	J	110	J	90	J	260		79	J	250	U
PAHs by SIM																			
2-Methylnaphthalene	20.2	2390000	ug/kg	23		31		28		37		26		24		17		4.9	U
Acenaphthene	6.7	35900000	ug/kg	9	U	3.5	J	4.5	J	5.6		4.4	U	4.7	U	5.5		4.9	U
Acenaphthylene	5.9	NL	ug/kg	6.8	J	39		37		24		7.5		7.9		4.6	U	4.9	U
Anthracene	57.2	179000000	ug/kg	10		45		37		26		10		15		14		0.59	J
Benzo(a)anthracene	108	113000	ug/kg	46		120		120		81		52		75		44		4.9	U
Benzo(a)pyrene	150	11500	ug/kg	38		98		130		70		56		60		38		4.9	U
Benzo(b)fluoranthene	NL	115000	ug/kg	70		140		180		100		100		190		52		4.9	U
Benzo(g,h,i)perylene	170	NL	ug/kg	16		49		75		36		41		33		11		4.9	U
Benzo(k)fluoranthene	240	1150000	ug/kg	16		45		54		31		26		49		14		4.9	U
Chrysene	166	11500000	ug/kg	110		130		140		120		110		240		63		4.9	U
Dibenzo(a,h)anthracene	33	11500	ug/kg	7.1	J	16		22		14		14		11		5.3		4.9	U
Fluoranthene	423	23900000	ug/kg	97		240		190		170		120		410		76		4.9	U
Fluorene	77.4	23900000	ug/kg	29		7.3		9	U	6.3		4.4	U	4.7	U	17		3	J
Indeno(1,2,3-cd)pyrene	17	115000	ug/kg	19		63		90		42		45		40		13		4.9	U
Naphthalene	176	382000	ug/kg	15		38		17		10		14		17		8		4.9	U
Pentachlorophenol	504	102000	ug/kg	18	U	13	U	2.1	J	8.6	U	8.8	U	1.1	J	1.2	J	9.9	U
Phenanthrene	NL	NL	ug/kg	150		170		91		150		130		120		83		4.9	U
Pyrene	195	17900000	ug/kg	65		130		130		93		85		250		56		2.2	J

Notes:

Results compared to EPA BTAG screening value for freshwater sediment (EPA, 2006) and to EPA RML for residential soil (1E-04 risk level for carcinogens a hazard quotient of 10 for non carcinogens) (EPA, 2018)

ug/kg = microgram per kilogram

Red value indicates exceedance of EPA BTAG screening value

BTAG = Biological Technical Assistance Group

CLP = Contract Laboratory Program

J = Estimated quantity

NL = No listed value

RML = Removal Management Level

Q = Qualifier

U = Not detected

Table 20
Shaffer Equipment/Arbuckle Creek Area Site
Expanded Site Inspection
June 2018 Inorganics in Sediment Samples

			Station:	SD-100		SD-101		SD-102		SD-103		SD-104		SD-105	
			Field Sample ID:	SEC-SD-100		SEC-SD-101		SEC-SD-102		SEC-SD-103		SEC-SD-104		SEC-SD-105	
			Date:	6/27/2018		6/27/2018		6/27/2018		6/28/2018		6/28/2018		6/28/2018	
			Lab Sample ID:	MC0AS9		MC0AT2		MC0AT3		MC0AT6		MC0AT7		MC0AT8	
	BTAG	RML	Units:	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Aluminum	NL	774000	mg/kg	5020		5160		5830		3520		2950		902	
Arsenic	9.8	67.7	mg/kg	6.2		3.3		3.6		3.2		2.9		3	
Barium	NL	153000	mg/kg	99.2		47		56.3		33		58.4		18.9	J
Beryllium	NL	1560	mg/kg	0.98		1.7		0.65		1.5		0.63		1	
Cadmium	0.99	711	mg/kg	1.2		0.26	J	0.52	U	0.25	J	0.59	U	0.56	U
Calcium	NL	NL	mg/kg	3180		5280		1370		917		649		624	
Chromium	43.4	1170000	mg/kg	10.4		7.9		10.3		8.6		6.2		5.3	
Cobalt	50	234	mg/kg	20.5		26.2		11.2		9.8		8.9		2.8	J
Copper	31.6	31300	mg/kg	51.6		36.6		17.2		12		8.4		12.6	
Iron	20000	548000	mg/kg	28600		10500		19100		19500		13800		4720	
Lead	35.8	400	mg/kg	62.3		19.5		11.4		10.5		13.5		7.3	
Magnesium	NL	NL	mg/kg	882		1560		1110		769		489	J	200	J
Manganese	460	18300	mg/kg	688		504		307		187		249		59	
Nickel	22.7	15500	mg/kg	45		53.4		23.6		36.8		16.2		6.8	
Potassium	NL	NL	mg/kg	891		939		990		560	J	408	J	207	J
Selenium	2	3910	mg/kg	5.3	U	5.4	U	3.6	U	4.4	U	4.2	U	3.9	U
Silver	1	3910	mg/kg	1.5	U	1.6	U	1	U	1.2	U	1.2	U	1.1	U
Sodium	NL	NL	mg/kg	754	U	777	U	519	U	623	U	593	U	560	U
Thallium	NL	7.82	mg/kg	1.7	J	1.1	J	0.87	J	3.1	U	3	U	2.8	U
Vanadium	NL	3930	mg/kg	7.8		7	J	9.4		5.8	J	6.1		13.1	
Zinc	121	235000	mg/kg	594		109		55.3		88.6		41.6		17.9	

Notes:

Results compared to EPA BTAG screening value for freshwater sediment (EPA, 2006) and to EPA RML for residential soil (1E-04 risk level for

mg/kg = milligram per kilogram

Red value indicates exceedance of EPA BTAG screening value

BTAG = Biological Technical Assistance Group

CLP = Contract Laboratory Program

J = Estimated quantity

NL = No Listed value

RML = Removal Management Level

Q = Qualifier

U = Not detected

Table 20
Shaffer Equipment/Arbuckle Creek Area Site
Expanded Site Inspection
June 2018 Inorganics in Sediment Samples

			Station:	SD-106		SD-79		SD-80		SD-81		SD-82		SD-83	
			Field Sample ID:	SEC-SD-106		SEC-SD-79		SEC-SD-80		SEC-SD-81		SEC-SD-82		SEC-SD-83	
			Date:	6/28/2018		6/27/2018		6/27/2018		6/26/2018		6/26/2018		6/27/2018	
			Lab Sample ID:	MC0AW1		MC0AK4		MC0AK5		MC0AK6		MC0AK7		MC0AK8	
	BTAG	RML	Units:	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Aluminum	NL	774000	mg/kg	3570		3900		4140		2700	J	1940	J	5170	
Arsenic	9.8	67.7	mg/kg	7.1		3.7		3.4		8.3		2.4		3.4	
Barium	NL	153000	mg/kg	55.6		51.6		39.7		66		39.9		49.7	
Beryllium	NL	1560	mg/kg	0.58	J	0.51	J	0.35	J	0.42	J	0.25	J	0.85	
Cadmium	0.99	711	mg/kg	0.25	J	0.2	J	0.66	U	0.34	J	0.24	J	0.15	J
Calcium	NL	NL	mg/kg	76300		1400		1190		1820		2580		839	
Chromium	43.4	1170000	mg/kg	10		6.2		5.8		5.7		3.9		13.9	
Cobalt	50	234	mg/kg	7.3		8.4		5.1	J	3.6	J	3	J	9.6	
Copper	31.6	31300	mg/kg	13.8		5.8		6		20.6		15.4		16.1	
Iron	20000	548000	mg/kg	12400		10600		11500		17600		4510		18000	
Lead	35.8	400	mg/kg	19.8		12.2		8.6		22.3		14.9		19.8	
Magnesium	NL	NL	mg/kg	7740		325	J	340	J	331	J	306	J	1520	
Manganese	460	18300	mg/kg	239		403		270		124		76.1		191	
Nickel	22.7	15500	mg/kg	14.1		8.3		5	J	10.2		9.8		22.4	
Potassium	NL	NL	mg/kg	739		419	J	511	J	509	J	315	J	1440	
Selenium	2	3910	mg/kg	4.2	U	5.3	U	4.6	U	6.2	U	5.2	U	3.9	U
Silver	1	3910	mg/kg	1.2	U	1.5	U	1.3	U	1.8	U	1.5	U	1.1	U
Sodium	NL	NL	mg/kg	601	U	761	U	663	U	885	U	744	U	558	U
Thallium	NL	7.82	mg/kg	3	U	3.8	U	3.3	U	4.4	U	3.7	U	2.8	U
Vanadium	NL	3930	mg/kg	7.9		9.1		8.9		4.3	J	4.4	J	15.5	
Zinc	121	235000	mg/kg	72.2		47.3		27.5		64.1		49		79.1	

Notes:

Results compared to EPA BTAG screening value for freshwater sediment (EPA, 2006) and to EPA RML for residential soil (1E-04 risk level for

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Table 20
Shaffer Equipment/Arbuckle Creek Area Site
Expanded Site Inspection
June 2018 Inorganics in Sediment Samples

