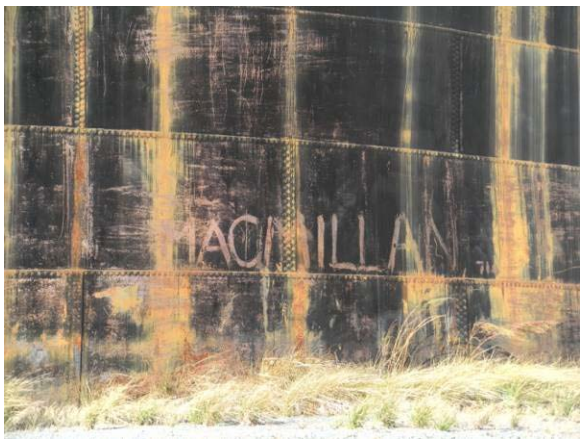
State of Arkansas
Department of Environmental Quality

COMPREHENSIVE SITE ASSESSMENT
NORPHLET CHEMICAL, INC.
(AFIN: 70-00694)



April 25, 2011

COMPREHENSIVE SITE ASSESSMENT
Norphlet Chemical, Inc.
Norphlet, Arkansas
(AFIN: 70-00694)

Prepared for

Arkansas Department of Environmental Quality
Hazardous Waste Division
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FTN Project No. 3013-132

April 25, 2011

PROFESSIONAL GEOLOGIST'S CERTIFICATION

This Comprehensive Site Assessment (CSA) Report has been prepared under the direction and supervision of a qualified, State of Arkansas registered, Professional Geologist. Ms. Emily J. Hollingsworth, P.G., of FTN Associates, Ltd. was responsible for the overall preparation of the report.

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4/25/2011

Date

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1.0 EXECUTIVE SUMMARY

A Comprehensive Site Assessment (CSA) was conducted by FTN Associates, Ltd. (FTN) for the Norphlet Chemical, Inc. (NCI) site located in Norphlet, Union County, Arkansas. This section defines the objectives of the CSA for this site, provides background information, and presents a concise statement of the findings and conclusions.

1.1 CSA Objectives

Results of a number of investigations conducted at the site in the 1990s indicate chemicals have been released to the environment. The objectives of this CSA were to determine the nature and extent of hazardous substances released into the environment, the potential for additional releases of hazardous substances, and the current and possible future risks to human health and the environment from the site

1.2 Site Background

The abandoned industrial property is situated on approximately 100 acres of land and is bordered by a residential subdivision and the Norphlet Public School on the west, Hayes Creek on the north and east, and Massey Creek and bottomlands associated with the creek to the southwest. Future plans for the use of the property are unknown; however, the surrounding property is used for commercial and residential purposes.

The site is the location of the former MacMillan Ring-Free Oil Refinery, which closed in 1987. The facility was inactive from 1987 until 1989, when the property was sold to Nor-Ark Industrial Corp (Nor-Ark) who used the on-site storage tanks for asphalt products until March of 1991, when the company filed for bankruptcy. The facility was refurbished by NCI as a chemical manufacturing plant in early 2006 to produce tetrafluoroethane (Freon 134A) refrigerant used in automobiles but the plant failed to produce the product upon completion in 2007 and never operated as intended. The site has been vacant since 2007. In April 2010, the site was placed on the Remedial Action Trust Fund (RATFA) Hazardous Substances Site Priority

List (SPL), which identifies hazardous substance sites that are eligible for state-funded investigations and remedial actions.

Records indicate a history of regulatory environmental issues and enforcement actions dating to MacMillan's operation. From 1992 to 1997, a series of EPA Superfund removal operations were conducted to mitigate endangerment and/or eminent threat to public health and the environment. These operations were designed to recovered on-site hazardous materials for off-site disposal. In 2009, USEPA conducted an Emergency Removal Action at the site in response to ADEQ's concerns about the unsafe condition of tanks and piping systems left by NCI containing anhydrous hydrogen fluoride (AHF) and AHF mixtures, including hydrofluoric acid. The Norphlet Public School, located approximately 500 ft from the site, was temporarily closed due to EPA's determination of an Imminent and Substantial Endangerment posed by the NCI facility.

Major site features currently include an office building, laboratory building, boiler building, a 50,000 barrel bulk crude oil above-ground storage tank (AST), and a number of smaller ASTs, storage building, a fire water pond, a canning building, and a drum storage building. A variety of chemicals is stored in the canning and drum storage buildings, and a large amount of debris, piping, drums, used equipment, and parts are found at various locations on the property. Open areas having sparse vegetation are associated with former impoundments used for wastewater treatment and process ponds.

1.3 Environmental Setting

Site-specific environmental characteristics were identified during the CSA. Surface soils consists of fine sandy loam to sandy loam. Underlying soils consist of discontinuous gray to white to brown, well graded, very fine to medium grained sand interbedded with silt, sandy silt, and clay. These soils comprise the Cockfield Formation, which is approximately 42 ft thick beneath the site. The Cockfield Formation comprises the uppermost aquifer beneath the site and discharges to local streams and rivers. Groundwater was encountered in saturated intervals ranging at depths as shallow as 8 ft below ground surface (bgs) in lower elevations to approximately 40 ft bgs in topographically high areas. A groundwater divide beneath the site

controls the flow of groundwater to the north-northeast towards Hayes Creek, south-southeast towards Massey Creek, and south towards the convergence of the two creeks. Shallow groundwater from the Cockfield Formation is not a source of water supply at the site. The site is drained by a number of ditches and runoff from the site flows generally from northwest to southeast via two unnamed tributaries that are referred to as Massey Creek and Hayes Creek in project documents.

1.4 Nature and Extent of Contamination

Findings of the site investigation demonstrate obvious chemical contamination of surface and subsurface soil. Surface soil staining (black, petroleum hydrocarbon) is extensive in the area of the former tank farms and in drainage ditches on the site. Oil sheens were observed on soil in former ponds after rainfall events. Yellow and green stains were observed on surface soil in the area of the former NCI plant. Strong to very strong hydrocarbon odors and staining was observed in the majority of soil boreholes, and oil seeps and/or sheens were observed in subsurface soil samples collected in the vicinity of former impoundments.

There were 20 chemicals detected in surface soil samples but only a small number were found at levels of concern based on risk-based screening levels for human health. A hot spot area of surface soil contamination was identified consisting of elevated levels of carcinogenic polynuclear aromatic hydrocarbon (PAH) compounds. Contamination of surface and subsurface soil by diesel range petroleum hydrocarbons (DRO) was identified for large areas of contamination associated with the former impoundments located on the east and west sides of the facility and beneath the former tank farm. Gasoline-range petroleum hydrocarbon contamination was found in shallow subsurface soils associated with the former tank farm on the east side of the site and appears to be more or less confined to the property. Elevated levels of napthalene are also associated with former impoundments and tank farm.

Many of the groundwater samples collected during the CSA had hydrocarbon odors; some samples effervesced indicating the presence of methane gas; and others were characterized by oil sheens or contained free product. The data indicate the presence of 29 chemicals in groundwater beneath the site but only a few are associated with petroleum hydrocarbon

compounds (including gasoline and diesel range compounds) were detected above an applicable screening level. Diesel range organics (DRO) are ubiquitous beneath the site, and gasoline range organic and oil range organic (GRO and ORO) plumes are associated with the former hazardous waste impoundments and tank farm. Benzene, napthalene, 1-methylnapthalene, and 1,2,4-trimethylbenzene plumes are associated with the GRO plume on the east side of the property, and there is a napthalene plume associated with DRO observed beneath the former hazardous waste impoundments. Elevated levels of dissolved lead were also detected is a sample associated with these impoundments. Given the configuration of the potentiometric surface, offsite plume migration west of site source areas is not expected. Although the extent of migration has not been defined by the data, it is likely the maximum extent of plume migration is represented by Hayes Creek and Massey Creek. However, offsite plume migration has likely occurred northeast, east, and southeast of the railroad tracks beneath property owned by others.

Sewage odor and oil sheen were observed during the collection of surface water and sediment samples from Hayes Creek upgradient from the site and low levels of DRO were observed in the data, indicating a possible upgradient source of contamination. DRO in a sample from the drainage pathway on the east side of the property was identified as a concern because of the potential to impact Hayes Creek, and lead in surface water and lead and some PAHs in sediment were identified as a potential concern from an ecological standpoint.

1.5 Human Health and Ecological Risk Assessment

The human health risk assessment exposure pathways were developed based on current and future use of the site and included the following receptors: on-site trespasser, future on-site construction/industrial worker, and future on-site resident. The calculated noncancer hazards and cumulative theoretical cancer risks associated with direct contact with soil and groundwater were assessed. An unacceptable risk for the construction worker was identified based on the noncancer hazard that exceeded the value of 1 is primarily due to the potential exposure to trimethylbenzene isomers in non-hotspot subsurface soils. However, it should be noted that the estimated air exposure concentration for total trimethylbenzenes for this receptor is 0.147 mg/m^3. Compared to the ACGIH TLV-TWA of 123 mg/m^3 for mixed trimethylbenzene isomers, the

estimated air exposure concentration for the future on-site construction worker is 837 times lower than the air level considered acceptable for an 8-hour work shift. Therefore, it is likely that the estimated risk for the construction worker is overestimated. The noncancer hazards and risks associated with the resident's direct contact with groundwater (i.e., ingestion, bathing, and other domestic purposes) were above the target risk values considered acceptable by the USEPA; however, groundwater is not used on-site and this pathway is unlikely to occur. Noncancer hazards and theoretical cancer risks were also elevated for the vapor intrusion pathway for groundwater and subsurface soil. As stated previously, risks calculated from vapor intrusion into indoor air from subsurface soils should be considered very uncertain. In addition, sand (most porous soil type) was used as the soil type in the model and is likely to result in an overestimation of risks.

A screening level ecological risk assessment was completed. Some chemicals that were detected in surface soil or shallow subsurface soil (e.g., alkylbenzenes, PAHs, chromium, lead, and PCBs) were further evaluated from the standpoint of ecological risks. Because ecological screening levels for alkylbenzenes and PAHs are not based on ecotoxic endpoints, the relative ecological impact of relatively low concentrations of these chemicals in soil cannot be determined with any certainty. Exceedance of the USEPA Region 4 (2001) Ecological Screening Levels (ESLs) may be interpreted from the standpoint that these chemicals exceed "background" or "detection limits" that serves as the bases for the USEPA Region 4 ESLs. Chromium and lead concentrations in soil exceed protective ecological soil screening levels in less than three percent of samples analyzed. For this reason, these metals are unlikely to pose an ecological risk to receptors exposed to site soils. PCBs were barely detected in subsurface soil at a concentration similar to the ecological screening level. Based on the depth of the sample (2 ft bgs), it is unlikely that ecological receptors would be exposed to PCBs in soil.

The Arkansas Natural Heritage Commission (ANHC) indicates that there are no occurrences of plant or animal species of interest recorded within one mile of the NCI site. Detected concentrations of organic and inorganic chemicals in site soils are unlikely to pose a significant ecological risk. However, the detection of relatively high concentrations of petroleum

hydrocarbon in soil may impact soil ecological receptors. Because of the industrial character of the former operational portion of the site, it is unlikely to be an important terrestrial habitat.

1.6 Risks to Degrade Groundwater Quality

There were several chemicals detected in subsurface soil at concentrations below health-based screening levels but above the more stringent groundwater protection values. Although it is not believed that these chemicals pose a risk to human health, they were detected in groundwater at low concentrations, indicating that the groundwater pathway is complete for these chemicals.

2.0 INTRODUCTION

This Comprehensive Site Assessment (CSA) report presents the results of the investigation for the property located at the end of MacMillan Road (Highway 335) in Norphlet, Union County, Arkansas. FTN Associates, Ltd (FTN) submitted a CSA Work Plan (CSAWP) for the site to the Arkansas Department of Environmental Quality (ADEQ) on December 21, 2010. The CSAWP was revised on February 15, 2011 based on ADEQ comments and approved by a letter dated February 24, 2011.

ADEQ is the lead agency for this site. The project team includes personnel from FTN and Center for Toxicology and Environmental Health, LLC (CTEH). FTN was responsible for managing the CSA and conducting field investigations. CTEH provided a human health risk evaluation based on site data as well as a screening level ecological risk assessment.

There are currently no specific plans for redeveloping the site. The site is located adjacent to residential and commercial areas of Norphlet. Results of a number of investigations conducted at the site since the 1980s indicate chemicals have been released to the environment. The objectives of this CSA are to determine the nature and extent of hazardous substances released into the environment, to determine the potential for additional releases of hazardous substances, and to determine the current and possible future risks to human health and the environment from the site. The scope of work includes conducting additional investigation activities, evaluating available information and data, and preparing a CSA report.

3.0 INTENDED LAND USE

This section of the CSA addresses land use of the former NCI site as well as institutional controls. This information is used to make determinations associated with risks to human health and the environment.

3.1 Previous Site Use

The NCI site is the location of the former MacMillan Ring-Free Oil Refinery, which closed in 1987. The facility was inactive until April 4, 1989, when the bankruptcy trustee sold the refinery to Nor-Ark Industrial Corp (Nor-Ark), who did not use the facility as a refinery, but offered storage tank leasing for asphalt products until March 1991, when the company filed for bankruptcy. The facility was inactive from that time until it was refurbished by NCI as a chemical manufacturing plant in early 2006. It was planned that the facility would produce tetrafluoroethane (Freon 134A) refrigerant used in automobiles but the plant failed to produce the product upon completion in 2007 and never operated as intended.

3.2 Current Institutional Controls

No institutional controls were identified for this site. EPA filed a lien on two tracts of land at the site. The lien was filed with the Union County Circuit Clerk on October 14, 1994 to secure the payment of all costs and damages which Nor-Ark is liable to EPA. However, the lien has likely expired because ADEQ has indicated there are no environmental liens on record (Annette Cusher 11/29/10). Mayor Jim Crotty, who oversees security at the site, indicated that he is unaware of any environmental liens; however, there are other liens on the property.

3.3 Past and Current Land Use Controls

This abandoned site is located within Norphlet city limits near a residential subdivision and the Norphlet Public School. The city does not have a zoning ordinance, according to Mayor Crotty.

3.4 Future Planned Land Use

The site has been subject to interim action by the EPA (for petroleum wastes and the chemicals such as hydrogen fluoride from the NCI plant tank farm). The site is currently inactive, and future plans for the property are unknown. The NCI site was placed on the SPL in April 2010.

4.0 SITE DESCRIPTION

This section includes a general description of the NCI site. A legal description is included, as well as a discussion of current site conditions.

4.1 Location

4.1.1 Site Location and Legal Description

The site is situated in part on approximately 95 acres of land that is located at the end of MacMillan Road off State Highway 335 in Norphlet, Union County, Arkansas (Figure 4.1). Access to the site from the north is from West Front Street while access from the west is from MacMillan Road. The physical address is 600 MacMillan Road (State Highway 335), Norphlet, Arkansas, 71759. The geographical coordinates of the site are 33º 18' 36" north latitude and 92º 39' 30" west longitude. The legal description from NCI's Brownfield Application follows:

> Commencing at the Southwest corner of the Southwest Quarter of the Southeast Quarter of Section 21, Township 16 South, Range 15 West, and thence North 26°58'55" West 43.74 feet along a fence; thence North 13°43'47" West 38.76 feet along a fence; thence North 02°24'08" West 380.57 feet along a fence to a fence corner; thence North 45°00'58" West 20.84 feet along the fence to a fence corner; thence North 83°54'57" West 119.62 feet. along a fence to a fence corner; thence North 03°58'52" East 366.40 feet along a fence; thence North 06°17'16" East 159.80 feet along a fence; thence North 63°53'57" West 269.45 feet; thence North 24°15'28" East 487.73 feet to the Southerly right of way of the Missouri Pacific Railroad; thence South 50°13'30" East 485.12 feet along said right of way; thence along said right of way around a curve to the right, having a radius of 2770.44 feet and a length of 1452.53 feet; thence South 20°11'15" East 1559.56 feet along said right of way; thence leaving said right of way North 87°52'21" West 985.46 feet along a fence to a fence corner; thence South 01°36'29" West 700.00 feet along a fence to a fence corner; thence South 87°52'21" East 736.55 feet along a fence and its extension to the East line of the Southwest Quarter of the Northeast Quarter of Section 28, Township 16 South, Range 15 West; thence South 0°38'41" West 591.51 feet to the Southeast Corner of said Southwest Quarter of the Northeast Quarter; thence North 89"00'04" West 1319.85 feet to the Southwest corner of the said forty; thence North 0°43'15" East 1317.37 feet to the Northwest Corner of the said forty; thence North 0°43'15" East 1317.37 feet to the point of beginning containing 94.829 acres more or less.

The property boundary thus described is shown on Figure 4.2.

4.1.2 Topography, City, and County Maps

The NCI site occupies the SW ¼, SE ¼ Section 21 and W½, NE¼ Section 28, Range 15 West, Township 16 South, as shown on the US Geological Survey 7.5-minute series topographic map (quadrangle) for Smackover, ARK (1984). Figure 4.3 is a portion of the topographic map that depicts the property.

4.1.3 Potential Critical Contaminant Exposure Points

Exposure points are points of potential contact for receptors with chemicals of concern through a particular route (e.g., ingestion). Potential exposure points and routes of exposure (inhalation, ingestion, and dermal contact) have been identified for the soil, groundwater, surface water, sediment and air pathways. At the NCI site, the exposure point for the current trespasser is surface soil and potentially surface water and sediment. The exposure points for the future commercial/industrial worker are considered to be onsite soil, groundwater, and surface water. The exposure points for the construction worker, and resident are considered to be on-site soils and groundwater.

4.2 Description of Current Conditions

4.2.1 Site Description and Improvements

Figure 4.4 is a site map based on a site visit completed on March 3, 2010.