			Station:	SD-84		SD-85		SD-86		SD-87		SD-88		SD-90	
			Field												
			Sample ID:	SEC-SD-84		SEC-SD-85		SEC-SD-86		SEC-SD-87		SEC-SD-88		SEC-SD-90	
			Date:	6/27/2018		6/27/2018		6/27/2018		6/28/2018		6/27/2018		6/26/2018	
			Lab												
			Sample ID:	MCOAK9		MCOAL0		MCOAL1		MCOAL2		MCOAL3		MCOAL5	
	BTAG	RML	Units:	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Aluminum	NL	774000	mg/kg	4780		2960		4350		3200		5270		2180	J
Arsenic	9.8	67.7	mg/kg	7.2		7.1		7.5		5		4.8		1.8	J
Barium	NL	153000	mg/kg	84.8		85.6		93.6		39.8		49		32.8	J
Beryllium	NL	1560	mg/kg	0.69	J	0.53	J	1.1		0.5	J	0.58		1.9	
Cadmium	0.99	711	mg/kg	0.37	J	0.24	J	0.82		0.56	U	0.18	J	0.53	J
Calcium	NL	NL	mg/kg	5660		2180		5610		704		261	J	6520	
Chromium	43.4	1170000	mg/kg	11.7		7		15.8		6.7		10.8		3.3	
Cobalt	50	234	mg/kg	9.3		14.2		20.4		6.4		9.1		24.7	
Copper	31.6	31300	mg/kg	19.9		25.5		56.3		23.2		9.7		12.2	
Iron	20000	548000	mg/kg	21500		70500		33300		14800		20400		4120	
Lead	35.8	400	mg/kg	46		20.3		66.8		14.3		17.9		19.4	
Magnesium	NL	NL	mg/kg	663	J	411	J	938		973		348	J	1280	
Manganese	460	18300	mg/kg	391		71.7		1070		145		325		2970	
Nickel	22.7	15500	mg/kg	10.3		33.2		46		10.5		9.5		115	
Potassium	NL	NL	mg/kg	811		698	J	709	J	560		480	J	689	J
Selenium	2	3910	mg/kg	5	U	6	U	5.1	U	3.9	U	3.4	U	2.6	J
Silver	1	3910	mg/kg	1.4	U	1.7	U	1.4	U	1.1	U	0.97	U	0.5	J
Sodium	NL	NL	mg/kg	719	U	862	U	723	U	555	U	485	U	1150	U
Thallium	NL	7.82	mg/kg	1.1	J	4.3	U	2.6	J	2.8	U	1.1	J	6.2	
Vanadium	NL	3930	Removal	10.4		8.6	U	5.5	J	5.6		8.2		4.2	J
Zinc	121	235000	mg/kg	109		38.9		404		41.4		40		108	

Notes:

Results compared to EPA BTAG screening value for freshwater sediment (EPA, 2006) and to EPA RML for residential soil (1E-04 risk level for

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J = Estimated quantity

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Table 20
Shaffer Equipment/Arbuckle Creek Area Site
Expanded Site Inspection
June 2018 Inorganics in Sediment Samples

			Station:	SD-91		SD-92		SD-93		SD-95		SD-96		SD-97		SD-98		SD-99	
			Field Sample ID:	SEC-SD-91		SEC-SD-92		SEC-SD-93		SEC-SD-95		SEC-SD-96		SEC-SD-97		SEC-SD-98		SEC-SD-99	
			Date:	6/26/2018		6/27/2018		6/27/2018		6/27/2018		6/26/2018		6/26/2018		6/26/2018		6/27/2018	
			Lab Sample ID:	MC0AL6		MC0AL7		MC0AL8		MC0AM0		MC0AM1		MC0AM2		MC0AS5		MC0AS8	
	BTAG	RML	Units:	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Aluminum	NL	774000	mg/kg	2380	J	8420		5650		1850		5970	J	8020	J	2420	J	4930	
Arsenic	9.8	67.7	mg/kg	2.4		9.1		4.7		8.6		11		11.6		2.8		14.8	
Barium	NL	153000	mg/kg	26	J	78.8		125		26.5		75.1		109		32.2		36.8	
Beryllium	NL	1560	mg/kg	0.72	J	4.2		0.71	J	0.95		1.5		1.9		0.98		0.91	
Cadmium	0.99	711	mg/kg	1.1	U	2		0.84	J	0.17	J	0.36	J	0.68		0.29	J	0.38	J
Calcium	NL	NL	mg/kg	1960		2740		4130		699		3100		2120		2090		508	J
Chromium	43.4	1170000	mg/kg	4		13.6		18.7		6		12.3		15.2		5.2		36	
Cobalt	50	234	mg/kg	7.3	J	100		7.2	J	3	J	9.7		45.3		11.9		5	J
Copper	31.6	31300	mg/kg	9.3		40.4		33.1		16.7		35.2		44.8		57.2		5.9	
Iron	20000	548000	mg/kg	5250		11100		14000		6030		14800		23000		7860		104000	
Lead	35.8	400	mg/kg	7.6		17.1		74.2		7.3		59.7		112		84.8		34.2	
Magnesium	NL	NL	mg/kg	663	J	942		1030	J	720		1340		1370		576	J	242	J
Manganese	460	18300	mg/kg	126		14100		161		38		363		1770		258		233	
Nickel	22.7	15500	mg/kg	18.9		287		18.2		12		33.6		56.5		30.3		10.6	
Potassium	NL	NL	mg/kg	529	J	758	J	859	J	483	J	1270		1340		393	J	766	
Selenium	2	3910	mg/kg	7.7	U	10		8.7	U	4.2	U	4	U	4.3	U	4.8	U	3.9	U
Silver	1	3910	mg/kg	2.2	U	0.27	J	2.5	U	1.2	U	1.2	U	0.22	J	1.4	U	1.1	U
Sodium	NL	NL	mg/kg	1090	U	875	U	1250	U	244	J	576	U	612	U	691	U	555	U
Thallium	NL	7.82	mg/kg	5.5	U	1.3	J	6.2	U	3	U	0.92	J	4.1		3.5	U	1.2	J
Vanadium	NL	3930	mg/kg	4.6	J	6.8	J	10.8	J	11		10.7		13.4		6	J	33.6	
Zinc	121	235000	mg/kg	40.6		500		317		27.4		108		293		60		35.5	

Notes:

Results compared to EPA BTAG screening value for freshwater sediment (EPA, 2006) and to EPA RML for residential soil (1E-04 risk level for

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U = Not detected

APPENDIX A

JUNE 2018 SAMPLE LOCATION SUMMARY TABLE

Shaffer Equipment/Arbuckle Creek Area Site
June 2018 Sample Location Summary Table

Sample Identifier	Sample Matrix	Sampling Location Description	Analyses
SEC-SD-71	Sediment	Background 1; Arbuckle Creek upstream of Shaffer Site; collected from west bank at water line approx. 20 feet south of bridge; light to medium brown; medium grade sand with trace amounts of rock/pebbles	PCBs
SEC-SD-72	Sediment	Background 2; Arbuckle Creek upstream of Shaffer Site; collected from east bank below water line adjacent to bridge; brown medium grade sand with 20% cobbles 20% silt; no odor	PCBs
SEC-SD-73	Sediment	AC-1; Arbuckle Creek adjacent/downstream from Site; collected from west bank at the water line; medium brown sand with 30% silt and 20% pebbles; no odor	PCBs
SEC-SD-74	Sediment	AC-2; Arbuckle Creek adjacent/downstream from Site; collected from east bank at the water line; medium brown; medium grade, 50% sand, 30% silt, 20% pebbles and small rocks; no odor	PCBs
SEC-SD-75	Sediment	AC-3; Arbuckle Creek adjacent/downstream from Site; collected from east bank at the water line; medium brown color; no odor; some organics present, medium grade sand with some silt and pebbles	PCBs
SEC-SD-76	Sediment	AC-4; Arbuckle Creek adjacent/downstream from Site; collected from west bank slightly above water line; dark brown; 60% sand, 40% silt, medium pebbles; no odor	PCBs
SEC-SD-77	Sediment	AC-5; Arbuckle Creek adjacent/downstream from Site; collected from east bank; dark brown, mixed with pebbles/sand/silt and small pieces of brick	PCBs
SEC-SD-78	Sediment	Duplicate of SEC-SD-77	PCBs
SEC-SD-79	Sediment	Portal 1 Runoff creek; collected from small drainage creek; wet, brown silt	PCBs, TAL Metals, TAL PAHs (SIM), Pesticides, SVOCs
SEC-SD-80	Sediment	Portal 1 Runoff creek; collected from small drainage creek; wet, brown silt	PCBs, TAL Metals, TAL PAHs (SIM), Pesticides, SVOCs
SEC-SD-81	Sediment	Mine 2 Outfall East; collected approx. 25 feet from the Mine 2 Outfall Pipe from the center of drainage channel; saturated; natural organic odor; loamy soil with silt; vegetative organics present; slight sheen	PCBs, TAL Metals, TAL PAHs (SIM), Pesticides, SVOCs
SEC-SD-82	Sediment	Mine 2 Outfall West; collected from west bank of drainage channel; loamy/silty soil with vegetative organic	PCBs, TAL Metals, TAL PAHs (SIM), Pesticides, SVOCs
SEC-SD-83	Sediment	Portal 3 Mine Drainage; collected from portal air vent; wet, dark brown sandy clay	PCBs, TAL Metals, TAL PAHs (SIM), Pesticides, SVOCs
SEC-SD-84	Sediment	Portal 3 Mine Drainage; collected from portal drainage ditch; wet, dark brown sandy clay	PCBs, TAL Metals, TAL PAHs (SIM), Pesticides, SVOCs
SEC-SD-85	Sediment	Portal 3 Sediment; collected from portal drainage ditch; wet, red to dark brown silt with clay	PCBs, TAL Metals, TAL PAHs (SIM), Pesticides, SVOCs
SEC-SD-86	Sediment	Sheen Location; collected where sheen was present; wet, black clay	PCBs, TAL Metals, TAL PAHs (SIM), Pesticides, SVOCs
SEC-SD-87	Sediment	Duplicate of SEC-SD-105	PCBs, TAL Metals, TAL PAHs (SIM), Pesticides, SVOCs
SEC-SD-88	Sediment	Barrel Storage; collected within 200 feet of residence in drainage area; brown and tan silt	PCBs, TAL Metals, TAL PAHs (SIM), Pesticides, SVOCs
SEC-SD-90	Sediment	Mine Drainage; collected from the slope of the hill directly below the air vent; medium brown; wet silty soil with large amount of vegetation and organic debris	PCBs, TAL Metals, TAL PAHs (SIM), Pesticides, SVOCs
SEC-SD-91	Sediment	Mine Drainage; collected from runoff area at bottom of hill; dark black loamy soil with large amount of vegetation and organic debris; decaying odor; sheen present	PCBs, TAL Metals, TAL PAHs (SIM), Pesticides, SVOCs
SEC-SD-92	Sediment	Res-1; collected from dry creek bed of residence; light black color; 60% medium sand, 20% silt, 10% pebbles, 10% vegetative debris; no odor	PCBs, TAL Metals, TAL PAHs (SIM), Pesticides, SVOCs
SEC-SD-93	Sediment	Mary Lane; collected outside the fence of residence in sheen area approx 30 feet from home; dark brown color; 60% silt, 20% clay, 20% vegetative debris; slight organic odor	PCBs, TAL Metals, TAL PAHs (SIM), Pesticides, SVOCs
SEC-SD-95	Sediment	Mine Hole; collected from bottom of Mine Hole approx. 20ft deep using ponar dredge; dark black sediment; organic odor; mostly silt and gravel with some coal slag	PCBs, TAL Metals, TAL PAHs (SIM), Pesticides, SVOCs
SEC-SD-96	Sediment	Res-2; within 200 feet of residence; 0-12"; collected from drainage ditch, wet dark brown silt with some gravel	PCBs, TAL Metals, TAL PAHs (SIM), Pesticides, SVOCs

Shaffer Equipment/Arbuckle Creek Area Site
June 2018 Sample Location Summary Table

Sample Identifier	Sample Matrix	Sampling Location Description	Analyses
SEC-SD-97	Sediment	Res-2; within 200 feet of residence; collected from drainage ditch; dark brown clay with some silt; black plastic sheeting present	PCBs, TAL Metals, TAL PAHs (SIM), Pesticides, SVOCs
SEC-SD-98	Sediment	Collected outside of discovered mine portal; saturated; no odor; dark brown to black; 40% sand, 20% loam, 30% silt, 10% other, small pebbles present	PCBs, TAL Metals, TAL PAHs (SIM), Pesticides, SVOCs
SEC-SD-99	Sediment	Portal 3 Sediment; sample collected from drainage ditch; red silt with a lot of gravel; collected within 200 feet of 2 residences	PCBs, TAL Metals, TAL PAHs (SIM), Pesticides, SVOCs
SEC-SD-100	Sediment	Sheen Location; collected where sheen was present; wet, black clay with some sand	PCBs, TAL Metals, TAL PAHs (SIM), Pesticides, SVOCs
SEC-SD-101	Sediment	Access - Powerhouse; wet, brown silt	PCBs, TAL Metals, TAL PAHs (SIM), Pesticides, SVOCs
SEC-SD-102	Sediment	Access - Powerhouse; wet, brown silt with gravel	PCBs, TAL Metals, TAL PAHs (SIM), Pesticides, SVOCs
SEC-SD-103	Sediment	Mine water discharge; sample collected downstream of discharge point, above the water line; brown fine silt with gravel	PCBs, TAL Metals, TAL PAHs (SIM), Pesticides, SVOCs
SEC-SD-104	Sediment	Mine water discharge; sample collected upstream of discharge point; tan colored silt	PCBs, TAL Metals, TAL PAHs (SIM), Pesticides, SVOCs
SEC-SD-105	Sediment	Collected from old rail bed; black sandy silt with black and red gravel	PCBs, TAL Metals, TAL PAHs (SIM), Pesticides, SVOCs
SEC-SD-106	Sediment	Collected from old rail bed; brown silty sand with some gravel	PCBs, TAL Metals, TAL PAHs (SIM), Pesticides, SVOCs
SEC-SS-212	Soil	Res-1; collected approx. 250ft from the residence up the wooded hill; 2 residents; light brown soil with some vegetative debris; no odor	PCBs, TAL Metals, TAL PAHs (SIM), Pesticides, SVOCs
SEC-SS-213	Soil	Res-2; collected in drainage ditch within 200 feet of residence; dark brown clay with some silt	PCBs, TAL Metals, TAL PAHs (SIM), Pesticides, SVOCs
SEC-SS-216	Soil	Res-3; collected within 20 feet of residence; black silty soil	PCBs
SEC-SS-217	Soil	Res-5; collected 15 feet from SW corner on the back of the house; 2 residents; dark brown, 60% silt, 30% clay, 10% vegetative debris; no odor; sample collected in flood plain of Arbuckle Creek	PCBs
SEC-SS-218	Soil	Res-6; collected 20 feet from NE corner of house & 1 foot from creek bed; dark brown soil, 60% clay, 30% loam, 10% vegetative debris; no odor	PCBs
SEC-SS-219	Soil	Res-6; collected 5 feet from SE corner of house; 5 residents; dark brown, 60% clay, 30% silt, 10% vegetative debris; no odor	PCBs
SEC-SS-220	Soil	Res-7; collected from under the house; light brown/gray clay with some silt; slight organic odor	PCBs
SEC-SS-221	Soil	Res-8; collected from under front deck of house where Arbuckle Creek has reached during flooding; dark brown sandy silt with gravel	PCBs, TAL Metals, TAL PAHs (SIM), Pesticides, SVOCs
SEC-SS-222	Soil	Res-9; collected 10 feet from shed in yard; brown, 70% poorly graded silt, 20% loam, 10% organics	PCBs
SEC-SS-223	Soil	Res-10; collected from side yard of home 20 ft. from southeast corner; home is vacant, burned down; brown silty loam with some veg. debris	PCBs
SEC-SS-224	Soil	Post Office; collected from behind the post office 6 inches from the back of the building; brown silt and clay with some gravel and vegetative debris; no odor	PCBs
SEC-SS-225	Soil	Needle eye/Slate dump; 0-6"; poorly sorted light brown clay with some silt and large gravel	PCBs, TAL Metals, TAL PAHs (SIM), Pesticides, SVOCs
SEC-SS-226	Soil	Needle eye/Slate dump; 12-18"; dark brown, poorly sorted soil with some red gravel; black soil layer at 12"	PCBs, TAL Metals, TAL PAHs (SIM), Pesticides, SVOCs
SEC-SS-227	Soil	Needle eye/Slate dump; 0-6"; brown clay with some sand and gravel	PCBs, TAL Metals, TAL PAHs (SIM), Pesticides, SVOCs
SEC-SS-228	Soil	Needle eye/Slate dump; 12-18"; dark brown sandy silt; black layer at 11"	PCBs, TAL Metals, TAL PAHs (SIM), Pesticides, SVOCs
SEC-SS-229	Soil	Needle eye/Slate dump; 0-6"; brown clay with some silt and gravel	PCBs, TAL Metals, TAL PAHs (SIM), Pesticides, SVOCs
SEC-SS-230	Soil	Needle eye/Slate dump; 12-18"; dark brown sandy silt with some small red gravel	PCBs, TAL Metals, TAL PAHs (SIM), Pesticides, SVOCs
SEC-SS-231	Soil	Needle eye/Slate dump; 0-6"; tan and brown silty sand with some clay	PCBs, TAL Metals, TAL PAHs (SIM), Pesticides, SVOCs
SEC-SS-232	Soil	Needle eye/Slate dump; 18-28"; dark brown, poorly sorted silty sand with some gravel	PCBs, TAL Metals, TAL PAHs (SIM), Pesticides, SVOCs

Shaffer Equipment/Arbuckle Creek Area Site
June 2018 Sample Location Summary Table