FTN conducted a site reconnaissance of the NCI property on November 30, 2010. The site reconnaissance was conducted by Ms. Jane Spellman and Mr. Mark Koch of FTN, Tamara Knight-House with CTEH, and several representatives of ADEQ Hazardous Waste Division. Access to the site was granted by ADEQ, through a gate located at the end of McMillan Road which terminates at the western gate. Although the entire western property boundary was fenced and gated, the eastern property boundary along the railroad right of way was not. Access to the site from the east is possible by walking through the right of way.

The site reconnaissance was conducted by observing the subject property from public roads and walking the interior of the site. Access to the interior of the structures at the site was not available during the site visit. Therefore during the site reconnaissance the only investigation of the interior of the structures was what was viewable from the windows.

Major site features include an office building, laboratory building, a boiler building 50,000 barrel bulk crude oil above-ground storage tank (AST), a boiler building, storage building, tanks and structures associated with the NCI operation, a canning building, and a drum storage building (Figure 4.4). Additionally, the site has a number of ASTs. The tanks correspond in number and location with historical maps available for the site. No tanks were opened or entered during the site reconnaissance. Attempts to determine if the tanks were empty were made by tapping the exterior of the tank. Given this method and the size of the tanks, tanks that appeared to be empty may contain significant amounts of sludge or materials at the bottom.

The interior of the office building has typical office furniture and equipment, a conference room, and library area which appear to include many engineering drawings in vertical racks. Just south of the office structure is the laboratory building. A number of pieces of laboratory equipment, small chemical containers, computers, and office type furniture were present in the laboratory building.

The former Boiler House is located northeast of the office and laboratory buildings. The boiler house is a large metal structure with the boiler equipment still in place. The building was locked and signs were in place warning of asbestos hazards in the structure. Looking through the door on the east end of the boiler house, no insulation was apparent on the boiler structure.

North of the boiler house was a flat area of ground where a number of pieces of equipment were being. The equipment included small tanks, piping with insulation intact, and various process fittings. Further to the north were a number of piles of aggregate material. An in-ground truck scale was present west of the piles of aggregate. There was a small wood frame scale house adjacent to the scale. A bank of three pole-mounted electrical transformers located just north of the boiler house. The transformers appeared to be in good condition with no evidence of leakage. Five 55-gallon metal containers were located on a wooden pallet below the

transformer bank. The containers were filled with liquids. One of the containers was open and appeared to be filled with rain water.

North and east of the boiler house was a group of ASTs located near the railroad tracks. These tanks are assumed to be asphalt material storage based upon research and tank markings. The tanks were rusted on the exterior and appeared to be mostly empty. It appeared that one of the tanks had been cut and the majority of the tank removed, with only 1 to 2 ft of the side walls remaining. Inside this tank bottom was what appeared to be asphalt residue.

Further south of these tanks was another set of large ASTs which appeared to be for oil storage. These tanks were insulated with an open cell foam insulation which was covered with a corrugated metal protective skin. The metal skin was missing from several large areas of the tanks and the foam insulation was falling to the ground. Since access to the exterior of the tank was limited, it is not know if the tanks are empty. A large flat area, located south of the ASTs, was oil stained and appeared to be the location of a tank that had been removed.

Based upon the former plant drawings, these oil storage tanks are located east of the former refinery site. The topography of the site in this area is such that the refinery and the boiler house sit at a higher elevation than the ASTs. East of the ASTs are several sets of railroad tracks which are at a lower elevation than the ASTs. Storm water from the former plant area flows east towards the railroad tracks and was conveyed under the tracks via a corrugated metal pipe and several smaller clay tile pipes. The pipes empty on the eastern side of the railroad tracks. From there it moves through series of swales and off the property. Inspection of the corrugate metal piping, clay tile piping, and swales showed evidence of free product on the water. Additionally, the piping was stained with oil. Several areas along the western bank of the railroad tracks were stained where water seeps from the embankment.

East of the railroad tracks was a cleared flat area where the former run-off collection ponds were located. Although the ponds had been closed or filled in, their location was still obvious. A series of dirt roads were present east of railroad tracks running north and south.

Two structures are located adjacent to the railroad tracks in the southeast portion of the property. The structures, the canning building and the drum storage building, are both metal structures with metal siding and both have concrete loading docks along the railroad track side.

The canning building was locked during FTN's initial site visit and the interior of the building was not visible from the exterior. During the field investigation, Jim Crotty, Mayor for the City of Norphlet provided FTN with keys to the building and the interior was viewed on March 2, 2011.

At that time, the interior of the canning building consisted of a tool storage area and a drum storage area. Chemicals were observed throughout both areas. The tool storage area consisted of multiple shelving units containing plant operations equipment, generally consisting of motors, pumps, and miscellaneous parts and tools. Several 55-gallon metal and plastic drums were observed throughout the western and northern portions of the canning building. Some drums were physically damaged, dented, and or leaking while others were well contained on pallets and in shipping package. While some drums were unlabeled or had hand-written labeling, other drums had chemical hazard labels. Drum labels included: alumina from on site storage tank, Glycol Ether Eb, Therminol 72, Ethacure 100, Xylene, Refrigeration Oil, Wf Iso 32, Oil, Used Refrigeration Oil, Wet Methanol, Methanol, Tetrabromophthalic Anhydride Diol, Unused Catylist From Rx03b, Isoproply Alcohol Anhydrous, Acetone, used oil, C-3 refrigeration oil, mty oil drum, and spent carbon cat. Additionally, bags of chemicals (e.g., Harborlite, True Soft Solar Crystals, Activated Alumina, Sodium Fluoride, and Soda Ash) stored both on and off of pallets were observed all throughout the canning building. The physical condition of the storage bags ranged from well wrapped with plastic to ripped and torn. The southwestern portion of the canning building contained numerous 5-gallon buckets and 1- liter containers of named and un-named chemicals. Labeled chemical containers from this area include: Nokorode 124 Fiberated Asphalt Emulsion Coating, Ritchie Motor oil, Methanol, SoyOyl, Pelro, and Lexorez 1772-80. At least three unlabeled 1,000 gallon plastic storage tanks enclosed by metal frames were observed and contained a brown liquid. Concrete flooring throughout the building had observable staining. After inspecting the canning building, the facility was locked and ADEQ was notified of its contents. Appendix A contains photographs of the building interiors.

West of both the caning and drum storage buildings was a concrete slab which had discarded equipment and metal parts. The interior of the drum storage building was visible through the windows of the structure. The interior held several 55-gallon metal drums, some

machine shop equipment, and a fork truck. A covered truck loading dock was located on the south end of the drum storage building. Large amounts of debris, drums, and used equipment and parts are located under the covered dock. Two drums of Therminol 72 heat transfer fluid were located on the dock. One of the drums was bulging, but not leaking.

The area to the south of the drum storage building was heavily wooded with the exception of the area where the city of Norphlet wastewater ponds are located. The area west of the canning and drum storage building is gravel covered with a number of metal pipe racks with process piping still in place. West of the piping racks is the area used by NCI for their manufacturing operation. All of the storage tanks, tower, and process vessels and piping are still in place from the NCI operation. Storm water from this area of the facility drains westward to a new small wastewater treatment system which is located on the eastern edge of the former wastewater treatment plant. A water leak was discovered from a system of sumps from the NCI process area. The runoff from the leak was flowing towards the Fire Water Pond located to the south.

The area west of the NCI operation and south of the office and lab buildings was the location of the MacMillan Refinery wastewater treatment plant. Although they had been closed or backfilled, the location of the wastewater treatment ponds was still obvious. Several tanks from the treatment system are still located at the site. A number of white PVC piping, assumed to be piezometers were discovered in this area of the facility. South of the former wastewater treatment area was the former location of several process ponds. The ponds comprising the former hazardous waste management unit (referred to in historical documents as ponds 705, 706, and 707) appear to have been filled in and were no longer present. Soil from the remediation activities at the site were spread over the area which was formerly these ponds. The larger pond to the south (historically referred to as Pond 704, or the 5-acre pond) appears to have been drained to Massey Creek by breaching the dike located along the south of the pond. The outfall structure and sampling equipment for the pond were still present at the site. The former pond area has become a laydown yard for process equipment, piping, tanks, and other equipment at the site. Just south of the outfall structure from this former pond is a large pile of soil. The pile has evidence of debris from the plant site including piping, hoses, metal containers, and concrete.

Just east of the former pond is a metal building with a block fireplace. The building has a large covered slab. Maps of the site call this facility the bioreactor building and historical documents refer to it as the picnic area but the actual use is unknown. There were no chemical containers or process related equipment located in the structure. Just north of this structure is the Fire Water Pond which is still intact. A large metal pump platform is still located in the pond which was full of water at the time of the site visit.

A number of monitoring wells and piezometers were still present at the facility, including two located offsite in the yard of a residence located adjacent to the west of the former wastewater treatment plant area. There is an additional gated entrance to site along the northern property boundary.

4.2.2 Utilities Description and Location

Based upon observations, both natural gas and city water enter the site from the north. Electrical lines run throughout the facility, mostly on elevated poles.

4.2.3 Surrounding Land Use

The site is bordered by a residence and the Norphlet Public School on the west, Hayes Creek on the north and east, and Massey Creek and bottomlands associated with the creek to the southwest. The city's wastewater treatment ponds are located on the southeast side of the property. The Union Pacific Railroad right-of-way bounds the east side of the property (Figure 4.5). The Norphlet Public School is located within 500 ft (west) of the site, and a city park and ball fields are located northwest of the site. The nearest residents are located immediately west of the property and commercial areas are nearby. There are security gates on the north and west entrances to the site, but the west gate was not locked at the time of the site visit. There is a partial fence around the property but the site is accessible to the public.

4.2.4 Topography and Surface Water Flow Paths

The site lies within the Gulf Coastal Plain Physiographic Province. The region is generally characterized by low rolling hills between wide river valleys that drain to the

Mississippi River. According to the USGS 7.5-minute series quadrangle for Smackover, ARK (1981) (Figure 4.3) the former plant site sits at an elevation of approximately 190 ft National Geodetic Vertical Datum (NGVD) of 1929 in the northeast corner to 180 ft in the area of NCI's former tank farm. The NCI tank farm is located in an area of significant relief where the ground surface drops to 160 ft then slopes gradually to the south. The site is drained by a number of ditches with primary surface water runoff to the south, west and east from the topographically high areas used by MacMillan and NCI for their operations.

Regional surface water flow is to the south-southeast. Runoff from the site flows into Hayes Creek and Massey Creek which are tributaries to Haynes Creek (also referred to as Flat Creek). The watershed consists of a coastal plain of rolling terrain broken by stream valleys. Streams meander and are of moderate to low gradient (all less than 10 ft/mi).

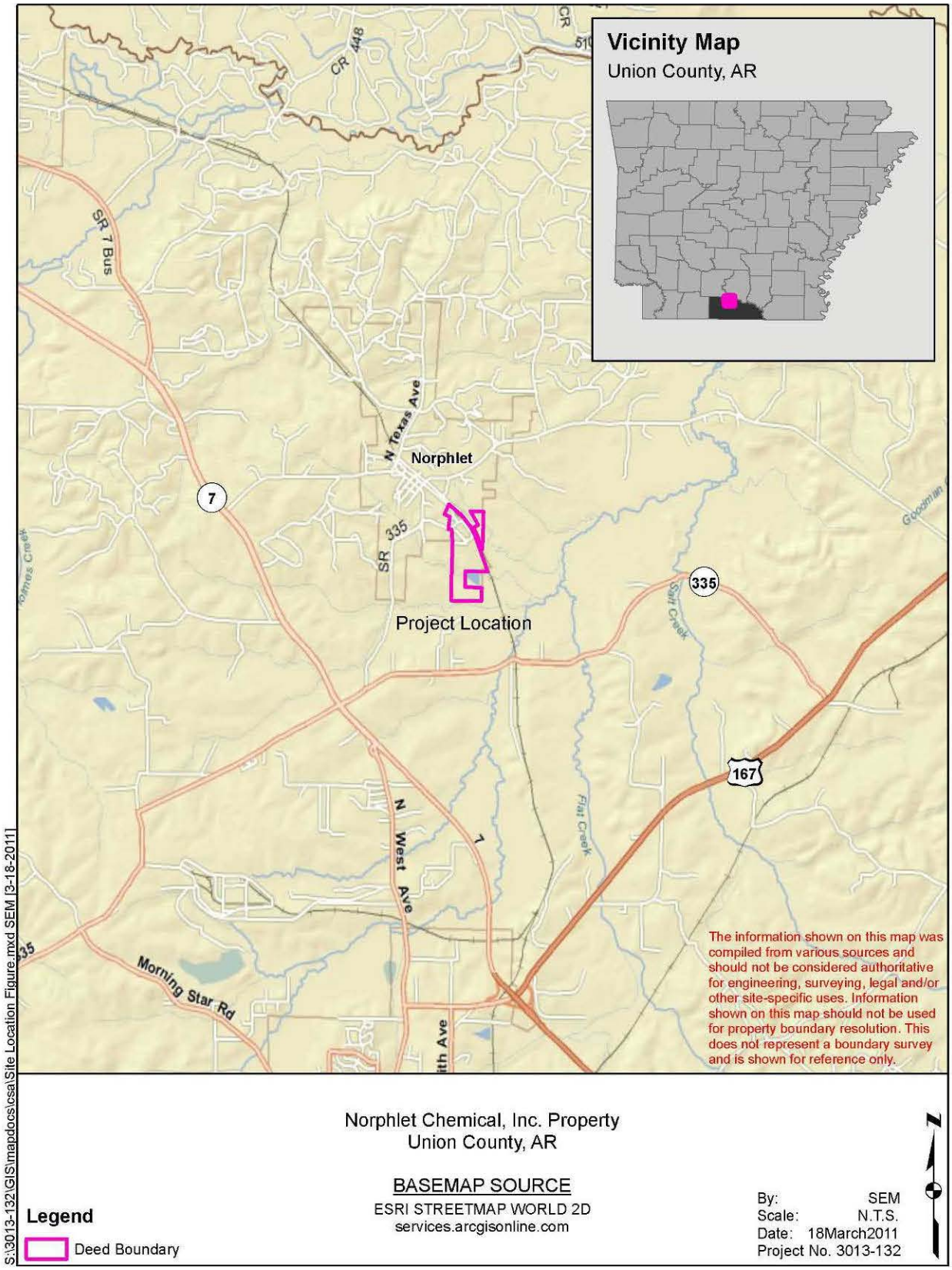
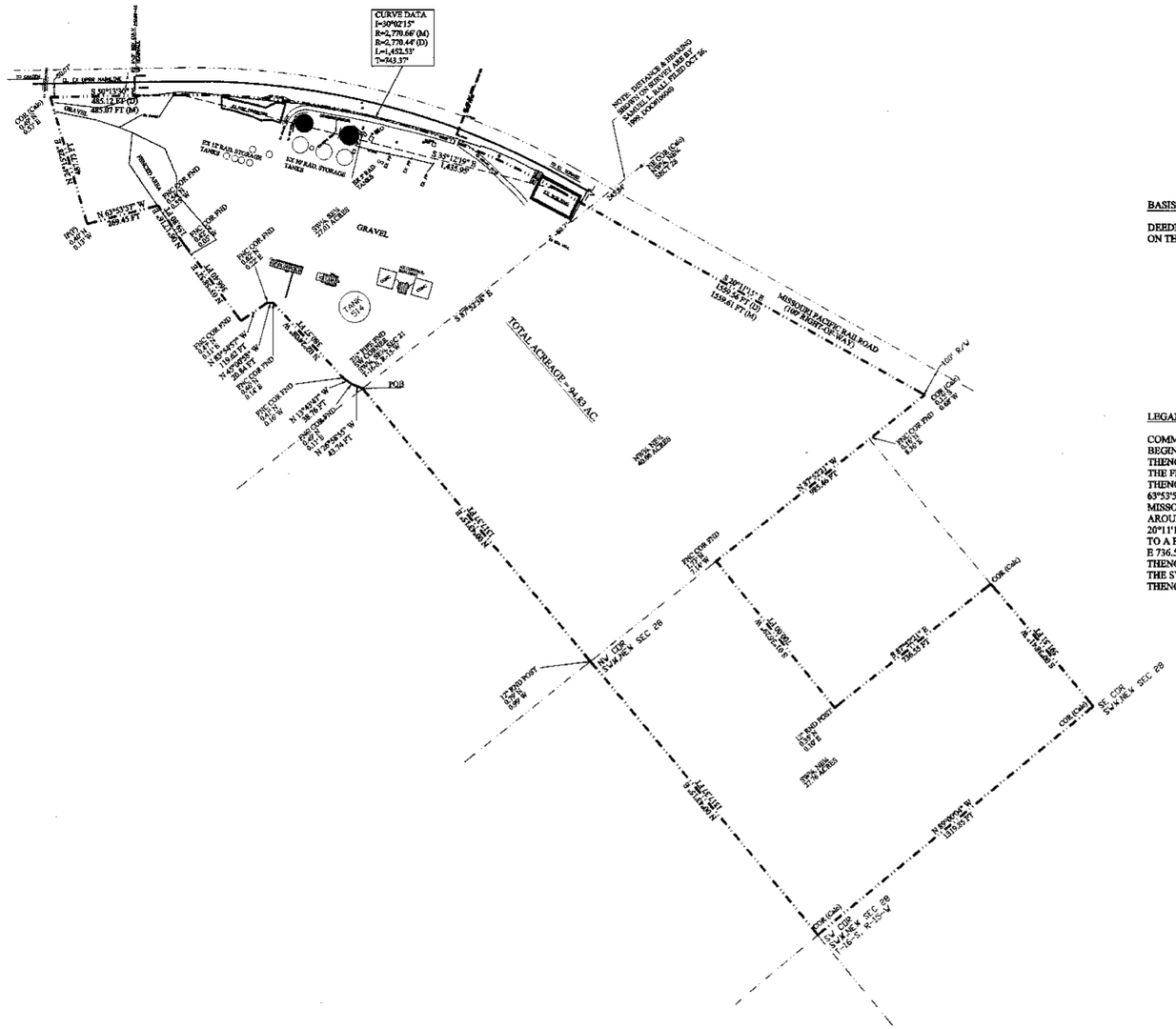
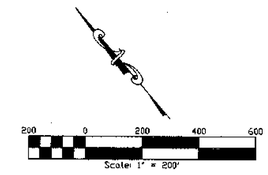


Figure 4.1. Location of the NCI site, Norphlet, Arkansas.