Sample Identifier	Sample Matrix	Sampling Location Description	Analyses
SEC-SS-233	Soil	Needle eye/Slate dump; 0-6"; well sorted, brown silt clay	PCBs, TAL Metals, TAL PAHs (SIM), Pesticides, SVOCs
SEC-SS-234	Soil	Needle eye/Slate dump; 12-18"; dark brown sandy silt with some gravel	PCBs, TAL Metals, TAL PAHs (SIM), Pesticides, SVOCs
SEC-SS-235	Soil	Needle eye/Slate dump; 0-6"; brown sandy clay with some silt and gravel	PCBs, TAL Metals, TAL PAHs (SIM), Pesticides, SVOCs
SEC-SS-236	Soil	Needle eye/Slate dump; 12-18"; dark brown sandy silt with red and black gravel	PCBs, TAL Metals, TAL PAHs (SIM), Pesticides, SVOCs
SEC-SS-237	Soil	Needle eye/Slate dump; 0-6"; well sorted, brown sandy silt	PCBs, TAL Metals, TAL PAHs (SIM), Pesticides, SVOCs
SEC-SS-238	Soil	Needle eye/Slate dump; 12-18"; dark sandy silt with some gravel	PCBs, TAL Metals, TAL PAHs (SIM), Pesticides, SVOCs
SEC-SS-239	Soil	5 Hump; Soil Cover; 0-6"; dark sandy silt with some gravel	PCBs, TAL Metals, TAL PAHs (SIM), Pesticides, SVOCs
SEC-SS-240	Soil	5 Hump; Mine Dump; 12-18"; brown silt with some gravel	PCBs, TAL Metals, TAL PAHs (SIM), Pesticides, SVOCs
SEC-SS-241	Soil	Duplicate of SEC-SS-240	PCBs, TAL Metals, TAL PAHs (SIM), Pesticides, SVOCs
SEC-SS-242	Soil	UST Discovered; wet, black to dark brown clay	PCBs, TAL Metals, TAL PAHs (SIM), Pesticides, SVOCs
SEC-SS-243	Soil	UST Discovered; black sandy silt with a lot of gravel	PCBs, TAL Metals, TAL PAHs (SIM), Pesticides, SVOCs
SEC-SS-244	Soil	Mine Discharge Pipe; collected from below the discharge pipe; saturated; orange/red/brown color, 60% silt, 20% pebbles, 20% organics; no odor	PCBs, TAL Metals, TAL PAHs (SIM), Pesticides, SVOCs
SEC-SS-245	Soil	Mine Discharge Pipe; collected from above the discharge pipe on mound; liquid on top with slight sheen; no odor; iron coloration, 70% silt, 30% organics; 2 residents live within 200 feet	PCBs, TAL Metals, TAL PAHs (SIM), Pesticides, SVOCs
SEC-SS-246	Soil	Water Tower Access; collected from the backside of water tower; dry; light brown silty soil; vegetative debris present; no odor	PCBs, TAL Metals, TAL PAHs (SIM), Pesticides, SVOCs
SEC-SS-247	Soil	Mary Lane 2; collected outside the fence of residence in sheen area approx. 30 feet from home; saturated; 60% silt, 20% clay, 20% vegetative debris; sheen present; no odor	PCBs, TAL Metals, TAL PAHs (SIM), Pesticides, SVOCs
SEC-SS-248	Soil	Mine Hole; collected around mine hole; dark black soil; 60% silt, 20% gravel, 20% coal slag; no odor	PCBs, TAL Metals, TAL PAHs (SIM), Pesticides, SVOCs
SEC-SS-249	Soil	Duplicate of SEC-SS-248	PCBs, TAL Metals, TAL PAHs (SIM), Pesticides, SVOCs
SEC-SS-250	Soil	Vacant Lot 1; collected approx. 30 feet from southwest corner of building footprint, 5 feet west of pole; black soil; 70% silt, 20% vegetative debris, 10% sand	PCBs, TAL Metals, TAL PAHs (SIM), Pesticides, SVOCs
SEC-SS-251	Soil	Vacant Lot 4; collected 2 feet adjacent to light pole; dark brown-black; 30% fine sand, 40% silt, 30% vegetation; biological sheen present nearby	PCBs, TAL Metals, TAL PAHs (SIM), Pesticides, SVOCs
SEC-SS-252	Soil	Vacant Lot 3; collected 5 feet from the southwest corner of old house; brown; no odor; 70% clay, 20% silt, 10% vegetative debris	PCBs, TAL Metals, TAL PAHs (SIM), Pesticides, SVOCs
SEC-SS-253	Soil	Vacant Lot 2; collected east of the former building footprint; brown soil; 60% silt, 20% fine sand, 20% vegetative debris; no odor	PCBs, TAL Metals, TAL PAHs (SIM), Pesticides, SVOCs
SEC-SS-254	Soil	Res-9; collected from area where water comes up from the ground during rain events; approx. 20 feet from house; brown soil, no odor	PCBs
SEC-SS-255	Soil	Res-9; collected 5 feet from driveway; black soil, 60% silt, 30% medium-grade pebbles, 10% organics; no odor	PCBs
SEC-SS-256	Soil	Res-11; Collected from residence driveway within 200 feet of home; dark brown sandy silt with some gravel	PCBs, TAL Metals, TAL PAHs (SIM), Pesticides, SVOCs
SEC-GW-01	Groundwater	Mine Hole; collected water from hole using poly bailer; clear water; low turbidity; no odor	PCBs, TAL Metals, TAL PAHs (SIM), Pesticides, SVOCs
SEC-GW-02	Groundwater	Duplicate of SEC-GW-01	PCBs, TAL Metals, TAL PAHs (SIM), Pesticides, SVOCs



APPENDIX B

PHOTO DOCUMENTATION LOG

PHOTOGRAPHIC DOCUMENTATION LOG

Shaffer Equipment/Arbuckle Creek Area • Minden, Fayette County, West Virginia
EPA Region III START • Contract No. EP-S3-15-02 • TDD No. W503-17-12-001



PHOTOGRAPH 1: Transect 1

DATE: 12/12/2017

PHOTOGRAPHER: WESTON START



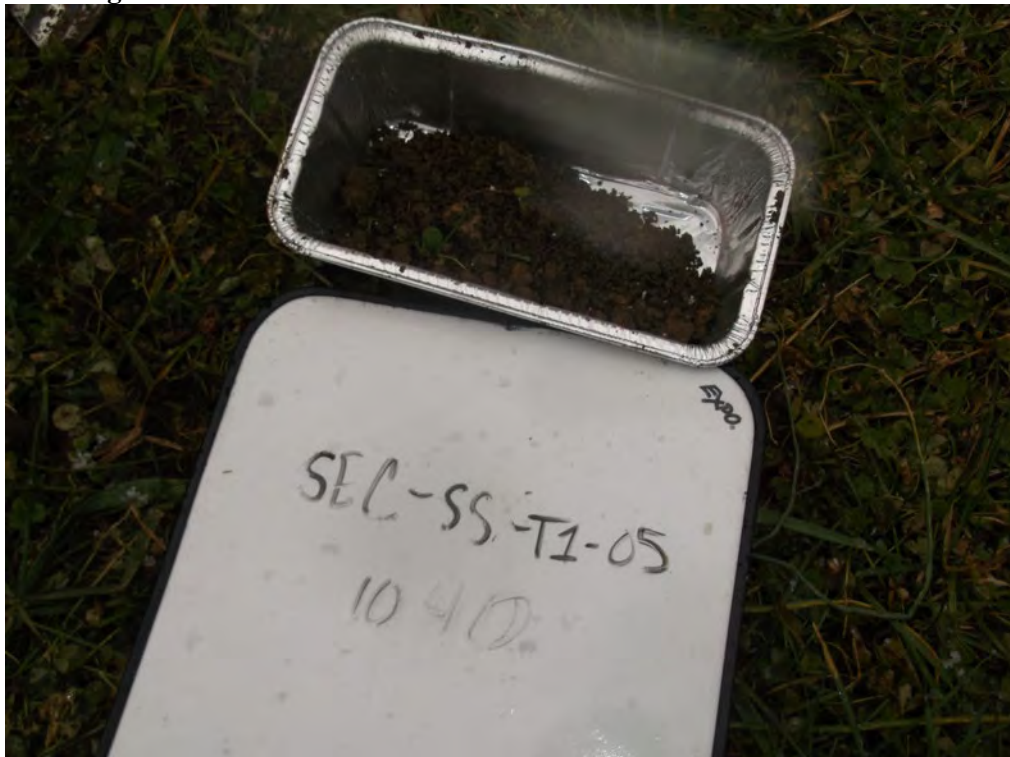
PHOTOGRAPH 2: Soil sample SEC-SS-T1-04 collected from transect 1.