BASIS OF BEARINGS

DEEDED LEGAL DESCRIPTION AND BEARING ALONG THE SOUTH LINE OF THE SW¼, SE¼ OF SECTION 21, AS SHOWN ON THE SURVEY BY SAMUEL L. BALL, DATED OCTOBER 26, 1999.

LEGAL DESCRIPTION (AS PROVIDED BY NORPHLET CHEMICAL)

COMMENCING AT THE SW CORNER OF THE SW¼, SE¼ OF SECTION 21, T-16-S, R-15-W, BEING THE POINT OF BEGINNING; THENCE N 26°58'55" W 43.74 FEET ALONG A FENCE; THENCE N 13°43'47" W 38.76 FEET ALONG A FENCE; THENCE N 02°24'08" W 380.57 FEET ALONG A FENCE TO A FENCE CORNER; THENCE N 45°00'58" W 20.84 FEET ALONG THE FENCE TO A FENCE CORNER; THENCE N 83°54'57" W 119.62 FEET ALONG A FENCE TO A FENCE CORNER; THENCE N 03°58'52" E 366.40 FEET ALONG A FENCE; THENCE N 06°17'16" E 159.80 FEET ALONG A FENCE; THENCE N 63°53'57" W 269.45 FEET; THENCE N 24°15'28" E 487.73 FEET TO THE SOUTHERLY RIGHT-OF-WAY (100' R/W) OF THE MISSOURI PACIFIC RAILROAD; THENCE S 50°13'30" E 485.12 FEET ALONG SAID R/W; THENCE ALONG SAID R/W AROUND A CURVE TO THE RIGHT 1,452.53 FEET, SAID CURVE HAVING A RADIUS OF 2,770.44 FEET; THENCE S 20°11'15" E 1,559.56 FEET ALONG SAID R/W; THENCE LEAVING SAID R/W N 87°52'21" W 985.46 FEET ALONG A FENCE TO A FENCE CORNER; THENCE S 01°36'29" W 700.00 FEET ALONG A FENCE TO A FENCE CORNER; THENCE S 87°52'21" E 736.55 FEET ALONG A FENCE AND ITS EXTENSION TO THE EAST LINE OF THE SW¼, NE¼ OF SEC 28, T-16-S, R-15-W; THENCE S 00°38'41" W 591.51 FEET TO THE SE CORNER OF SAID SW¼, NE¼; THENCE N 89°00'04" W 1,319.85 FEET TO THE SW CORNER OF THE SAID FORTY; THENCE N 00°43'15" E 1,317.37 FEET TO THE NW CORNER OF THE SAID FORTY; THENCE N 00°43'15" E 1,317.37 FEET TO THE POINT OF BEGINNING, CONTAINING 94.83 ACRES, MORE OR LESS.

CERTIFICATION

THIS IS TO CERTIFY THAT THE ABOVE DESCRIBED LAND HAS BEEN SURVEYED. THE CORNERS ARE MARKED AS SHOWN AND ARE IN ACCORDANCE WITH EXISTING MONUMENTS IN THE VICINITY. THIS CERTIFICATION IS FOR AND LIMITED TO THE PARTIES SHOWN HEREON.

DATE: NOVEMBER 29, 2005
SCALE 1" = 200'
NORPHLET, AR
FOR THE USE AND BENEFIT OF:
NORPHLET CHEMICAL, INC.

W. WILLIAM GRAHAM JR., INC.
CONSULTING ENGINEERS AND LAND SURVEYORS

CHARLES T. WASSON
REGISTERED LAND SURVEYOR
ARKANSAS CERTIFICATE #676

REGISTERED LAND SURVEYOR

16 S 15 W 21
Commissioner of State Lands
Recorded 12-19-05
Document # 514907

BOUNDARY SURVEY OF
Norphlet Chemical, INC. Property

PART OF SECTION 21 & 28, T-16-N, R-15-W UNION COUNTY, NORPHLET, ARKANSAS

DATE: DECEMBER 13, 2005 SCALE: 1" = 200'

W. WILLIAM GRAHAM JR., INC.
CONSULTING ENGINEERS & LAND SURVEYORS
LITTLE ROCK, ARKANSAS

500-16S-15W-0-21-230-70-0676

Figure 4.2. Boundary survey of Norphlet Chemical, Inc. property (2005).

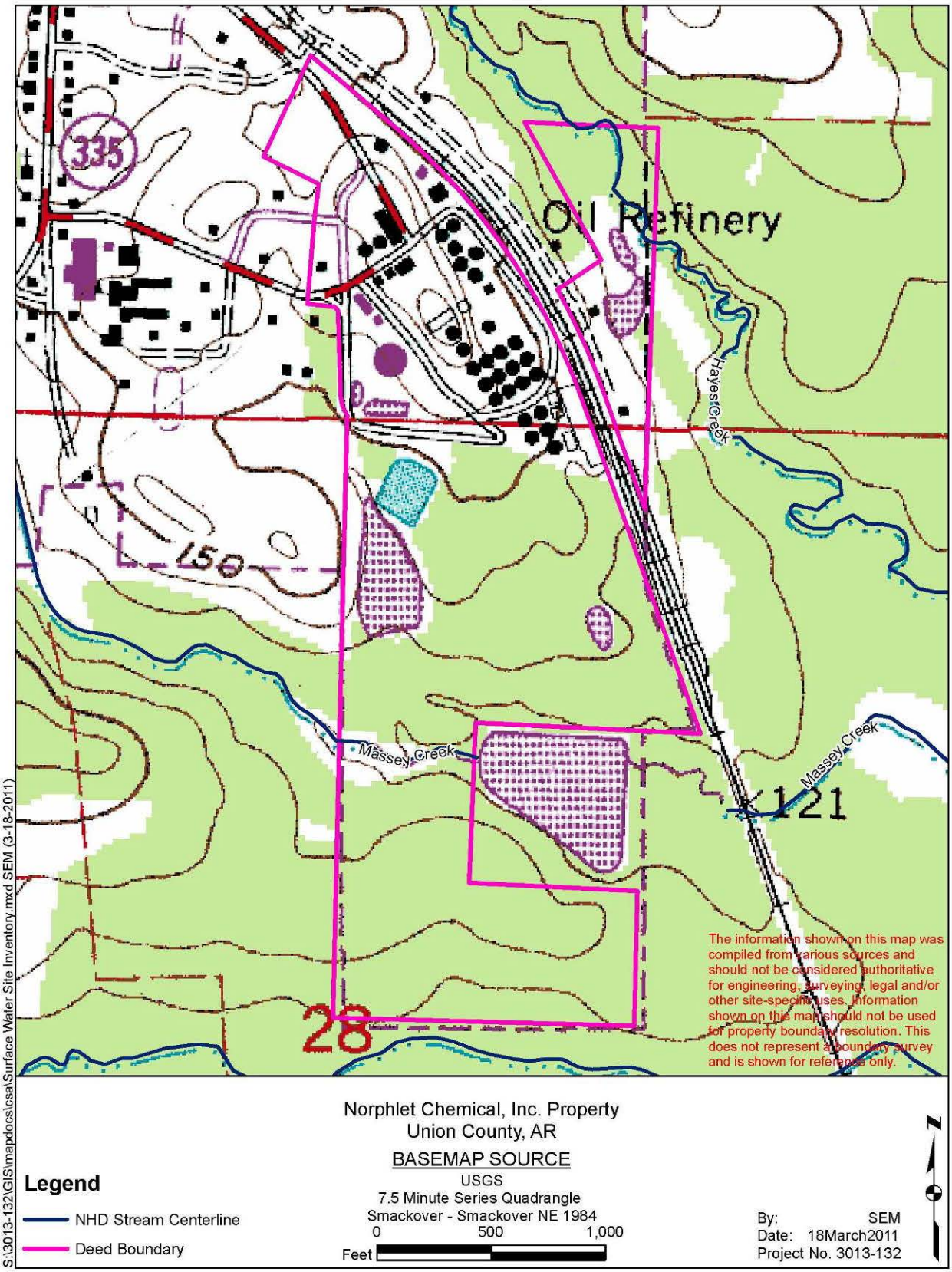


Figure 4.3. USGS topographic map, Smackover ARK (1984).

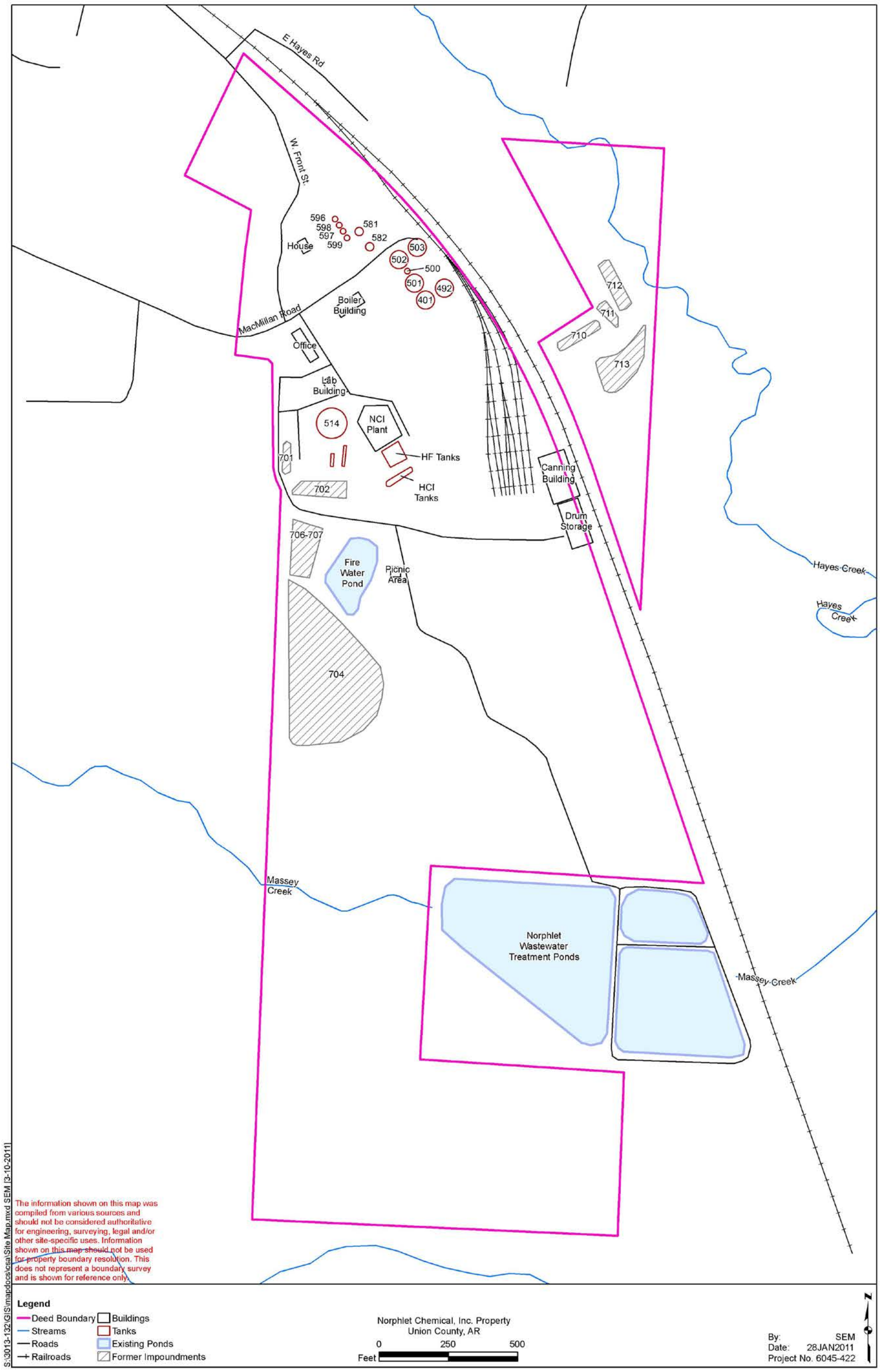


Figure 4.4. Norphlet Chemical Inc. site map.

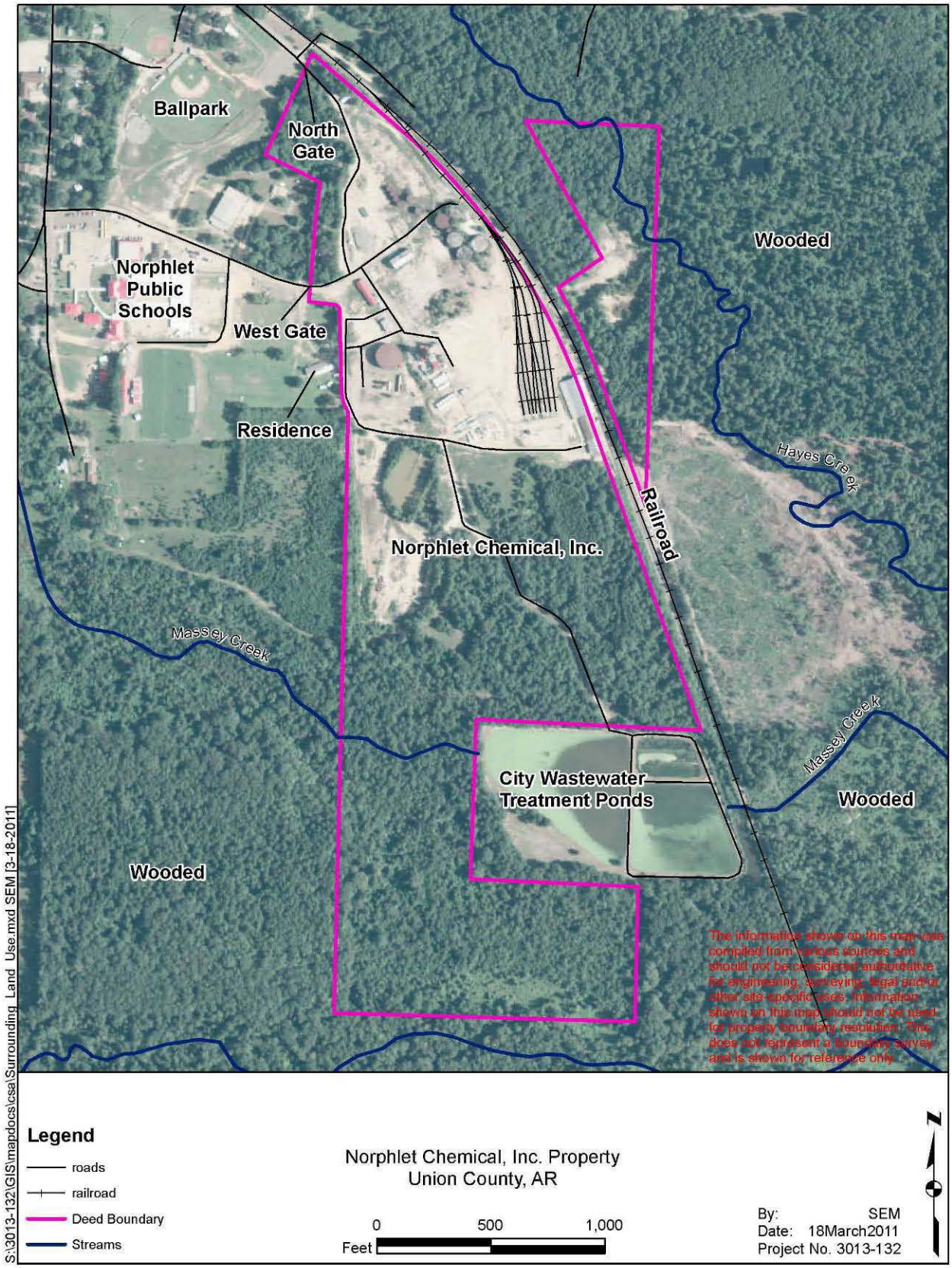


Figure 4.5. Land use surrounding the NCI site.

5.0 SITE HISTORY

5.1 Operational History

The NCI facility is currently inactive. It was planned that the facility would produce 1,1,1,2-tetrafluoroethane (Freon 134A) refrigerant used in automobiles but the plant failed to produce the product upon its completion in 2007. Although the plant never operated as intended, the following is a process description taken from the facility's air permit:

> Anhydrous hydrofluoric acid (AHF) and Trichloroethylene (TCE) raw materials are received by railcar. The finished product, 1,1,1,2-tetrafluoroethane (R134a), will be shipped out by railcar.
>
> The first reaction involves pumping and vaporizing AHF and TCE along with recycled hydrofluoric acid (RHF) into the hot oil or steam heated liquid reactor. The hot oil used to heat reactors in the plant comes from the hot oil heater (SN-01), or the steam to heat reactors comes from a natural gas fired boiler (SN-02). The reactor will be charged with AHF and catalyst and will be preheated prior to being fed. This reaction step converts the TCE to chlorotrifluoroethane (R-133a), anhydrous Hydrochloric acid (HCl) with some R-134a. The R-133a and unreacted hydrofluoric acid (HF) are then separated from the HCl and R-134 in the separation column allowing the R-133a and HF to flow to a decanter. The R-134a and HCl with some HF flow to the primary distillation column through a pressure control valve using differential pressure.
>
> The feed into the primary distillation column is cooled to ensure the separation of R-134a and HCl in the tower. The R-134a is collected in the bottom of the primary distillation column and the HCl is removed from the top by pressure control to an HCl absorber system. An internal cooler at the top of the primary distillation column further ensures the R-134a and HF go to the tower bottoms. The liquid collected in the primary distillation column bottom is level controlled to the secondary distillation column for final purification.
>
> The temperature and pressure of the secondary distillation column will be adjusted to minimize any HF into the top of the tower and to collect it in the bottom. The R-134a in the top of the tower is cooled and condensed for reflux back to the column. A slip stream of the reflux, which will be high purity R-134a, flows to a set of alumina beds where any residual acid is removed. The R-134a then flows to storage thru a product cooler for cooling. Any low boiling material that collects in the cooler at the top of the secondary distillation column will be vented to the vent scrubber system to ensure efficiency of the condenser and maintain constant tower pressure. The liquid collected in the bottom of the secondary distillation column, which is primarily HF, will be level

controlled to the decanter storage tank. The decanter storage tank is cooled to insure that material can be feed into the tank.