DATE: 12/12/2017

PHOTOGRAPHER: WESTON START

PHOTOGRAPHIC DOCUMENTATION LOG

Shaffer Equipment/Arbuckle Creek Area • Minden, Fayette County, West Virginia
EPA Region III START • Contract No. EP-S3-15-02 • TDD No. W503-17-12-001



PHOTOGRAPH 3: Soil sample SEC-SS-T1-05 collected from transect 1.
DATE: 12/12/2017

PHOTOGRAPHER: WESTON START



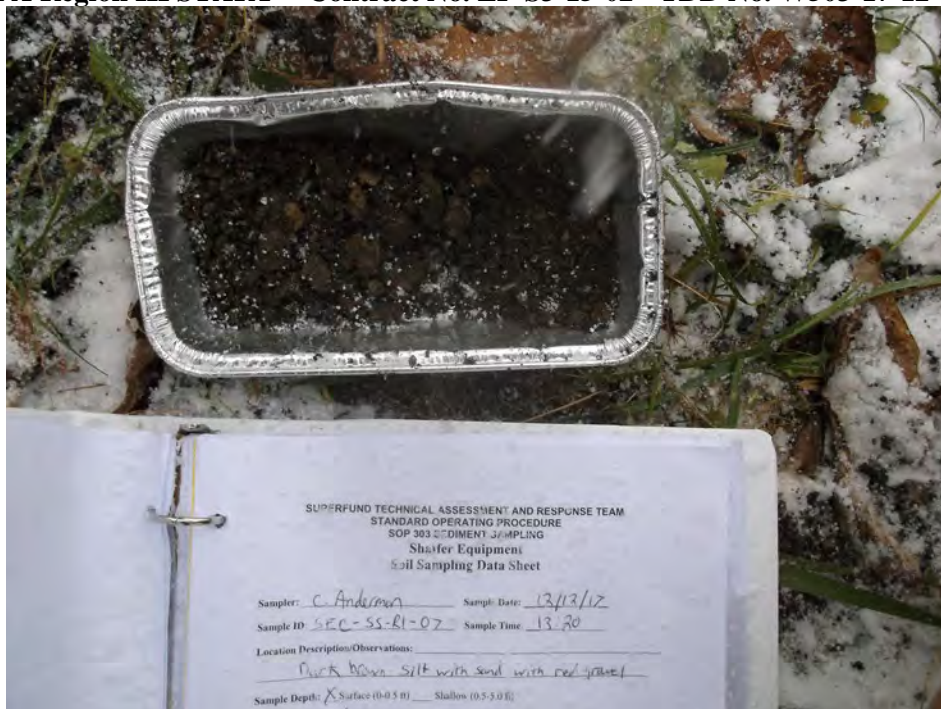
PHOTOGRAPH 4: Soil sample SEC-SS-R1-02 collected from a neighboring resident's property. This is one of 10 soil samples collected from this property.

DATE: 12/12/2017

PHOTOGRAPHER: WESTON START

PHOTOGRAPHIC DOCUMENTATION LOG

Shaffer Equipment/Arbuckle Creek Area • Minden, Fayette County, West Virginia
EPA Region III START • Contract No. EP-S3-15-02 • TDD No. W503-17-12-001



PHOTOGRAPH 5: Soil sample SEC-SS-R1-07 collected from a neighboring resident's property. This is one of 10 soil samples collected from this property.

DATE: 12/12/2017

PHOTOGRAPHER: WESTON START



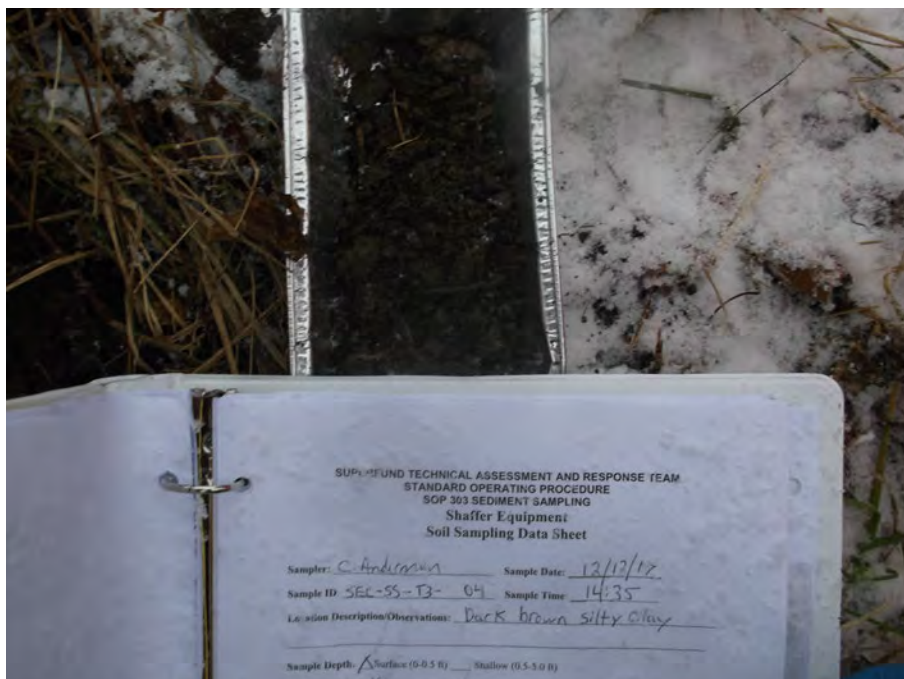
PHOTOGRAPH 6: Transect 3

DATE: 12/12/2017

PHOTOGRAPHER: WESTON START

PHOTOGRAPHIC DOCUMENTATION LOG

Shaffer Equipment/Arbuckle Creek Area • Minden, Fayette County, West Virginia
EPA Region III START • Contract No. EP-S3-15-02 • TDD No. W503-17-12-001



PHOTOGRAPH 7: Soil sample SEC-SS-T3-04 collected from transect 3.
DATE: 12/12/2017

PHOTOGRAPHER: WESTON START

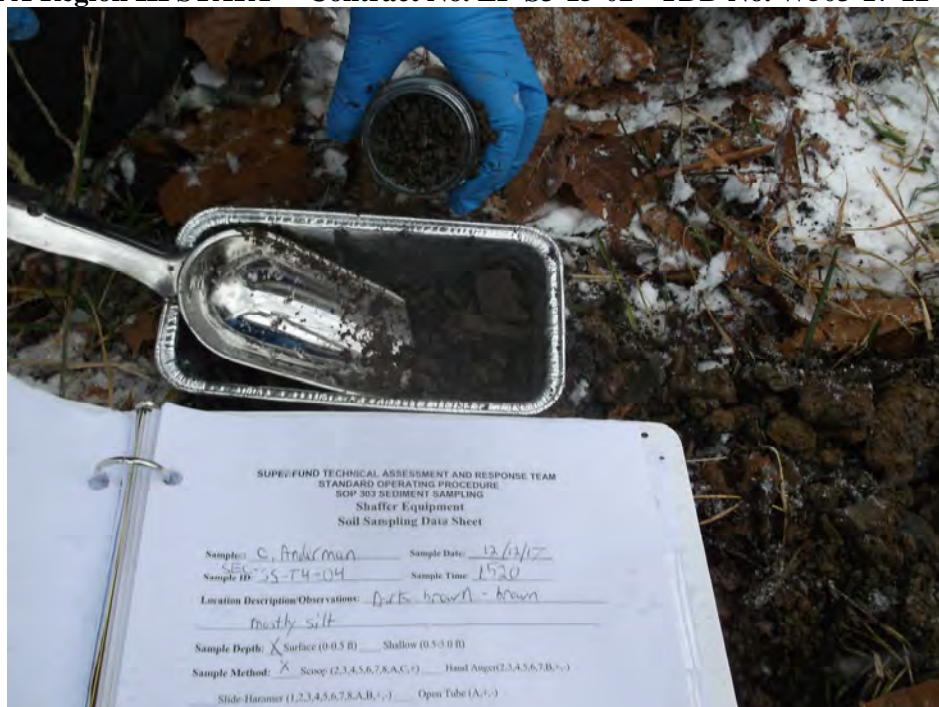


PHOTOGRAPH 8: Soil sample SEC-SS-T3-05 collected from transect 3.
DATE: 12/12/2017

PHOTOGRAPHER: WESTON START

PHOTOGRAPHIC DOCUMENTATION LOG

Shaffer Equipment/Arbuckle Creek Area • Minden, Fayette County, West Virginia
EPA Region III START • Contract No. EP-S3-15-02 • TDD No. W503-17-12-001



PHOTOGRAPH 9: Soil sample SEC-SS-T4-04 collected from transect 4.
DATE: 12/12/2017

PHOTOGRAPHER: WESTON START



PHOTOGRAPH 10: Collecting soil sample SEC-SS-T4-05 collected from transect 4.
DATE: 12/12/2017

PHOTOGRAPHER: WESTON START

PHOTOGRAPHIC DOCUMENTATION LOG

Shaffer Equipment/Arbuckle Creek Area • Minden, Fayette County, West Virginia
EPA Region III START • Contract No. EP-S3-15-02 • TDD No. W503-17-12-001



PHOTOGRAPH 11: Transect 5

DATE: 12/13/2017

PHOTOGRAPHER: WESTON START



PHOTOGRAPH 12: Soil sample SEC-SS-T5-04 collected from transect 5.

DATE: 12/13/2017

PHOTOGRAPHER: WESTON START

PHOTOGRAPHIC DOCUMENTATION LOG

Shaffer Equipment/Arbuckle Creek Area • Minden, Fayette County, West Virginia
EPA Region III START • Contract No. EP-S3-15-02 • TDD No. W503-17-12-001



PHOTOGRAPH 13: Soil sample SEC-SS-T5-05 collected from transect 5.

DATE: 12/13/2017

PHOTOGRAPHER: WESTON START



PHOTOGRAPH 14: Transect 6.