The contents of the decanter are the feed for the hot oil heated gas phase reactor. The feed is pumped from decanter to the reactor. Make up AHF and oxygen are added into this feed stream prior to passing thru a vaporizer. The gas feed flows into a reactor for reaction of the R-133a and HF to R-134a. The gas outlet of the reactor is then fed thru a cooler to cool the reactor outlet gas. The reactor outlet gas is then pressure controlled back into the reactor.

The scrubber system (SN-03) consists of the following description: The overhead vent stream will be feed to the vent scrubber system. The vent scrubber system consists of three tanks, one charged with water and re-circulated thru the packed scrubber column, and two charged with 5% Potassium Hydroxide (KOH). The gas from the overhead vent system contacts the water column in the first scrubber to absorb the majority of the acid and/or organics, then passes to the two KOH scrubbers to neutralize anything that is not absorbed in the water column. The three scrubbers are connected in series with a negative pressure draft blower pulling through them. The final scrubber vents to the atmosphere as SN-03 (the process stack).

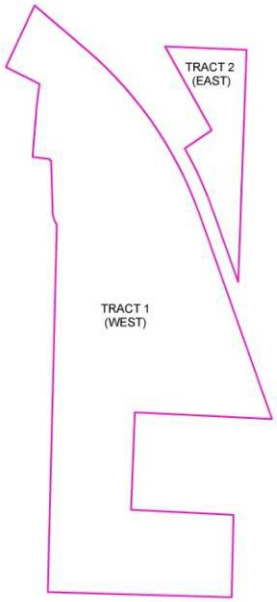
NCI was present on site from 2005 to September 2008. Prior to 2005, the site had a long history of operation including an oil refinery.

MacMillan Ring-Free Oil (MacMillan), operated a crude oil refinery for approximately 58 years. During operations, crude oil for processing was brought to the refinery from surrounding oil fields by pipe lines and tanker trucks. Daily refining capacity was approximately 4,500 barrels (ADEQ 2010). The refinery produced primarily naptha, diesel fuel, insulating oil, lubricating oil, and asphalt. The remaining wastes and volumes associated with historic oil refinery operations are currently unknown. Figure 5.1 is a 1962 aerial photograph that shows the MacMillan operation. Not shown in this photograph is the large 50,000 gallon storage tank “514” that is a prominent site feature today, the former 5-acre pond, and former impoundments comprising the hazardous waste management unit that were constructed after 1962.

The facility was active until 1985. From April 1989 until March 1991, Nor-Ark Industrial Corp (Nor-Ark), allegedly did not use the facility as a refinery, but offered storage tank leasing for asphalt products and had plans to offer office space, storage, and repair of railroad cars. Nor-Ark had dismantled most of the facility and sold equipment, fixtures, etc. by September 1990 (1991b).

5.2 Ownership History

MacMillan owned the property from approximately 1929 until August 1987, when operations ceased followed by involuntary bankruptcy proceedings against MacMillan in October 1987. The facility was inactive until April 4, 1989, when the bankruptcy trustee sold the refinery to Nor-Ark, who had plans for an industrial park (Nor-Ark. 1989). ADEQ (1991b) reported that Nor-Ark had filed for bankruptcy by March 1991. Further review of documents at the Union County Courthouse by FTN indicates that as a result of a legal judgment against Nor-Ark, the property was sold at auction, and the Chancery Court of Union County conveyed the property to Norphlet Commercial Storage, Inc. on May 4, 1999. The property included the 94.8 acre tract of land west of the railroad and the 10.7 acre tract east of the railroad. The sketch below depicts the property boundary shape files for the two tracts of land.



Norphlet Commercial Storage, Inc. sold the 94.8 acre tract for a nominal fee to Norphlet Commercial Properties, LLC on November 8, 2004. NCI occupied the site from 2005 to September 2008. The relationship between NCI and Norphlet Commercial Properties, LLC is not clear from court records; however, the NCI property boundary survey coincides with the western 94.8-acre tract, and the county assessor' s records indicate that NCI paid the 2010 real estate taxes on this tract of land.

5.3 Past Environmental Regulatory Involvement

There is significant amount of information regarding regulatory actions located in ADEQ's records. This section lists the permits held by NCI and summarizes the site's regulatory history.

5.3.1 Permits, Licenses, and Certificates

ADEQ issued the following permits to NCI:

1. NPDES Permit No. ARR000161 for storm water discharges (April 3, 2006); and
2. Air Permit (Permit No. 2101-A) on June 1, 2006. Permitted sources for the plant included a Hot Oil Heater (SN-01), a Natural Gas Fired Boiler (SN-02), and a series of scrubbers (SN-03) to capture process emissions. Requested permitted emissions included 1.1 tons per year of PM/PM10, 0.2 tons per year of SO2, 7.3 tons per year Volatile Organic Compounds (VOC), 11.3 tons per year of CO_2, 6.7 tons per year of NOX, and 3.95 tons per year of R134a. VOC emissions include the following Hazardous Air Pollutants (HAPs) emissions: 1.32 tons per year of TCE, 3.44 tons per year of hydrogen fluoride (HF), and 2.9 tons per year of hydrogen chloride.

ADEQ's Permit Data System also lists NCI as having EPA Identification No. ARD008049207 (active) and Regulated Storage Tank (RST) permit No. 70000219, which were carried over from the previous MacMillan operation.

5.3.2 Regulatory History

This section describes the regulatory history of the site by operator beginning with the MacMillan oil refinery.

MacMillan Oil Refinery

Records indicate a history of regulatory environmental issues and enforcement actions from 1980, when MacMillan filed a Part A application for hazardous waste activity to 1987, when the facility ceased operation. Issues primarily pertained to hazardous waste pond closures. During operation of the oil refinery, MacMillan used dissolved air floatation (DAF) systems as part of their waste water treatment process. DAF sludge is classified as a hazardous waste (KO48) in 40 CFR 261. The primary chemicals of concern were chromium and lead based on the listing, but the waste included volatile organic and semi-volatile organic compounds as well. Sludge was stored in three surface impoundments (identified in the files as 705, 706, and 707) located west of the fire water pond (Figure 4.4), considered to be a RCRA treatment, storage, and disposal (TSD) facility. MacMillan constantly maintained that their DAF float should not be regulated as hazardous wastes and refused to install a groundwater monitoring system around the impoundments by the November 8, 1986 regulatory deadline, thus its interim status was terminated, and ADEQ directed MacMillan to close the impoundments. As part of the closure a site hydrogeologic characterization was completed (B&F 1987), and a closure plan prepared by MacMillan and modified by ADEQ on May 22, 1986 was approved, but closure was not completed due to the bankruptcy.

The site had a history of overflows from the impoundments to adjacent streams. The refinery used 11 ponds to contain oil contaminated liquids and to recover crude oil leaks and spills. The refinery had an NPDES permit to discharge into Massey Creek on the west site of the facility, but spills into Hayes Creek were evident during USEPA assessments. USEPA had conducted assessments in 1981 and 1985 and reported no major concerns but recommended detailed sampling along Haynes Creek to determine the extent of contamination. No action was taken under Superfund because the site was an active refinery (Weston 1993). Oily material was reportedly released from impoundments during floods in 1982 and 1983 and covered approximately 150 to 200 acres of Ouachita River bottoms; however no records of environmental damage or cleanup actions associated with these spills have been located.

Nor-Ark Industrial Corporation

After purchasing the facility in 1989, Nor-Ark failed to assume the environmental liabilities (including pond closure and groundwater monitoring) and to obtain an EPA identification number. Violations ranged from failure to maintain 12-inch freeboard on the impoundments, unpermitted discharges and improper storage of hazardous wastes, failure to monitor groundwater, and failure to close the hazardous waste impoundments. In 1990, violations of asbestos regulations resulted in an Emergency Order requiring the removal of approximately 171 cubic yards of asbestos-containing materials. By the time of the September 1990 compliance monitoring evaluation (ADEQ 1991a), Nor-Ark had dismantled most of the facility and sold equipment, fixtures, etc. Nor-Ark ceased operations and filed for bankruptcy by March 1991 (ADEQ 1991b).

The bankruptcy of Nor-Ark in 1991 led to a series of EPA Superfund removal actions from 1992 to 1997. During removal operations conducted in 1992, approximately 31,500 gallons of free-floating oil materials were recovered from impoundments. During subsequent removal operations conducted in 1993, 9,600 gallons of composite waste/flammable corrosive liquids and 50,080 gallons of waste oil were transported off-site. Final Superfund removal operations were completed in 1997, and included pumping, treating, and discharging wastes from ponds and onsite bioremediation of approximately 13,000 cubic yards of contaminated soils, which was used to backfill the impoundments (ADEQ 2010). The extent of the removal work included excavation, treatment (bioremediation), and backfilling of some contaminated soils/sludge from the facility's impoundments and soil along Massey Creek. USEPA's removal work was conducted to mitigate substantial endangerment and/or eminent threat to public health and the environment. Therefore, USEPA did not address all environmental concerns or problems (e.g., groundwater).

Norphlet Chemical, Inc.

ADEQ had issued a letter dated October 2005, notifying NCI of acceptance of application for participation in the Arkansas Brownfield's Program; however, due to bankruptcy NCI's obligations under the Brownfields program were not realized.

ADEQ conducted a site inspection of the facility in March 2009 and noted corrosion on tank relief valves. In April 2009, USEPA began an Emergency Removal Action at the site in response to ADEQ's concerns about the unsafe condition of tanks and piping systems containing anhydrous hydrogen fluoride (AHF) and AHF mixtures, including HF. Initial actions to mitigate the site's Imminent and Substantial Endangerment status included the construction of a scrubber system, removal of AHF and AHF mixtures, and decontaminating all tanks and piping.

The Norphlet Public School, located approximately 500 ft from the site, was closed on April 17, 2009 due to EPA's determination of an Imminent and Substantial Endangerment posed by the NCI facility. Air monitoring was conducted throughout the site during transfer and cleanup processes. Air monitoring equipment remained in place at the perimeter of the site until after the tankers were removed.

Waste and approximate volumes removed from the site during the 2009 emergency actions include:

- 12,000 gallons of process tank decontamination/neutralization water;
- 58,000 gallons of AHF-contaminated liquid wastes;
- 540 cubic yards of TPH-contaminated soil (from an unknown location);
- 30 cubic yards of spent carbon and alumina;
- 30 cubic yards of sodium fluoride solids; and
- 1,460 gallons of used oil.

Additionally, 69,000 gallons of carbon-filtered water was discharged into onsite wastewater treatment ponds and 605 gallons of containerized TCE-contaminated liquid were removed from the site for disposal.

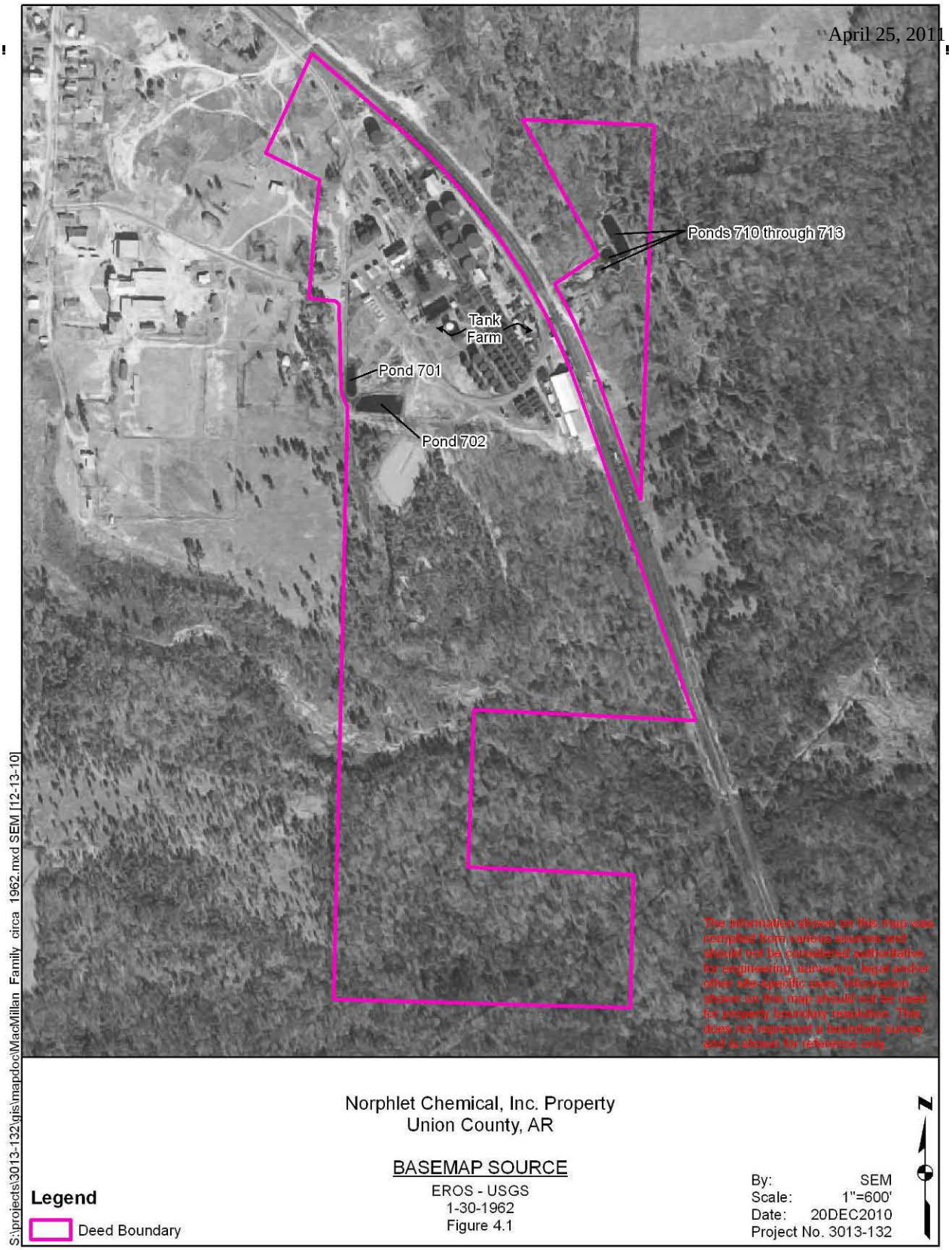


Figure 5.1. MacMillan facility circa 1969.

6.0 ENVIRONMENTAL SETTING

6.1 Soils and Hydrology

6.1.1 Surface Soil Description and Classification

Surface soil on the site is classified by the USDA-NRCS (USDA 1992) (http://websoilsurvey.nrcs.usda.gov/) as primarily Warnock-Smithdale complex (WsC) (Figure 6.1). Warnock-Smithdale are loamy, marine deposits found on hills and consist primarily of fine sandy loam to sandy loam that is moderately to well drained. They are variously identified as CL-ML, SM, SC-SM in the Unified Soil Classification System (USCS). Located on the south end of the site in the vicinity of the city's wastewater treatment ponds, is Harleston fine sandy loam (HaC), which has similar characteristics to the above but in a higher runoff class.

6.1.2 Regional Physiography and Geology

The NCI site is located within the south-central portion of the Gulf Coastal Plain Physiographic province which comprises approximately the southern quarter of Arkansas. This province is bounded to the north by the Ouachita Mountains Region and to the east by the Mississippi Embayment. Sediments ranging in age from Jurassic to Quaternary have been deposited in thicknesses as great as 6,000 ft in southwestern Arkansas. The sedimentary accumulations dip toward the southeast at a rate of 30 to 50 ft per mile, with the exception of the Quaternary-aged sediments, which locally overlie older sediments along stream and river channels. The deposits are successively overlain by younger deposits in the direction of dip (Ludwig 1972). Quaternary alluvial deposits consisting of gravels, sands, silts, and clays may be present at the southern end of the property; however the site appears to be underlain primarily by the Eocene-aged Claiborne Group (USGS 1984). McFarland (1998) describes the Claiborne Group as follows:

CLAIBORNE GROUP
Age: Tertiary Period, Eocene Epoch
Distribution: West Gulf Coastal Plain of southern Arkansas and Crowley's Ridge in eastern Arkansas; Gulf Coastal Plain from Georgia to southern Texas

Geology: The Claiborne is chiefly non-marine in origin, but does contain some marine intervals. The unit is composed of medium- to very fine-grained sands, silts, and silty clays. The sands tend to be light- to dark-gray, white, brown, or red, depending on the degree of weathering. The silts and clays are light- to dark-gray and sometimes variegated. Intervals enriched in carbonaceous material are dark-brown to black. The silts are usually clayey and the clays are normally silty or sandy. Lignite beds are present in this interval. Lignite deposition was controlled by the geologic environment. In the subsurface, the Claiborne Group has been divided into the Carrizo Sand, Cane River Formation, Sparta Sand, Cook Mountain Formation, and Cockfield Formation. Fossils include fish and reptile bones and teeth, leaf impressions, lignitic wood, and trace fossils. The lower contact of the Claiborne Group is poorly known, but considered unconformable to the Wilcox Group. The thickness of the Claiborne ranges from a thin edge to 1,500 ft.
Original reference: T. A. Conrad, 1847, Philadelphia Academy of Natural Science Proceedings, v. 3, p. 280-282.
Type locality: Named for exposures at Claiborne Bluff and Claiborne Landing on the Alabama River in Monroe County, Alabama.

Claiborne Group deposits belong to the Mississippi Embayment aquifer system (Renken 1998), which has been divided into nine hydrogeologic units, including six regional aquifers and three regional confining units. Of the six aquifers within this system, the middle Claiborne aquifer, which comprises the Sparta Sand, is the most heavily used in Union County. The Sparta Sand is bounded above and below by confining units – the middle Claiborne confining unit (i.e., Cook Mountain Formation) above and the lower Claiborne confining unit (Cane River Formation) below. These confining units comprise prodelta and marine shelf deposits of clay, mud, marl, and shale. Sands of the Cane River Formation and the Carrizo Sand comprise the lower Claiborne-upper Wilcox aquifer.

The site lies within the outcrop area of the Cockfield Formation of the Tertiary Claiborne Group (Figure 6.2). The Cockfield is composed of interbedded and lenticular fine to medium-grained sand, silt, clay, and lignite. Throughout most of Union County the Cockfield is approximately 200 ft thick (Broom et al. 1984). Sand beds in the Cockfield may be up to 100 ft thick. These sand beds form the Upper Claiborne aquifer (Renken 1998). Groundwater from this unit discharges to local streams and rivers. The underlying Cook Mountain Formation is approximately 100 to 150 ft thick and is comprised of primarily clay and silty clay (Bloom et al. 1984). As previously discussed, the formation serves as a confining unit between the more

permeable overlying Cockfield Formation and the underlying Sparta aquifer. (Bloom et al. 1984; Renken 1998).

In Union County, Arkansas, the Sparta aquifer is a confined aquifer consisting of a sequence of unconsolidated sand units that are contained within the Sparta Sand formation (Hays, 2000). The Sparta aquifer consists of gray, fine to medium sand, brown and gray sandy clay, and lignite. Total thickness of the aquifer is approximately 600 to 800 ft in Union County. Wells screened in the most productive upper and lower sand units of the Sparta aquifer in Union County (i.e., the "Green sand" and the "El Dorado sand", respectively (Hays, 2000)) may yield 300 to 1,000 gallons per minute (gpm) (Renken 1998). Water obtained from the aquifer is soft to moderately hard sodium bicarbonate type water (Renken 1998). Recent groundwater development and large water withdraws in the Union County area has caused declines in the potentiometric surface of the Sparta aquifer. In recent years, much emphasis has been place on the conservation, monitoring, and recovery of the groundwater in the southern Arkansas region.

6.1.3 Site-Specific Hydrogeologic Conditions

Appendix B contains boring logs for the 21 boreholes that were advanced through the Cockfield Formation to total depths of 12 to 45 ft bgs. Borings were continuously logged from ground surface to completion and temporary monitoring well installation information was included in boring logs (Appendix B). Subsurface data were used to develop the cross sections shown in Figure 6.3. As shown in this figure, site soil consists primarily of silt and sand deposits (SP/SW and ML) which contain lenses of clay (CL) and gravel (GP) that are complexly interbedded and lensed. The Cockfield Formation consists mainly of discontinuous gray to white to brown, well graded, very fine to medium grained sand (SW) interbedded with silt, sandy silt, and clay. Unsaturated soils consist of subaerial deposits of interbedded clay (CL), sand (SP), and silt (ML). Saturated soil consists primarily of white, gray, or tan sand, very fine to medium grained with saturated intervals found near the base of the Cockfield Formation.

Static groundwater levels were measure in temporary wells, NCI-0 through NCI-20 and historical monitoring wells and piezometers on March 2, 2011. Water level data were used to develop the potentiometric surface map shown in Figure 6.4, which indicates that groundwater

flows north-northeast towards Hayes Creek, south-southeast towards Massey Creek, and south towards the convergence of the two creeks. A groundwater divide located beneath the north western half of the property controls the flow of groundwater into creek basins. Groundwater occurs under both unconfined and semi-confined conditions. Shallow groundwater was encountered in saturated intervals ranging in depth from 8 to 10 ft bgs in lower elevations and about 40 ft bgs in topographically high areas. Gradients of the groundwater table are moderate near the center of the divide, becoming steeper away from the center of the NCI site.

The Cockfield Formation comprises the uppermost aquifer beneath the site and discharges to local streams and rivers. According to B&F (1987), the aquifer has a hydraulic conductivity of 4.8 X 10^{-3} cm/sec. Using the established site hydraulic conductivity, an effective porosity of 40% (B&F 1987), and hydraulic gradients varying from 0.001 to 0.026, seepage velocities are estimated to range from 1.4 x 10^{-5} cm/sec to 3.15x 10^{-4} cm/sec, or 15 to 325 ft/year.

The Cook Mountain formation was encountered at depths of 31 ft bgs at NCI-6 and 31 ft bgs at NCI-8. The maximum thickness of Cook Mountain formation penetrated was 5 ft at NCI-8. This formation was encountered at elevations of 128.97 to 120.68 ft mean sea level (MSL) at NCI-6 and NCI-8, respectively. Where encountered, the Cook Mountain formation consisted of a dark gray to black silt transitioning to hard shale with depth.

6.1.4 Local Groundwater Use

Union County relies heavily on groundwater for domestic, public, and industrial water supply purposes. For example, during 2006, wells in the Sparta aquifer produced 4.9 Mgal/day for industrial, commercial, and mining purposes (ANRC, 2008). A search of the online US Geological Survey (USGS) National Water Inventory System (NWIS) (http://nwis.waterdata.usgs.gov/nwis/gwsi), and the USGS Groundwater Site Inventory (GWSI) database indicated three wells within a one mile radius of the NCI site that provide public water supply (Figure 6.5). The public supply well located closest to the site is a USGS active data collection site for the Mississippi embayment aquifer system. Northwest of the USGS data collection well are two other public water supply wells. Well depths are between 600 and 665 ft bgs and all are completed in the lower El Dorado sand unit of the Sparta aquifer. A search of the

Arkansas Geological Commission well installation records identified no wells near the NCI plant.

Norphlet Municipal Waterworks serves a population of approximately 798 people (2009 Census, http://www.city-data.com/city/Norphlet-Arkansas.html). City of Norphlet residents use city water acquired from two groundwater wells completed in the El Dorado sand unit of the Sparta aquifer. These wells are approximately 500 to 600 ft deep. These wells are located 0.5 mile and 0.75 mile northwest of the site and are up gradient from the general regional direction of groundwater flow to the south-southeast. The total water withdrawal for both wells during the month of October 2010 was 5.32 million gallons.

Historically, there were also two plant production wells on the site. Well 1 and Well 2, drilled in 1960 and 1968, respectively, are approximately 600 ft deep (El Dorado Sand) and have the capacity to produce 285,600 gallons per day (USEPA 1980). These wells were not found during the well inventory and site assessment. Their locations shown on Figure 6.5 are based on information found in Weston (1993) and B&F (1987). The risk of contamination of the public water supply from the NCI site is low due to the depth of the Sparta drinking water source and the presence of overlying clay layers (Cook Mountain Formation).

6.2 Surface Water

USGS delineates watersheds into smaller areas commonly known as 12-digit hydrologic unit codes, or HUC-12. The project site is located within the Haynes Creek HUC-12 Watershed. The drainage in and around the project area includes well defined floodplains and gently rolling hills, which is characteristic of the West Gulf Coastal Plan. The drainage pattern around the site is generally from northwest to southeast via two unnamed tributaries that are referred to as Massey Creek and Hayes Creek in project documents. The confluence of the tributaries with Haynes Creek occurs just upstream of where a major tributary of the Haynes Watershed, Flat Creek, empties into Haynes Creek. The bulk of the Haynes Creek watershed lies south of the project area and includes the community of El Dorado. Haynes Creek ultimately flows into Smackover Creek (5.5 miles), which forms the county boundary between Union and Ouachita

Counties. Smackover Creek then flows east approximately 3.0 miles to the Ouachita River. The Ouachita River flows south and east into Louisiana.

Haynes Creek, which is the downstream receiving stream of the project area, is located in the Gulf Coastal Ecoregion. The designated uses for Haynes Creek are documented in Regulation No. 2, (Regulation Establishing Water Quality Standards for Surface Waters of the State of Arkansas, Adopted by the Arkansas Pollution Control and Ecology Commission on September 24, 2010), and include only Domestic, Industrial and Agricultural Water Supply. A use variation for Haynes Creek, which is referred to as Unnamed Tributary to Flat Creek based on a Use Attainability Analysis (UAA), indicates the stream supports no fishable/swimmable uses. Surface water is not used as a municipal drinking water source by the city of Norphlet.

A review of the effective FIRM Panels (05139C0135C & 05139C0145C) for Union County, Arkansas and Incorporated Areas, dated 9/28/2007, indicates a large portion of the property is located outside of the Special Flood Hazard Area (SFHA). However, portions of the southern part of the property are located inside Zone A. The areas that appear within the FEMA designated Zone A limits are limited to the lower elevation areas of the site (Figure 6.6). From aerial photography and the FEMA National Flood Hazard Layer, the site features (buildings, ponds, etc) are shown to be outside of the SFHA. The Fire Water pond and Bioreactor Building are close to the SFHA boundary, but are still located outside of the SFHA.

6.3 Air

Air monitoring was conducted during 1994 and 2009 response actions to stabilize imminent threats to human health and the environment. More recently, there have been no known releases of gas and particulates to the air migration pathway and/or reports of adverse health effects.

6.4 Ecological Systems

This section describes the site’s ecological habitat, biological characteristics, and results of a file review for threatened and endangered species. Appendix C presents the ecological checklist completed for this site.

6.4.1 Ecological Habitat and Biological Characterization

The site is an abandoned industrial property. The site consists of open graveled areas and a mature hardwood forest (50% open area versus 50% forested). Three metal-framed buildings are located on the property but are not currently being used. Several large above ground tanks and a freshwater pond are also present on-site.

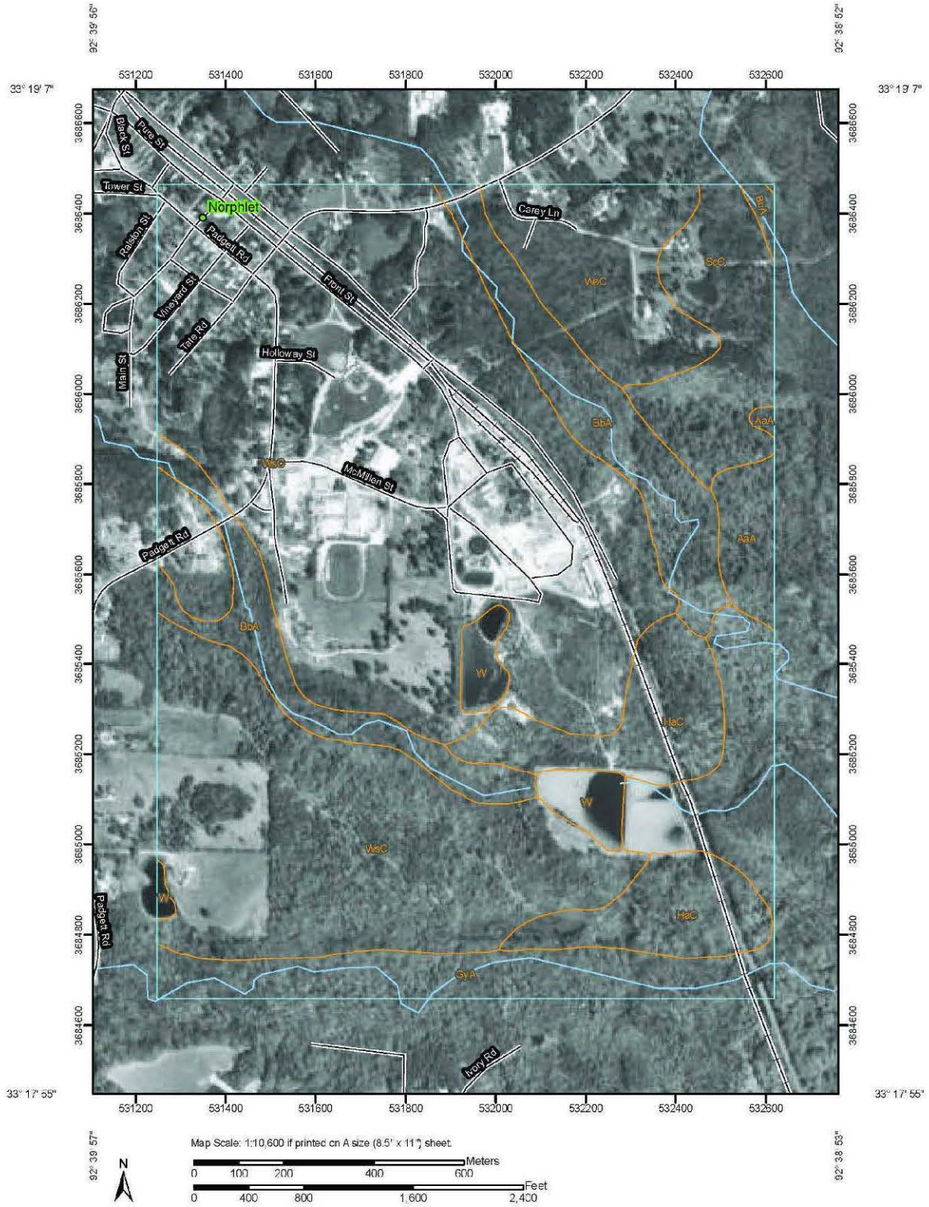
During the site visit in November 2010, red-breasted robins and hawks were observed on-site. Portions of the site also appear to offer suitable cover for small populations of deer and smaller herbivorous/omnivorous mammals and birds. Small pools of water/puddles were located on-site; however, no aquatic wildlife was observed.

During the site visit, there was ample water in the on-site pond. No fish or other aquatic organisms were observed in the pond. No wildlife was observed in or near the pond during the site visit. During certain times of the year, the pond may offer a habitat for aquatic organisms or may be a water source for wildlife.

6.4.2 Threatened and Endangered Species

The Arkansas Natural Heritage Commission (ANHC) was contacted to review its files for records indicating the occurrence of rare plants and animals, outstanding natural communities, natural or scenic rivers, or other elements of special concern within or near the NCI site. The materials supplied by the ANHC describe occurrences of species within Union County and as well as species located within one-quarter mile of the NCI site. These materials are presented in Appendix C.

The ANHC indicates that no elements of special concern have been recorded within one mile of the site.



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other

Special Line Features
- Gully
- Short Steep Slope
- Other

Political Features
- Cities

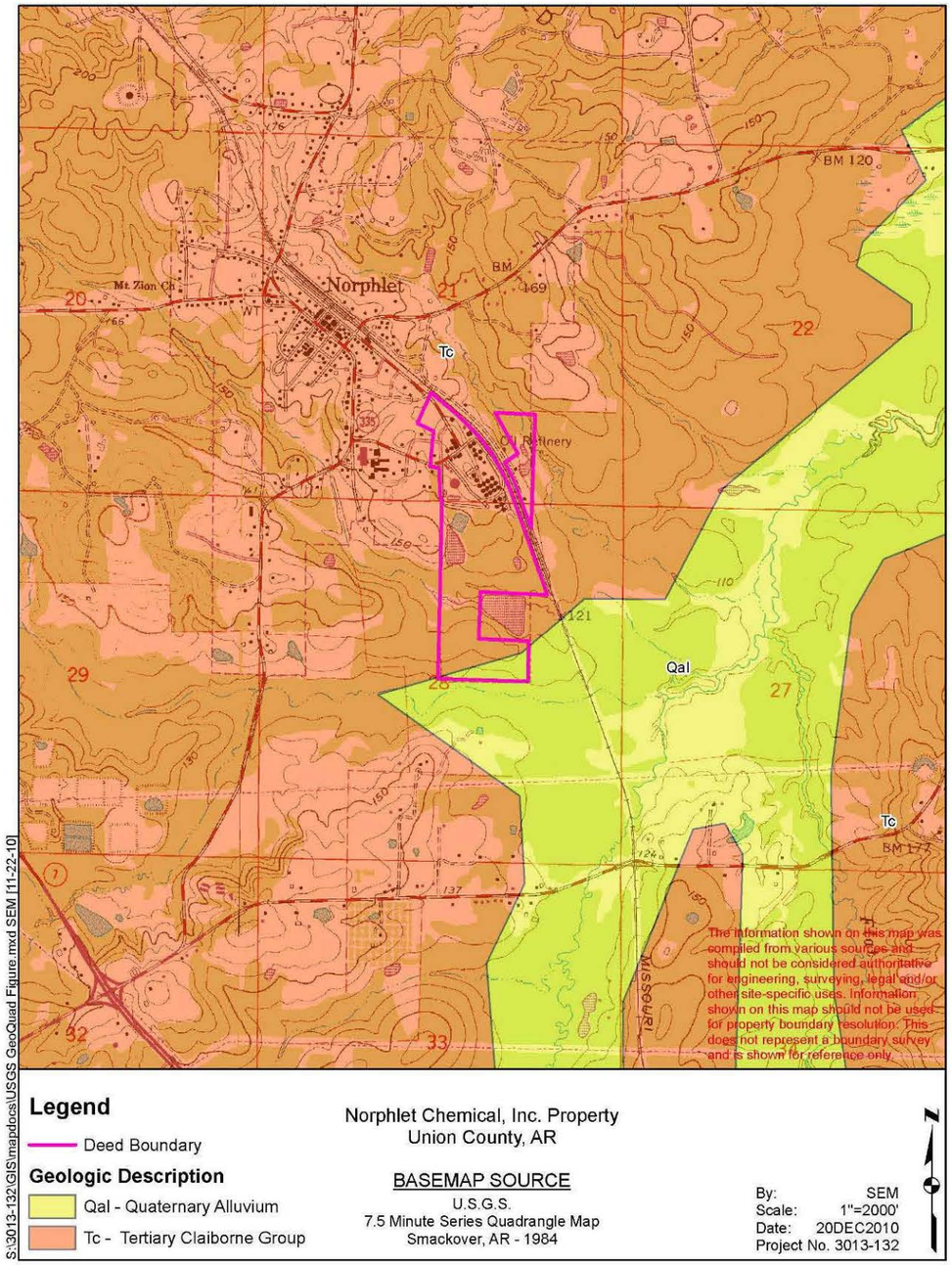
Water Features
- Oceans
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Map Unit Legend

Union County, Arkansas (AR139)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
AaA	Amy silt loam, 0 to 1 percent slopes, rarely flooded	10.9	1.8%
BbA	Bibb fine sandy loam, 0 to 1 percent slopes, frequently flooded	57.0	9.3%
GyA	Guyton silt loam, 0 to 1 percent slopes, frequently flooded	61.2	10.0%
HaC	Harleston fine sandy loam, 1 to 8 percent slopes	46.8	7.6%
ScC	Sacul-Sawyer complex, 1 to 8 percent slopes	32.7	5.3%
W	Water	11.7	1.9%
WaC	Warnock fine sandy loam, 1 to 7 percent slopes	36.5	6.0%
WsC	Warnock-Smithdale complex, 1 to 7 percent slopes	356.1	58.1%
Totals for Area of Interest		**612.8**	**100.0%**

Figure 6.1. USDA soil map, NCI site and vicinity.