DATE: 12/13/2017

PHOTOGRAPHER: WESTON START

PHOTOGRAPHIC DOCUMENTATION LOG

Shaffer Equipment/Arbuckle Creek Area • Minden, Fayette County, West Virginia
EPA Region III START • Contract No. EP-S3-15-02 • TDD No. W503-17-12-001



PHOTOGRAPH 15: Soil sample SEC-SS-T6-05 collected from transect 6.

DATE: 12/13/2017

PHOTOGRAPHER: WESTON START



PHOTOGRAPH 16: Soil sample SEC-SS-T6-04 collected from transect 6.

DATE: 12/13/2017

PHOTOGRAPHER: WESTON START

PHOTOGRAPHIC DOCUMENTATION LOG

Shaffer Equipment/Arbuckle Creek Area • Minden, Fayette County, West Virginia
EPA Region III START • Contract No. EP-S3-15-02 • TDD No. W503-17-12-001



PHOTOGRAPH 17: Transect 7.

DATE: 12/13/2017

PHOTOGRAPHER: WESTON START



PHOTOGRAPH 18: Soil sample SEC-SS-T7-04 collected from transect 7.

DATE: 12/13/2017

PHOTOGRAPHER: WESTON START

PHOTOGRAPHIC DOCUMENTATION LOG

Shaffer Equipment/Arbuckle Creek Area • Minden, Fayette County, West Virginia
EPA Region III START • Contract No. EP-S3-15-02 • TDD No. W503-17-12-001



PHOTOGRAPH 19: Soil sample SEC-SS-T7-05 collected from transect 7.

DATE: 12/13/2017

PHOTOGRAPHER: WESTON START



PHOTOGRAPH 20: Transect 8

DATE: 12/13/2017

PHOTOGRAPHER: WESTON START

PHOTOGRAPHIC DOCUMENTATION LOG

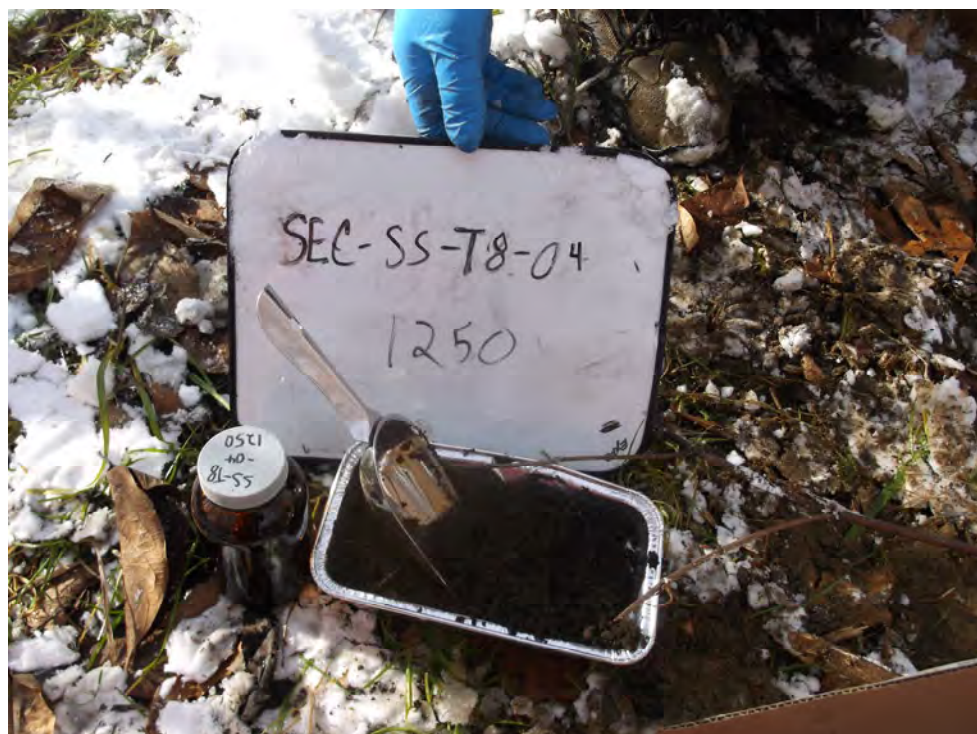
Shaffer Equipment/Arbuckle Creek Area • Minden, Fayette County, West Virginia
EPA Region III START • Contract No. EP-S3-15-02 • TDD No. W503-17-12-001



PHOTOGRAPH 21: Soil sample SEC-SS-T8-05 collected from transect 8.

DATE: 12/13/2017

PHOTOGRAPHER: WESTON START



PHOTOGRAPH 22: Soil sample SEC-SS-T8-04 collected from transect 8.

DATE: 12/13/2017

PHOTOGRAPHER: WESTON START

PHOTOGRAPHIC DOCUMENTATION LOG

Shaffer Equipment/Arbuckle Creek Area • Minden, Fayette County, West Virginia
EPA Region III START • Contract No. EP-S3-15-02 • TDD No. W503-17-12-001



PHOTOGRAPH 23: Soil sample SEC-SS-TL-43 collected where TechLaw has previously sampled.

DATE: 12/13/2017

PHOTOGRAPHER: WESTON START



PHOTOGRAPH 24: Soil sample SEC-SS-R2-01 collected from a neighboring resident.

DATE: 12/13/2017

PHOTOGRAPHER: WESTON START

PHOTOGRAPHIC DOCUMENTATION LOG

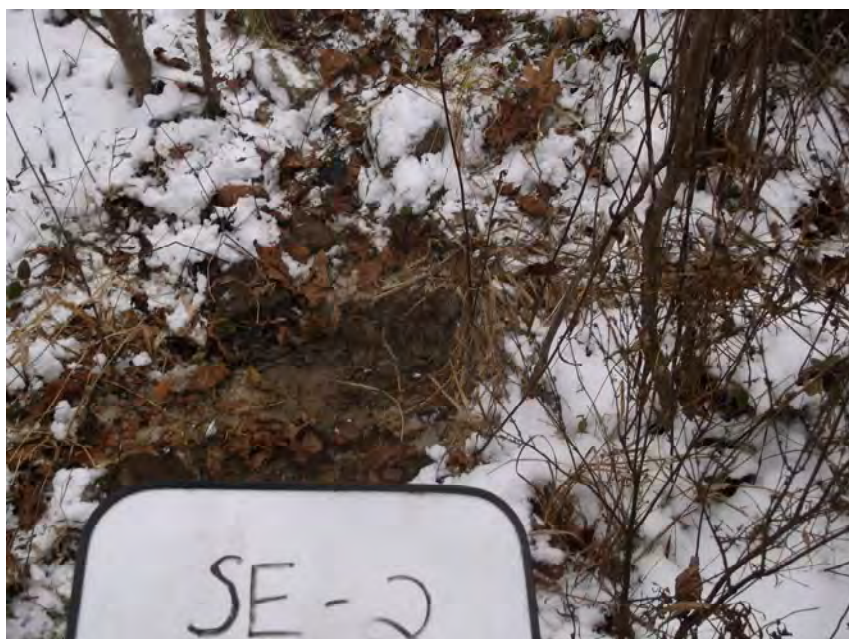
Shaffer Equipment/Arbuckle Creek Area • Minden, Fayette County, West Virginia
EPA Region III START • Contract No. EP-S3-15-02 • TDD No. W503-17-12-001



PHOTOGRAPH 25: Sample SEC-SS-SE-02 collected from a drainage channel in a compromised section of the cap.

DATE: 12/13/2017

PHOTOGRAPHER: WESTON START



PHOTOGRAPH 26: Sample SEC-SS-SE-02 collected from a drainage channel in a compromised section of the cap.

DATE: 12/13/2017

PHOTOGRAPHER: WESTON START

PHOTOGRAPHIC DOCUMENTATION LOG

Shaffer Equipment/Arbuckle Creek Area • Minden, Fayette County, West Virginia
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PHOTOGRAPH 1: Sediment Sample location for SD-50

DATE: 3/20/2018

PHOTOGRAPHER: WESTON START



PHOTOGRAPH 2: Sediment Sample location for SD-51

DATE: 3/20/2018

PHOTOGRAPHER: WESTON START

PHOTOGRAPHIC DOCUMENTATION LOG

Shaffer Equipment/Arbuckle Creek Area • Minden, Fayette County, West Virginia
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PHOTOGRAPH 3: Sediment Sample location for SD-52
DATE: 3/20/2018

PHOTOGRAPHER: WESTON START



PHOTOGRAPH 4: Sediment Sample locations for SD-53 (right) and SD-54 (left)
DATE: 3/20/2018

PHOTOGRAPHER: WESTON START

PHOTOGRAPHIC DOCUMENTATION LOG

Shaffer Equipment/Arbuckle Creek Area • Minden, Fayette County, West Virginia
EPA Region III START • Contract No. EP-S3-15-02 • TDD No. W503-17-12-001



PHOTOGRAPH 5: Sediment Sample location for SD-55

DATE: 3/20/2018

PHOTOGRAPHER: WESTON START



PHOTOGRAPH 6: Soil sample locations for SS-200 (farthest away/right), SS-201 (midway/left), SS-202 (closest/center)

DATE: 3/20/2018

PHOTOGRAPHER: WESTON START

PHOTOGRAPHIC DOCUMENTATION LOG

Shaffer Equipment/Arbuckle Creek Area • Minden, Fayette County, West Virginia
EPA Region III START • Contract No. EP-S3-15-02 • TDD No. W503-17-12-001



PHOTOGRAPH 7: Soil sample location for SS-203 in front of monitoring well.