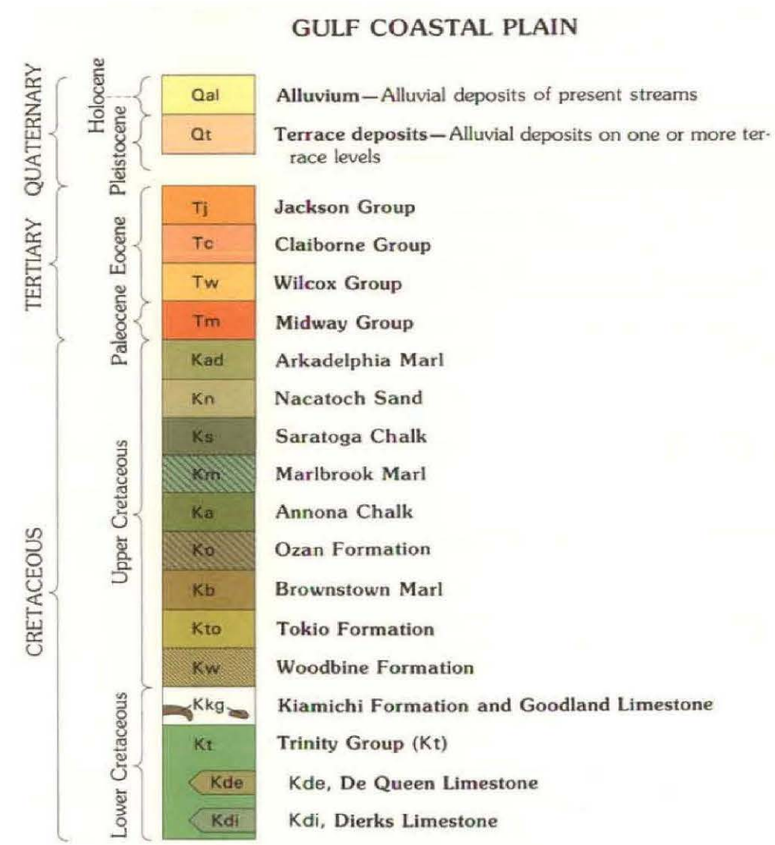
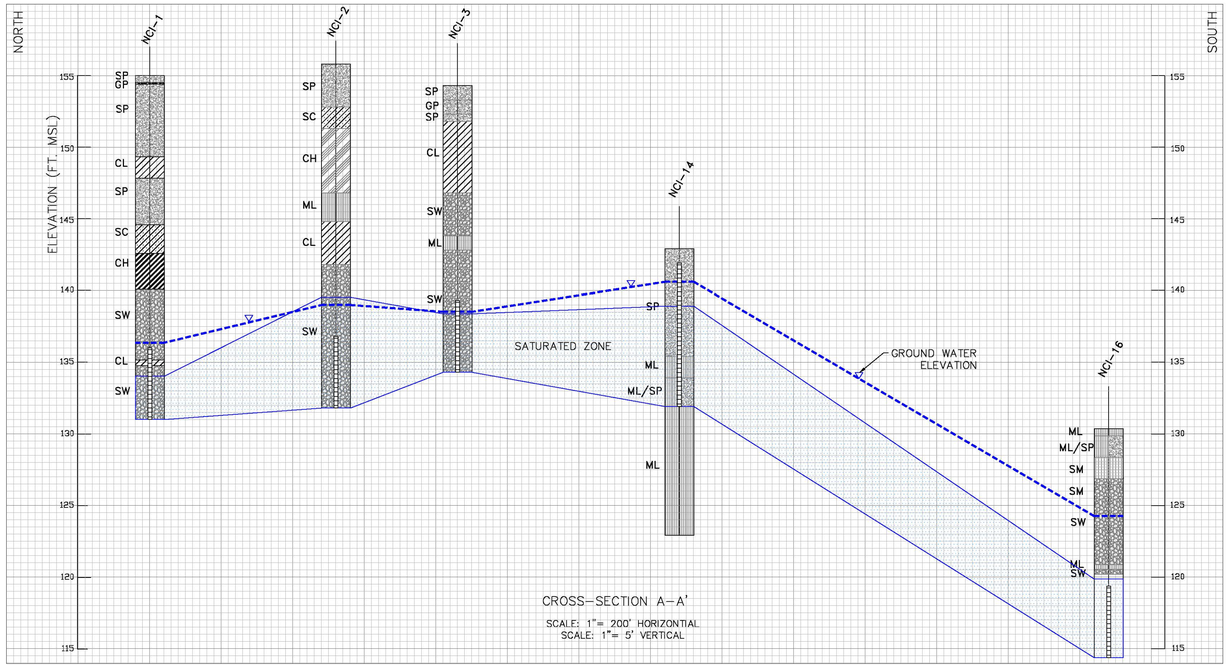
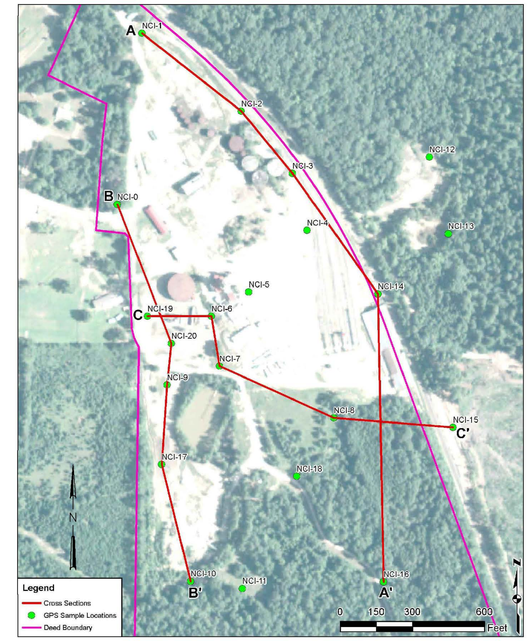
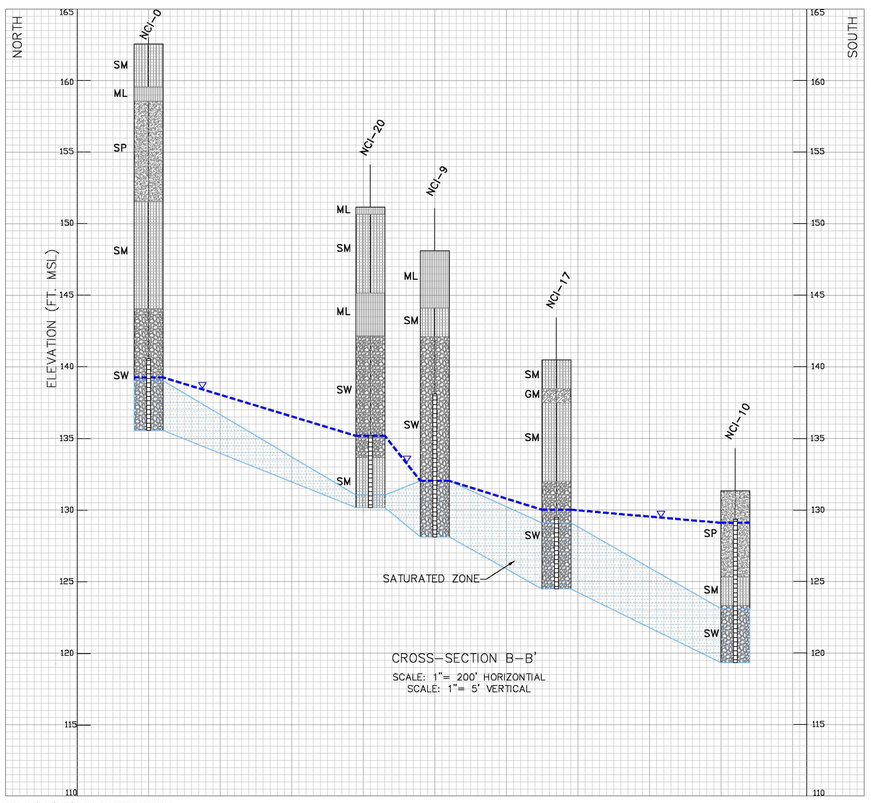


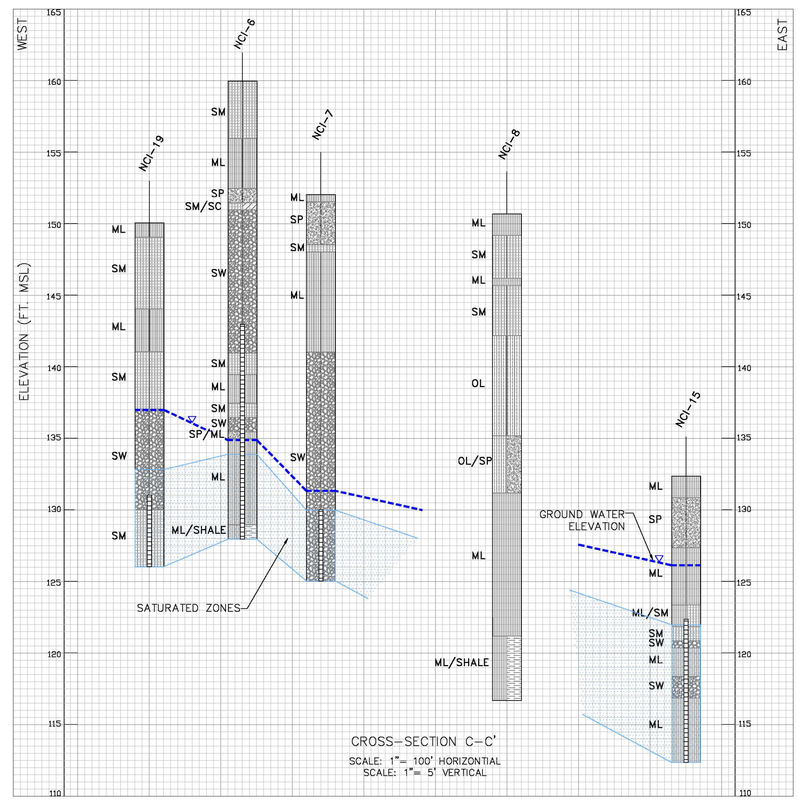
Figure 6.2. Geologic map of the project area.





PLAINVIEW OF CROSS-SECTIONS





LEGEND

- BORING LOCATION
- CROSS-SECTION
- FILL
- CL – CLAY
- ML – SILT
- SM – SAND, SILT
- SC – SAND, CLAYEY
- SP – SAND, POORLY GRADED
- SW– SAND, WELL GRADED
- GC – CLAYEY GRAVELS
- GM – GRAVEL, SAND, SILT MIXTURE
- GP – POORLY GRADED GRAVEL
- 0.010" SLOT, SCH 40 PVC PRE-PACKE SCREEN
- GROUNDWATER ELEVATION APRIL 23, 2011
- SATURATED ZONE

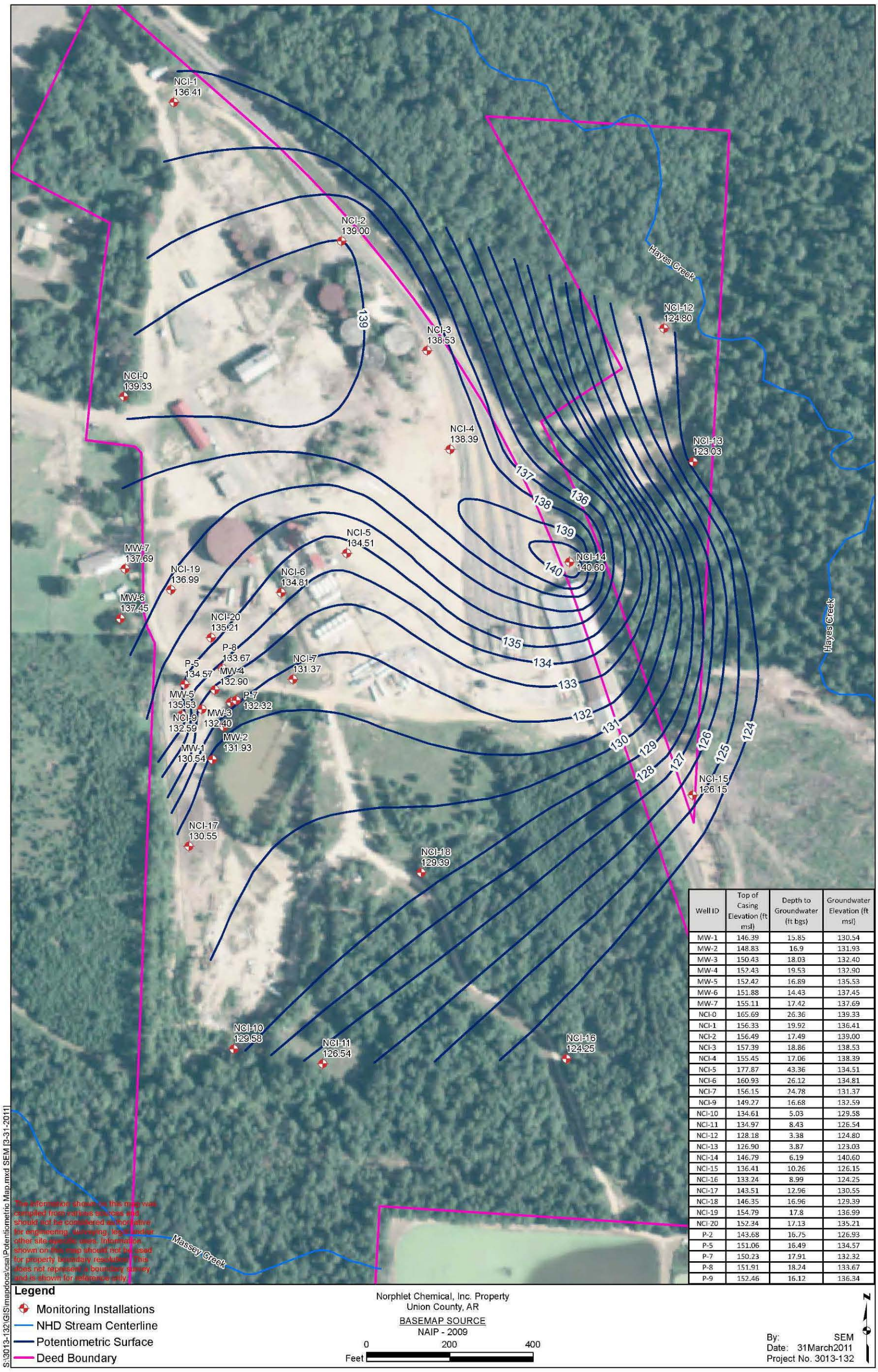
ftn Associates Ltd.
water resources/environmental consultants

NORPHLET CHEMICAL CSA
NORPHLET, ARKANSAS

FIGURE 6.3 GEOLOGIC CROSS-SECTIONS

DRAWN BY: JWM	FILE NAME: 3013-132 CROSS-SECTIONS	SCALE: N/A	SHEET NO. 1
APPROVED BY: EJH	PROJECT NO. 3013-132	DATE: 03/16/2011	OF 1

S:\PROJ\3013-132\CAD\DWG\3013-132 CROSS SECTIONS



Well ID	Top of Casing Elevation (ft msl)	Depth to Groundwater (ft bgs)	Groundwater Elevation (ft msl)
MW-1	146.39	15.85	130.54
MW-2	148.83	16.9	131.93
MW-3	150.43	18.03	132.40
MW-4	152.43	19.53	132.90
MW-5	152.42	16.89	135.53
MW-6	151.88	14.43	137.45
MW-7	155.11	17.42	137.69
NCI-0	165.69	26.36	139.33
NCI-1	156.33	19.92	136.41
NCI-2	156.49	17.49	139.00
NCI-3	157.39	18.86	138.53
NCI-4	155.45	17.06	138.39
NCI-5	177.87	43.36	134.51
NCI-6	160.93	26.12	134.81
NCI-7	156.15	24.78	131.37
NCI-9	149.27	16.68	132.59
NCI-10	134.61	5.03	129.58
NCI-11	134.97	8.43	126.54
NCI-12	128.18	3.38	124.80
NCI-13	126.90	3.87	123.03
NCI-14	146.79	6.19	140.60
NCI-15	136.41	10.26	126.15
NCI-16	133.24	8.99	124.25
NCI-17	143.51	12.96	130.55
NCI-18	146.35	16.96	129.39
NCI-19	154.79	17.8	136.99
NCI-20	152.34	17.13	135.21
P-2	143.68	16.75	126.93
P-5	151.06	16.49	134.57
P-7	150.23	17.91	132.32
P-8	151.91	18.24	133.67
P-9	152.46	16.12	136.34

Figure 6.4. Potentiometric surface map, March 2, 2011.

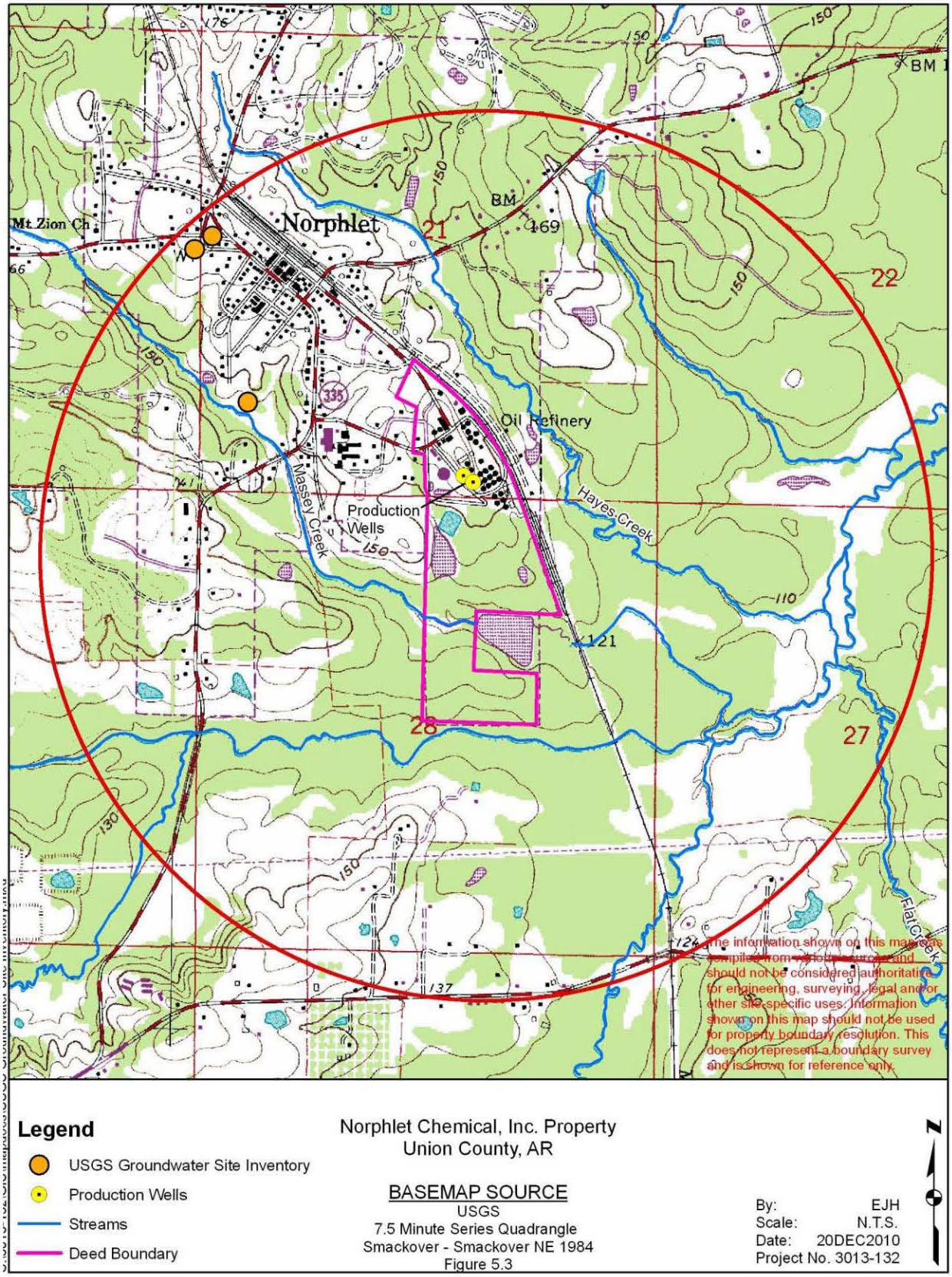


Figure 6.5. Water wells located in the project area.

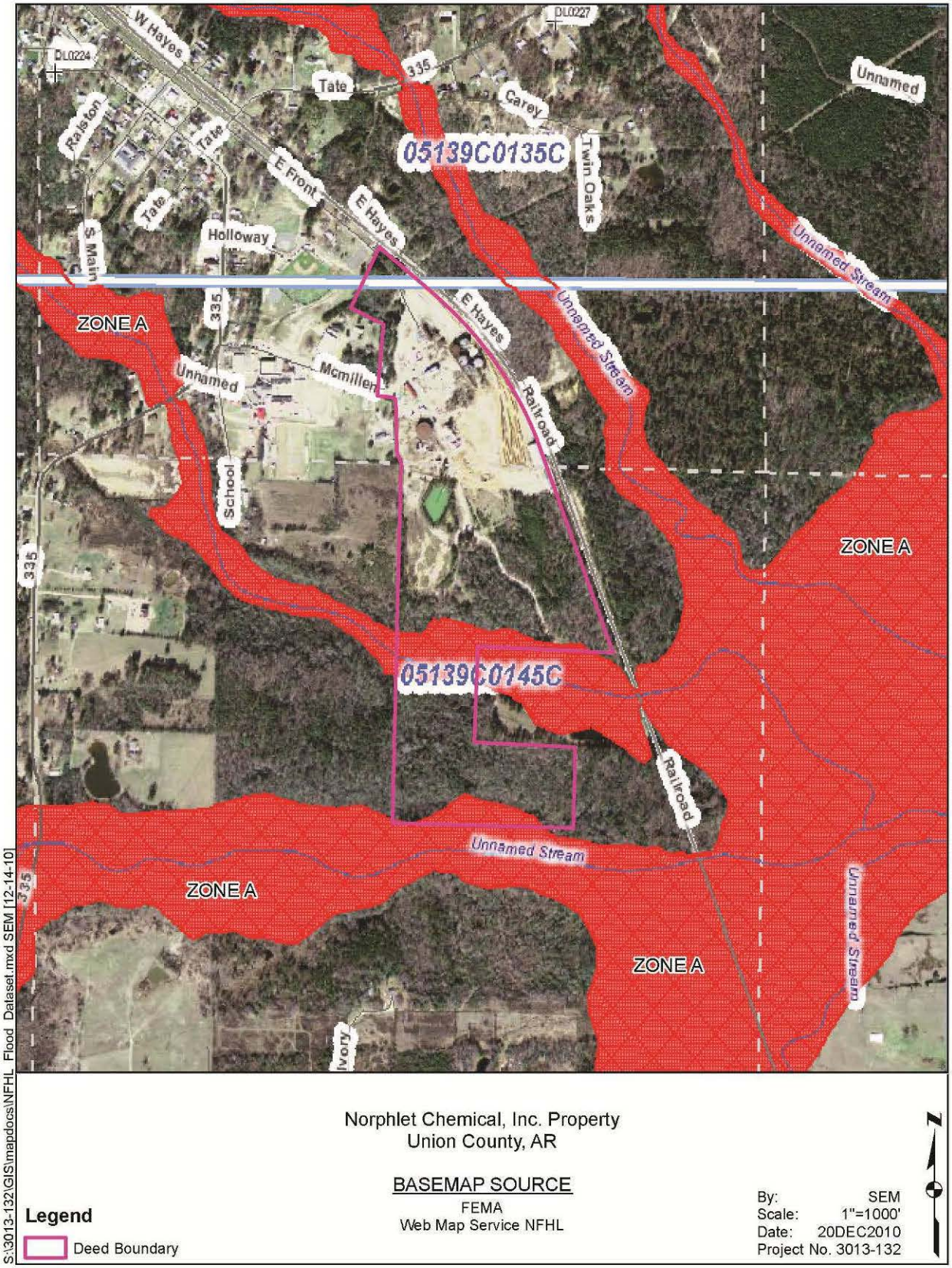


Figure 6.6. National flood insurance rate map of the project area.

7.0 SITE ASSESSMENT SAMPLING AND ANALYSIS

The objective of sampling and analysis was to collect data for use in the risk assessment. Given the magnitude of the potential issues associated with this site, the CSA focused on the potential for off-site migration via groundwater, surface water, and sediment pathways. Additionally, soil and groundwater samples were collected in former source areas and select locations to develop data for use in the risk assessment.

In 1990, violations of asbestos regulations resulted in an Emergency Order requiring the removal of approximately 171 cubic yards of asbestos-containing materials (ACM). It is possible that there is still ACM on the site. Additionally, given the age of site buildings, it is likely lead-based paint is present on site. If demolition or remodeling of structures containing this material is planned, then inspections will be required; however, ACM and lead-based paint inspections were beyond the scope of work described in FTN's letter dated October 26, 2010 and approved by ADEQ by letter dated November 16, 2010. Likewise, no sampling of concrete slabs, walls and floors of buildings, and contents of on-site tanks, drums, or containers found in various and questionable condition was conducted.

This section describes the field activities that were implemented to complete the CSA. The scope of work approved by ADEQ included sampling surface water, sediment, soils, and groundwater. Figure 7.1 shows the locations of surface water and sediment sampling sites, and Figure 7.2 and Figure 7.3 show soil and groundwater sampling locations. The methods and standard operating procedures used to complete the CSA were described in the CSAWP (FTN 2011) approved by ADEQ. FTN gained access to the facility as ADEQ's representative under the Arkansas Hazardous Waste Management Act of 1979. CTEH (2011) prepared a site-specific health and safety plan for work at the NCI site to address Occupational Safety and Health Administration (OSHA) requirements of 29 CFR 1910.120.

7.1 Background Concentrations

The background quality of sediment and surface water was evaluated by collecting sediment and surface water samples from Massey (SW-4/SD-4) and Hayes Creeks (SW-1/SD-1) at locations upgradient of the site (Figure 7.1).

The general direction of groundwater flow beneath the site is south-southeast with a north-northeast flow component and is influenced by the groundwater divide beneath the northern portions of the property (Section 6.1.3), thus groundwater data from monitoring well MW-7 (Figure 7.2) and a temporary well installed at the north-western entrance of the property, NCI-0 (Figure 7.2), were used to assess the quality of groundwater entering the site (background). Temporary monitoring well NCI-1, located at the northern end of the property, was originally designated in the CSAWP (FTN 2010) to assess background soil and groundwater quality. Due to black staining and hydrocarbon odor detected in soils during the installation of the well, ADEQ was contacted and agreed to the installation of an additional well, NCI-0, to address background.

The United States Geological Survey (USGS) Professional Paper 1270: *Element Concentrations in Soils and Other Surficial Materials of the Conterminous United State* (Shacklette and Boerngen, 1984) was used as a source of background soil concentrations for inorganic chemicals in soil.

7.2 Selection of Analytical Parameters

Findings from NCI file review indicated that VOCs (e.g., hydrocarbons, TCE and degradation products) SVOCs (primarily PAHs), total petroleum hydrocarbon (TPH) in the diesel and oil range, and metals (chromium, lead, and fluoride) are a potential concern for the site. Thus, to address these chemicals and other materials that may not have been fully assessed in previous investigations, samples from media were collected and analyzed for VOCs (EPA Method 8260), PAHs (EPA Method 8310), total petroleum hydrocarbon (TPH) compounds in the gasoline (GRO), diesel (DRO) and oil (ORO) ranges (EPA Method 8015), and lead and chromium (EPA Method 6010/6020).

Fluoride (EPA Method 9056) and pH were analyzed in surface soil samples and select subsurface soil samples collected from the area surrounding the former NCI plant operating area. Surface and subsurface soil samples from boring NCI-8, NCI-9, and NCI-12 were analyzed for the presence of hexavalent (VI) chromium (EPA Method 7196). Soil samples collected near the base of transformers (T-1 and T-2) were analyzed for PCBs (EPA Method 8082).

Select groundwater samples included fluoride analysis, and analysis of groundwater samples included dissolved metals, where totals analyses indicated concentrations above the MCL. ADEQ-certified laboratory, ESC Lab Sciences in Mt. Juliet, Tennessee, provided analytical services.

7.3 Sampling Locations and Rationale

The objective of this investigation was to collect data from environmental media to assess risks to human health and the environment posed by the presence of hazardous substances or petroleum products that have impacted the site. Media that were sampled included surface water, sediment, soil and groundwater.

7.3.1 Surface Water and Sediment Sampling

Releases to Hayes and Massey Creeks have been documented and off-site sources may have contributed to contamination of Hayes Creek. Both streams are located off-site. Surface water and sediment in these streams was sampled at upstream locations, probable points of entry, and at locations downstream of likely sources (FTN 2010). Figure 7.1 show the locations of surface water and sediment sampling sites. In addition to sampling these creeks, the fire water pond was sampled as well as sediment that collects at the base of the culvert that empties into the pond to assess on-site surface water conditions. Surface water samples were submitted to the laboratory for analysis of PAHs, TPH, lead, and chromium. Field analysis of surface water samples included pH, specific conductance and temperature and sample locations are shown in Figure 7.1. Data results for surface water and sediment are in Section 9.0 of this report. Sediment samples were analyzed for the presence of VOCs, PAHs, TPH, lead and chromium.

7.3.2 Groundwater Sampling

Groundwater was assessed through the installation of 20 temporary monitoring wells in boreholes drilled as described in Section 7.3.3. In addition; three existing monitoring wells were sampled so that data could be compared to data from previous sampling events conducted by ADEQ and others. Figure 7.2 shows groundwater sampling locations. Groundwater sampling locations include two (2) background sites (NCI-0 and MW-7), 14 locations for assessing potential source areas and off-site migration of contamination and seven locations for further assessing the extent and/or potential offsite migration of contamination.

Temporary casing with pre-packed, 5-ft long well screens were installed in each borehole for water level measurements and groundwater sampling. Table 7.1 shows well construction data and water level data used to construct the potentiometric surface map in Figure 6.4. Groundwater samples were submitted to the laboratory for analysis of VOCs, PAHs, TPH, chromium, and lead. Fluoride was analyzed in groundwater samples collected from NCI-5, NCI-6, NCI-7, MW-1, which are in the vicinity of the former NCI plant operations, and background monitoring well MW-7.

As the presence of suspended sediment can have the greatest affect on metals, groundwater samples collected for chromium, lead, and fluoride analysis included both the total and dissolved components. The dissolved samples were analyzed if totals exceeded the respective MCLs for these metals. Groundwater samples submitted for dissolved analysis included; NCI-5, NCI-6, NCI-10, NCI-12, and NCI-14. Upon completion of groundwater sampling, PVC casings was surveyed to provide horizontal and vertical control of temporary well locations in order to develop potentiometric surface maps from water level data.

7.3.3 Borehole Soil Sampling

Boreholes were advanced using direct push technology. Geoprobe™ borings were used to collect soil samples for laboratory analysis and characterize the subsurface stratigraphy. FTN subcontracted the services of an Arkansas licensed driller, Tri-State Testing Services (TST), of Memphis, TN for drilling and soil sampling. Boreholes were continuously logged from ground

Table 7.1. Temporary monitoring well construction data and depth to groundwater, March 2, 2011.

Boring ID	Northing	Easting	Top of Casing (TOC) Elevation (ft MSL)	Ground Surface Elevation (ft MSL)	Total Depth From TOC (ft bgs)	Depth to Groundwater from TOC (ft bgs)	Groundwater Elevation (ft MSL)
NCl-0	1547264	1111451	165.69	162.57	30.12	26.63	139.06
NCl-1	1547974	1111561	156.33	154.81	25.52	19.92	136.41
NCl-2	1547646	1111969	156.49	155.78	24.71	17.49	139.00
NCl-3	1547386	1112179	157.39	154.38	23.01	18.86	138.53
NCl-4	1547149	1112238	155.45	152.49	29.96	17.06	138.39
NCl-5	1546895	1111993	177.87	174.85	48.02	43.36	134.51
NCl-6	1546798	1111837	160.93	159.97	32.96	26.12	134.81
NCl-7	1546590	1111870	156.15	152.94	30.21	24.78	131.37
NCl-8	1546371	1112342	n/a	150.68	n/a	n/a	n/a
NCl-9	1546515	1111651	149.27	148.14	21.13	16.68	132.59
NCl-10	1545699	1111741	134.61	131.38	15.23	5.03	129.58
NCl-11	1545667	1111955	134.97	131.90	15.07	8.43	126.54
NCl-12	1547449	1112748	128.18	125.39	18.79	3.38	124.80
NCl-13	1547129	1112824	126.90	125.80	15.10	3.87	123.03
NCl-14	1546883	1112530	146.79	142.81	23.98	6.19	140.60
NCl-15	1546327	1112835	136.41	132.47	23.94	10.26	126.15
NCl-16	1545688	1112541	133.24	130.33	18.91	8.99	124.25
NCl-17	1546185	1111625	143.51	140.49	19.02	12.96	130.55
NCl-18	1546130	1112185	146.35	143.41	22.94	16.96	129.39
NCl-19	1546801	1111572	154.79	153.81	24.98	17.80	136.99
NCl-20	1546687	1111671	152.34	151.13	22.21	17.13	135.21

surface to total depth in accordance with ASTM Standard D2488-93 and the Unified Soil Classification System (USCS). Sixteen borings were used for the soil investigation. Locations of boreholes (Figure 7.2) were primarily driven by the groundwater investigation. Soil data allowed for an assessment of soil contamination (vertical extent) in potential source areas of the site, but these data are likely not sufficient to characterize on site extent of soil impacts or estimate potential remediation costs associated with the impacts.

Boreholes were advanced 5 ft into the saturated zone. Except for boreholes NCI-5, NCI-6, and NCI-8, total depth of borings ranged from 12 to 27 ft bgs. The total depths of NCI-5, NCI-6 and NCI-8 were 45 ft, 32 ft, and 34 ft bgs respectively. The total depth of the boring

affected the number of soil samples that were collected for analysis (FTN 2010). Soil samples were collected at the surface (0–6 inch) and from the 2-ft interval from each boring location. Soil samples were collected from 10 ft to the top of the water table interval in most borings because contamination was indicated and from the top of the water table. An additional soil sample was collected for the 2- to 10-ft interval in boring NCI-5 due to its greater depth and the presence of contamination. A soil sample was collected for the 2 ft to the top of the water table interval at NCI-10 and NCI-11 due to the shallower depth to groundwater.