DATE: 3/20/2018

PHOTOGRAPHER: WESTON START



PHOTOGRAPH 8: Soil sample location for SS-204 in front of monitoring well, towards the center of the cap.

DATE: 3/20/2018

PHOTOGRAPHER: WESTON START

PHOTOGRAPHIC DOCUMENTATION LOG

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PHOTOGRAPH 9: Soil sample location for SS-205, approximately 40 feet to the west of the monitoring well.

DATE: 3/20/2018

PHOTOGRAPHER: WESTON START



PHOTOGRAPH 10: Soil sample location for SS-206

DATE: 3/20/2018

PHOTOGRAPHER: WESTON START

PHOTOGRAPHIC DOCUMENTATION LOG

Shaffer Equipment/Arbuckle Creek Area • Minden, Fayette County, West Virginia
EPA Region III START • Contract No. EP-S3-15-02 • TDD No. W503-17-12-001



PHOTOGRAPH 11: Soil sample location for SS-207 from the removal area.

DATE: 3/20/2018

PHOTOGRAPHER: WESTON START



PHOTOGRAPH 12: Soil sample location for SS-208 from the removal area.

DATE: 3/20/2018

PHOTOGRAPHER: WESTON START

PHOTOGRAPHIC DOCUMENTATION LOG

Shaffer Equipment/Arbuckle Creek Area • Minden, Fayette County, West Virginia
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PHOTOGRAPH 13: Soil sample location for SS-209.
DATE: 3/20/2018

PHOTOGRAPHER: WESTON START



PHOTOGRAPH 14: Soil sample location for SS-210.
DATE: 3/20/2018

PHOTOGRAPHER: WESTON START

PHOTOGRAPHIC DOCUMENTATION LOG

Shaffer Equipment/Arbuckle Creek Area • Minden, Fayette County, West Virginia
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PHOTOGRAPH 15: Soil sample location for SS-211.

DATE: 3/20/2018

PHOTOGRAPHER: WESTON START



PHOTOGRAPH 16: Soil sample location for SS-150.

DATE: 3/20/2018

PHOTOGRAPHER: WESTON START

PHOTOGRAPHIC DOCUMENTATION LOG

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PHOTOGRAPH 17: Soil sample location for SS-151.
DATE: 3/20/2018

PHOTOGRAPHER: WESTON START



PHOTOGRAPH 18: Soil sample location for SS-152.
DATE: 3/20/2018

PHOTOGRAPHER: WESTON START

PHOTOGRAPHIC DOCUMENTATION LOG

Shaffer Equipment/Arbuckle Creek Area • Minden, Fayette County, West Virginia
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PHOTOGRAPH 19: Soil sample location for SS-153.

DATE: 3/20/2018

PHOTOGRAPHER: WESTON START



PHOTOGRAPH 20: Soil sample location for SS-154.

DATE: 3/20/2018

PHOTOGRAPHER: WESTON START

PHOTOGRAPHIC DOCUMENTATION LOG

Shaffer Equipment/Arbuckle Creek Area • Minden, Fayette County, West Virginia
EPA Region III START • Contract No. EP-S3-15-02 • TDD No. W503-17-12-001



PHOTOGRAPH 21: Soil sample location for SS-155.

DATE: 3/20/2018

PHOTOGRAPHER: WESTON START



PHOTOGRAPH 22: Soil sample location for SS-156.

DATE: 3/20/2018

PHOTOGRAPHER: WESTON START

PHOTOGRAPHIC DOCUMENTATION LOG

Shaffer Equipment/Arbuckle Creek Area • Minden, Fayette County, West Virginia
EPA Region III START • Contract No. EP-S3-15-02 • TDD No. W503-17-12-001



PHOTOGRAPH 23: Soil sample location SS-100
DATE: 3/20/2018

PHOTOGRAPHER: WESTON START



PHOTOGRAPH 24: Soil sample location SS-101
DATE: 3/20/2018

PHOTOGRAPHER: WESTON START

PHOTOGRAPHIC DOCUMENTATION LOG

Shaffer Equipment/Arbuckle Creek Area • Minden, Fayette County, West Virginia
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PHOTOGRAPH 25: Soil sample location SS-102
DATE: 3/20/2018

PHOTOGRAPHER: WESTON START



PHOTOGRAPH 26: Soil sample location SS-103
DATE: 3/20/2018

PHOTOGRAPHER: WESTON START

PHOTOGRAPHIC DOCUMENTATION LOG

Shaffer Equipment/Arbuckle Creek Area • Minden, Fayette County, West Virginia
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PHOTOGRAPH 27: Soil sample location SS-104
DATE: 3/20/2018

PHOTOGRAPHER: WESTON START



PHOTOGRAPH 28: Soil sample location SS-105
DATE: 3/20/2018

PHOTOGRAPHER: WESTON START

PHOTOGRAPHIC DOCUMENTATION LOG

Shaffer Equipment/Arbuckle Creek Area • Minden, Fayette County, West Virginia
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PHOTOGRAPH 29: Soil sample location SS-106

DATE: 3/20/2018

PHOTOGRAPHER: WESTON START



PHOTOGRAPH 30: Soil sample location SS-107

DATE: 3/20/2018

PHOTOGRAPHER: WESTON START

PHOTOGRAPHIC DOCUMENTATION LOG

Shaffer Equipment/Arbuckle Creek Area • Minden, Fayette County, West Virginia
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PHOTOGRAPH 31: Soil sample location SS-108

DATE: 3/20/2018

PHOTOGRAPHER: WESTON START



PHOTOGRAPH 32: Soil sample location SS-109

DATE: 3/20/2018

PHOTOGRAPHER: WESTON START

PHOTOGRAPHIC DOCUMENTATION LOG

Shaffer Equipment/Arbuckle Creek Area • Minden, Fayette County, West Virginia
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PHOTOGRAPH 33: Soil sample location SS-110

DATE: 3/20/2018

PHOTOGRAPHER: WESTON START



PHOTOGRAPH 34: Soil sample location SS-111

DATE: 3/20/2018

PHOTOGRAPHER: WESTON START

PHOTOGRAPHIC DOCUMENTATION LOG

Shaffer Equipment/Arbuckle Creek Area • Minden, Fayette County, West Virginia
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PHOTOGRAPH 35: Soil sample location SS-112

DATE: 3/20/2018

PHOTOGRAPHER: WESTON START



PHOTOGRAPH 36: Soil sample location SS-113

DATE: 3/20/2018

PHOTOGRAPHER: WESTON START

PHOTOGRAPHIC DOCUMENTATION LOG

Shaffer Equipment/Arbuckle Creek Area • Minden, Fayette County, West Virginia
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PHOTOGRAPH 37: Soil sample location SS-114
DATE: 3/20/2018

PHOTOGRAPHER: WESTON START



PHOTOGRAPH 38: Soil sample location SS-115
DATE: 3/20/2018

PHOTOGRAPHER: WESTON START

PHOTOGRAPHIC DOCUMENTATION LOG

Shaffer Equipment/Arbuckle Creek Area • Minden, Fayette County, West Virginia
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PHOTOGRAPH 39: Soil sample location SS-116

DATE: 3/20/2018

PHOTOGRAPHER: WESTON START



PHOTOGRAPH 40: Soil sample location SS-117

DATE: 3/20/2018

PHOTOGRAPHER: WESTON START

PHOTOGRAPHIC DOCUMENTATION LOG

Shaffer Equipment/Arbuckle Creek Area • Minden, Fayette County, West Virginia
EPA Region III START • Contract No. EP-S3-15-02 • TDD No. W503-17-12-001



PHOTOGRAPH 41: Soil sample location SS-118

DATE: 3/20/2018

PHOTOGRAPHER: WESTON START



PHOTOGRAPH 42: Soil sample location SS-119

DATE: 3/20/2018

PHOTOGRAPHER: WESTON START

PHOTOGRAPHIC DOCUMENTATION LOG

Shaffer Equipment/Arbuckle Creek Area • Minden, Fayette County, West Virginia
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PHOTOGRAPH 43: Soil sample location SS-120

DATE: 3/20/2018

PHOTOGRAPHER: WESTON START



PHOTOGRAPH 44: Soil sample location SS-121

DATE: 3/20/2018

PHOTOGRAPHER: WESTON START

PHOTOGRAPHIC DOCUMENTATION LOG

Shaffer Equipment/Arbuckle Creek Area • Minden, Fayette County, West Virginia
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PHOTOGRAPH 45: Soil sample location SS-122
DATE: 3/20/2018

PHOTOGRAPHER: WESTON START



PHOTOGRAPH 46: Soil sample location SS-123
DATE: 3/20/2018

PHOTOGRAPHER: WESTON START

PHOTOGRAPHIC DOCUMENTATION LOG

Shaffer Equipment/Arbuckle Creek Area • Minden, Fayette County, West Virginia
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PHOTOGRAPH 47: Soil sample location SS-124
DATE: 3/20/2018

PHOTOGRAPHER: WESTON START

PHOTOGRAPHIC DOCUMENTATION LOG
Shaffer Equipment/Arbuckle Creek Area • Minden, West Virginia
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Photograph Description: SEC-SD-56; Sediment collected from west bank of Arbuckle Creek. Sediment is silty, medium-coarseness. Creek fauna (salamander and crawfish) observed at sampling location.
Date: 15 May 2018



Photograph Description: SEC-SD-57; Sediment collected from east bank of Arbuckle Creek. Sediment is gravelly with sand and some silt; coarse grain.
Date: 15 May 2018

PHOTOGRAPHIC DOCUMENTATION LOG
Shaffer Equipment/Arbuckle Creek Area • Minden, West Virginia
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Photograph Description: SEC-SD-58; Sediment collected from small depositional area in the middle of Arbuckle Creek. Sediment is silty, sand mixed with some gravel; medium grain.

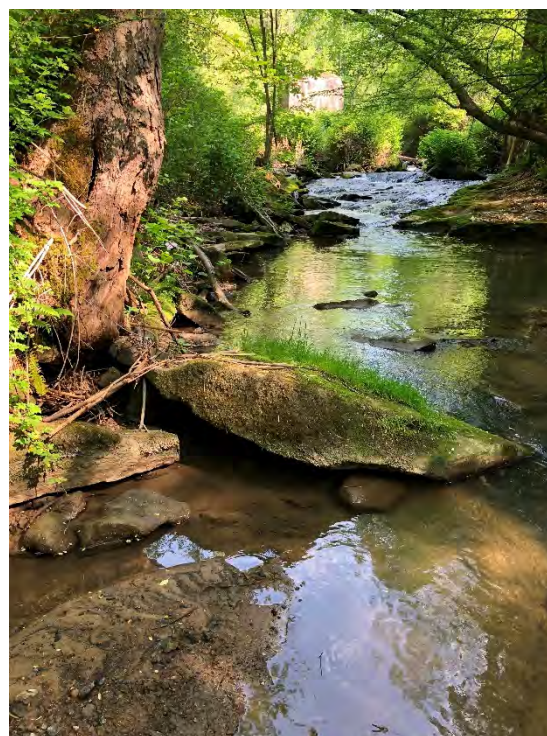
Date: 15 May 2018



Photograph Description: SEC-SD-59; Sediment collected on east bank of Arbuckle Creek. Sediment is largely gravel with coarse sand.

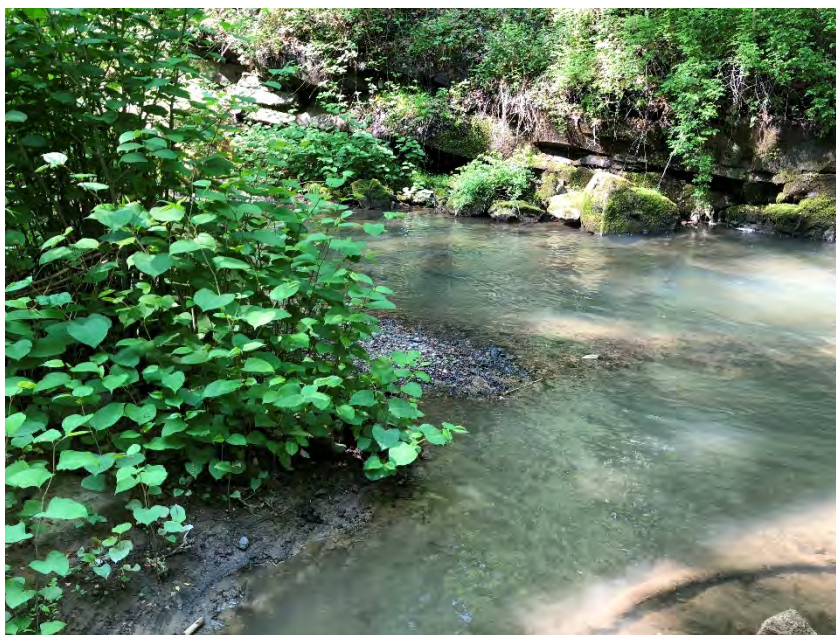
Date: 15 May 2018

PHOTOGRAPHIC DOCUMENTATION LOG
Shaffer Equipment/Arbuckle Creek Area • Minden, West Virginia
EPA Region III START • Contract No. EP-S3-15-02 •TDD No. W503-17-12-001



Photograph Description: SEC-SD-60; Sediment collected from west bank of Arbuckle Creek. Sediment is fine-grain silt with some sand.

Date: 15 May 2018



Photograph Description: SEC-SD-61; Sediment collected from east bank of Arbuckle Creek. Sediment is a fine-grain silt with some sand.

Date: 15 May 2018

PHOTOGRAPHIC DOCUMENTATION LOG
Shaffer Equipment/Arbuckle Creek Area • Minden, West Virginia
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Photograph Description: SEC-SD-62; Sediment collected from east bank of Arbuckle Creek in a submerged depositional area. Sediment is a fine-grain silt with some sand and gravel.

Date: 15 May 2018



Photograph Description: SEC-SD-63; Sediment collected from west bank of Arbuckle Creek in a submerged depositional area. Sediment is composed primarily of silt with some sand and gravel. Field duplicate collected, SEC-SD-66.

Date: 15 May 2018

PHOTOGRAPHIC DOCUMENTATION LOG
Shaffer Equipment/Arbuckle Creek Area • Minden, West Virginia
EPA Region III START • Contract No. EP-S3-15-02 • TDD No. W503-17-12-001



Photograph Description: SEC-SD-64; Sediment collected from west bank of Arbuckle Creek. Sediment contains mostly gravel with a small amount of coarse sand.

Date: 15 May 2018



Photograph Description: SEC-SD-65; Sediment collected from west bank of Arbuckle Creek. Sediment consists of a fine-grain silt with some sand and gravel.

Date: 15 May 2018

PHOTOGRAPHIC DOCUMENTATION LOG
Shaffer Equipment/Arbuckle Creek Area • Minden, West Virginia
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Photograph Description: SEC-SD-67; Sediment collected from wetland area. Sediment is a very fine-grain silt.
Date: 16 May 2018



Photograph Description: SEC-SD-68; Sediment collected from wetland area. Sediment is a fine-grain silt.
Date: 16 May 2018

Project Name: Shaffer Equipment/ Arbuckle Creek Area	Site Location: Minden, Fayette County, West Virginia
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Photo No. 1	
Date: 5/15/18	
Description: Sampling Location: "Needleseye" 7 surface soil and 7 sub-surface soil (12-18" bgs) samples collected. Samples: SEC-SS-225 to SEC-SS-238	

Photo No. 2	
Date: 6/26/18	
Description: Samples SEC-SS-225 and SS-226 being collected from Needleseye at 0-6" and 12-18" bgs, utilizing a stainless steel auger.	

Project Name: Shaffer Equipment/ Arbuckle Creek Area	Site Location: Minden, Fayette County, West Virginia
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Photo No. 3	
Date: 6/26/18	
Description: Sampling Location: "5 Hump" 1 surface soil and 1 sub-surface soil (12- 18" bgs) sample collected. Samples: SEC-SS-239 to SS-241. SS-241 is a Field Duplicate of SS- 240.	

Photo No. 4	
Date: 5/16/18	
Description: Sampling Location: Sheen observed at the base of a drainage channel location. Sample SEC-SD-86 collected from this location.	

Project Name: Shaffer Equipment/ Arbuckle Creek Area	Site Location: Minden, Fayette County, West Virginia
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Photo No. 5	
Date: 5/16/18	
Description: Sampling Location: "Mary Lane" - Sheen observed outside a residence on Mary Lane. Samples SEC-SD-93 and SS-247 were collected from this location.	

Photo No. 6	
Date: 5/16/18	
Description: Sampling Location: "Mine Hole" Samples SEC-SD-95, SS-248, and GW-01/02 were collected from an underground water system believed to be associated with an abandoned mineshaft. This location is adjacent to the Shaffer Equipment Company property.	

Project Name: Shaffer Equipment/ Arbuckle Creek Area	Site Location: Minden, Fayette County, West Virginia
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Photo No. 7	
Date: 6/26/18	
Description: Sampling Location: "Water Tower Access" Sample SEC-SS-246 collected from this location.	

Photo No. 8	
Date: 6/27/18	
Description: Sampling Location: "Post Office" Sample SEC-SS-224 collected from behind the Minden Post Office.	

Project Name: Shaffer Equipment/ Arbuckle Creek Area	Site Location: Minden, Fayette County, West Virginia
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Photo No. 9	
Date: 6/27/18	
Description: Sampling Location: "Res-6" Sample SEC-SS-219 collected from SE corner of residence.	

PHOTOGRAPHIC DOCUMENTATION LOG
Shaffer Equipment/Arbuckle Creek Area • Minden, West Virginia
EPA Region III START • Contract No. EP-S3-15-02 •TDD No. W503-17-12-001



Photograph Description: SEC-SD-69; Sediment collected from wetland area. Sediment is a fine-grain silt; sheen observed at sampling location.

Date: 16 May 2018



APPENDIX C

FIELD NOTES

ATTACHMENT 1

CLP ANALYTICAL DATA PACKAGES