The presence of contamination was indicated by visual evidence of contamination, presence of chemical odors, or flame ionization detector (FID) readings. Samples were collected at the top of the water table to assess the presence of light, non-aqueous phase petroleum products and other constituents. Samples were submitted to the laboratory for analysis of VOCs, PAHs, TPH, chromium, and lead. Select samples were submitted for analysis of Chromium VI (hexavalent chromium). Soil samples collected in the vicinity of the former NCI plant were analyzed for fluoride and pH.

7.3.4 Surface Soil Samples

Two samples representing the 0-6 inch and 1-2 ft intervals were collected within 2 ft of the previously identified transformer pole, samples T-1-0.5 and T-1-2 (Figure 7.3). An additional transformer was observed during the CSA investigation which appeared in physically poor condition. Additional soil samples were collected from the base of this transformer pole, T-2-0.5 and T-2-2, and were analyzed for PCBs using EPA Method 8082.

Twelve surface soil samples, SS-1, SS-2, and SS-9 through SS-19, were collected from areas adjacent to, within, and downgrading of the former NCI plant and the HCI and HF tanks (Figure 7.3). Surface soil sample locations for SS-9 through S-19 were determined in the field. Table 7.2 provides a description of these surface soil sample locations, which were determined based on obvious discoloration of soil and/or association with surface water drainage pathways. These surface soil samples were submitted to the laboratory for analysis of PAHs, TPH, lead, chromium, pH, and fluoride. Surface soil samples, SS-4 and SS-5, (Figure 7.3) were collected in areas downgrading of the drum storage loading area. Surface soil samples, SS-3, SS-6, SS-7, and

SS-8, were collected from areas down gradient of the railroad loading area. These samples were analyzed for PAHs, TPH, lead, and chromium.

Table 7.2. Surface soil sample location description, NCI site

Sample ID	Physical Location Description
SS-9	Surface water drainage pathway located in west central NCI plant near a diesel generator.
SS-10	Surface water collection area located on the north side of NCI plant. Surface soil was stained yellow and black.
SS-11*	Located north of the cooling towers in NCI plant. Surface soil was stained yellow and there was no vegetation.
SS-12*	Located east of the cooling towers in NCI plant. Surface soil was stained yellow and orange with stressed vegetation.
SS-13	Located below the corroded discharge valve of storage tank TT25 in the NCI plant. Soil was stained orange and with a lack of vegetation.
SS-14	A soil sample was collected from a drainage pathway between the power station and white tanks on the southeast corner of former plant area.
SS-15*	Surface water drainage associated with the railroad switch yard area east of NCI plant.
SS-16*	Surface water drainage pathway on the south end of former NCI plant discharging into the fire water pond.
SS-17	Surface water drainage pathway on southwest corner of former NCI plant before drainage entered the fire water pond.
SS-18	Surface water drainage pathway associated with a surface water discharge valve from the former NCI plant.
SS-19	Surface water drainage pathway directly downgradient. Tank 514, west of the former NCI plant.

* Denotes three-point composite sample.

7.3.5 Well Inventory

Historical site documentation indicated the presence of multiple series of monitoring wells and piezometers from previous investigations and two production wells. During the field investigation phase of this CSA, FTN inventoried locatable monitoring points by obtaining GPS coordinates and or survey locations. Figure 7.4 documents the locations of identified and inventoried monitoring wells and other site specific points of interest. Multiple MW-series, P-series, EMP-series, and two fire water wells were identified. EMP-UNK, located near the west

gate of the NCI plant, was constructed in the same manner as the EMP-series wells but historical documentation has no record of a monitoring well installed at this location.

7.4 Field Sampling Methodology

Fieldwork included sampling soil, surface soil, groundwater, surface water and sediments. The performance objective was to collect representative samples for laboratory analysis. This section includes a general description of methodologies followed and the management of investigation-derived wastes (IDW).

7.4.1 Soil Sampling

Surface soil samples not associated with drilling sites were grab samples collected with a disposable hand scoop. Surface and subsurface soil samples from boring locations were collected using a truck-mounted Geoprobe™ rig. Continuous soil samples were collected from ground surface to total depth using direct push technology (DPT), which included a 4-ft barrel sampler with plastic sleeves for visual classification. Lithologic logging was recorded in field notebooks, in accordance with the Unified Soil Classification System (USCS). Soil samples were collected at 2-ft intervals and screened using the headspace method and a flame ionization detector (FID) was utilized to measure for the presence of total organic vapor. Samples submitted for analysis were based on depth interval and the presence of obvious contamination, staining or odor, and or elevated FID measurements.

7.4.2 Groundwater Sampling

Grab samples were collected as soon as sufficient water filled pre-packed well screens. Except for NCI-5, samples were collected using a peristaltic pump at low-flow rates of less than 100 ml/min. The depth to groundwater exceeded 30 ft bgs at NCI-5, thus a grab sample was collected using a 1-inch bailer.

Low-flow purging techniques were used to sample existing monitoring wells MW-1, MW-5, and MW-7. Groundwater field measurements were documented on the Groundwater Sampling Record form or in field logbooks. Appendix D contains field documentation.

7.4.3 Water Level Measurements

Monitoring wells were gauged within 24 hours of completing all installations. Water level depths were measured with an electronic water level meter from the surveyed reference point at the top of PVC risers and recorded to the nearest 0.01 ft.

An oil interface probe was used to detect the presence and determine the thickness of oil layers in the vicinity of the former impoundments. Table 7.1 details temporary monitoring well construction data and depth to groundwater collected on March 2, 2011 and Figure 6.3 presents potentiometric contours for the upper aquifer.

7.4.4 Surface Water and Sediment Sampling

Grab surface water and sediment samples were collected from drainages by wading into the stream. In-situ field measurements, surface water samples, and sediment samples were collected at each location. Surface water samples were collected directly into the sample containers. Scoops were used to collect sediment samples. Sample locations were collected with a hand-held GPS.

7.4.5 Sample Location Survey

Horizontal positions of sampling locations were recorded using a Trimble GeoXH (mapping-grade) GPS receiver, with a Zephyr antenna mounted on a 2-meter pole. These observations were post-processed using Trimble GPS Pathfinder Office software and data for the three nearest NGS CORS stations in order to achieve sub-foot accuracy for these positions. While the GPS also measures elevations, the accuracy of these is insufficient for use in relation to water level measurements. Elevations of the tops of well casings were therefore measured via differential leveling using a Sokkia B21 level and 25’ fiberglass level rod. Due to a lack of known benchmarks in close proximity to the site, no ties to a known vertical coordinate system were made. Rather, since elevation values for wells installed during previous investigations were available, these were used to form the basis for elevations in this investigation. It is not know whether these elevations were referenced to any datum. The elevations measured for this report,

for both new and existing wells, are within the prescribed tolerance (0.01 ft) relative to each other.

FTN prepared a base map for the site, drawn to scale, showing these sample locations as well as other pertinent features (from other data sources).

7.5 Deviations from the CSAWP

Sample collection and transport and chain-of-custody (COC) documentation procedures followed those described in the CSAWP (FTN 2010). Deviations from the CSAWP follow:

1. Temporary monitoring well NCI-1, located at the northern end of the property, was originally designated in FTN's work plan (2010) to assess background soil and groundwater quality. Due to black staining and hydrocarbon odor detected in soils during the installation of the well, ADEQ was contacted and agreed to the installation of an additional well to address background concentrations. An additional well was installed, NCI-0 located north of the northwestern entrance to the facility, to assess the quality of groundwater entering the site and to assess background soil quality.
2. No temporary groundwater casing was installed at borehole NCI-8 due to the lack of a saturated interval. The borehole was backfilled with NSF Certified bentonite chips and ground surface elevations were calculated for cross-sectional evaluations.
3. An additional transformer was observed during the site investigation that appeared in physically pore condition. Additional soil samples were collected from the base of this transformer pole, T-2-0.5 and T-2-2, and were analyzed for PCBs using EPA Method 8082.
4. An additional IDW sample, IDW-2, was collected from the 55-gallon drum containing groundwater and decontamination liquid. The sample was submitted to the laboratory for analysis of TPH, PAHs, diesel and oil ranges, and chromium and lead. Data results were compared to MCLs and TCLP values for waste characterization and disposal.
5. Due to poor recovery during subsurface soil sampling there was insufficient sample in many cases to collect FID measurements.
6. Duplicate subsurface soils samples were collected from intervals with the highest percent recovery. In instances where percent recoveries were poor throughout a boring, an additional sample was collected from the 0 to 4 ft bgs interval next to the borehole with the Geoprobe.

7.6 Investigation Derived Wastes (IDW)

Soil cuttings, decontamination liquids, disposable sampling equipment, and disposable personal protective equipment (PPE) were contained in four 55-gallon drums and staged on the east side of the NCI office building for characterization and subsequent disposal. PPE and disposable sampling equipment were placed in separate containers from soil cuttings and decontamination liquids. Drums were labeled to indicate the type of material they contain, including boring numbers, well identifications, and dates when materials were initially generated. Appendix A contains photographic documentation of IDW storage.

FTN collected a soil IDW composite sample, IDW-1, consisting of soil cuttings which were analyzed for VOCs, PAHs, TPH, and chromium, and lead. The "total" values for the soil samples (assuming they are greater than 0.5% solids) were divided by 20 for comparison with TCLP regulatory levels, where applicable (see Environmental Protection Agency (EPA) TCLP Test Method No. SW846 1311 and 40 CFR 261.24). IDW soil data were below TCLP regulatory levels thus indicating the waste is non-hazardous. Data were also compared to USEPA (2010) residential RSLs and ADEQ screening levels for TPH. Of the constituents detected in the IDW sample only DRO (2900 mg/kg) exceeded a screening level (2300 mg/kg). Disposal of soil IDW will be determined upon completion and approval of the risk assessment.

FTN collected an aqueous IDW composite sample, IDW-2, consisting of decontamination water and purged groundwater from the sampling of monitoring wells MW-1, MW-5, and MW-7. The aqueous IDW sample was analyzed for lead, chromium, TPH, and PAHs and values for detected constituents were compared to TCLP regulatory levels, MCLs, and ADEQ TPH SLs. Concentrations for detected constituents were below applicable TCLP regulatory levels; however the lead level exceeded the 15 µg/L MCL and GRO, DRO, and ORO exceeded applicable ADEQ screening levels. Disposal of collected decontamination water and purged groundwater will be coordinated through the City of Norphlet wastewater treatment system.

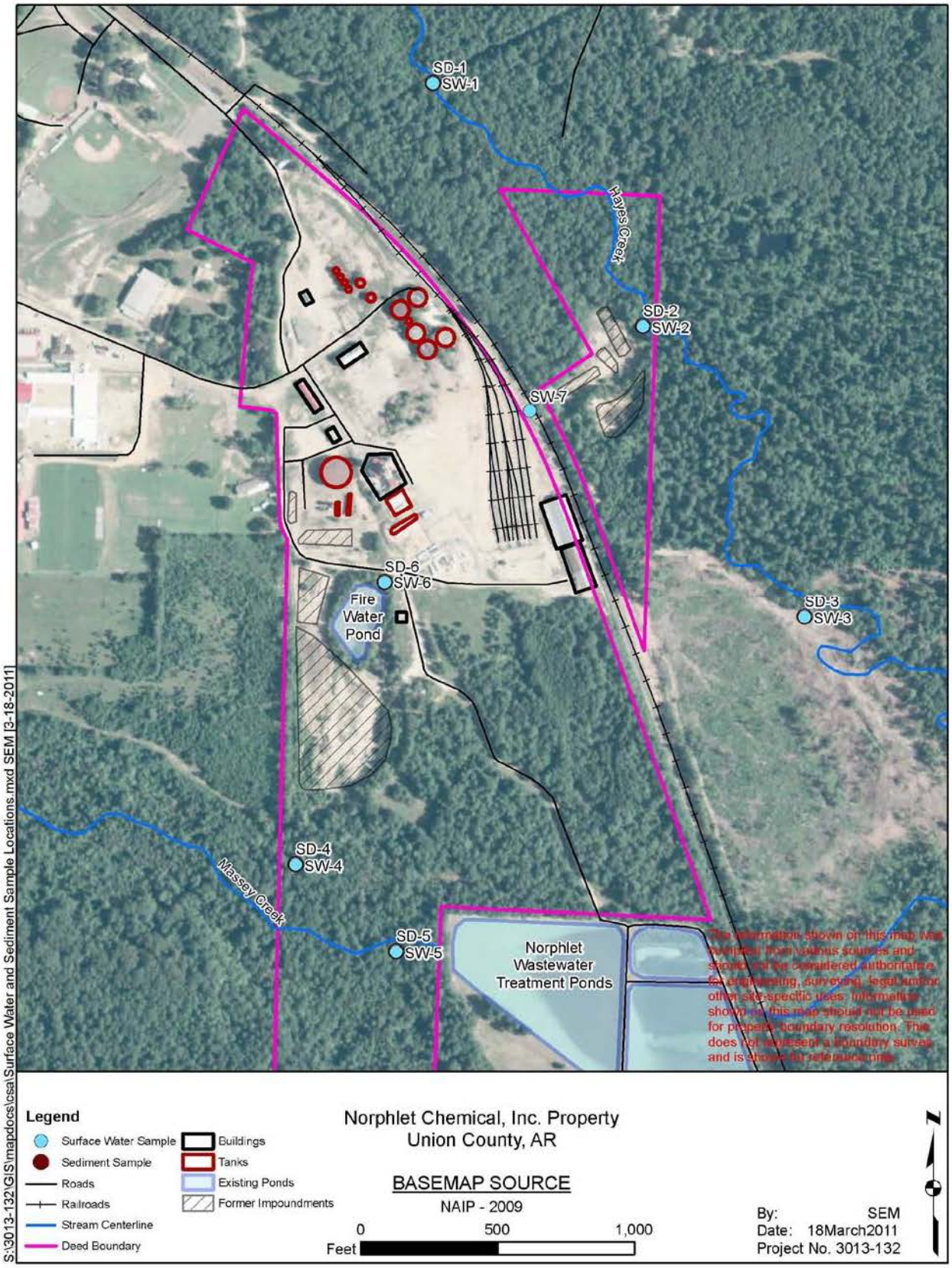


Figure 7.1. Location of surface water and sediment sampling sites, NCI site.

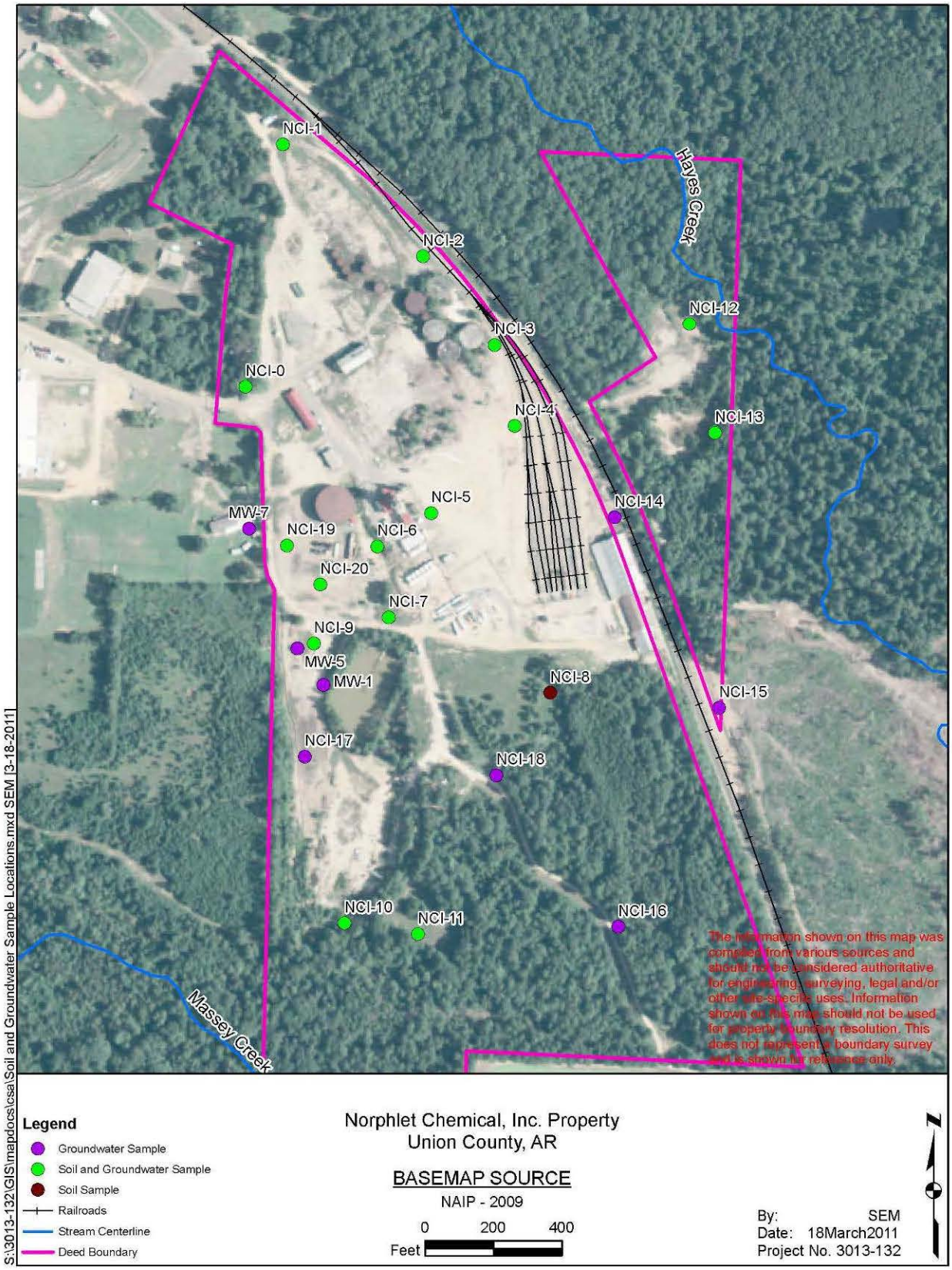


Figure 7.2. Location of soil and groundwater sampling sites, NCI site.

INSERT 7.3

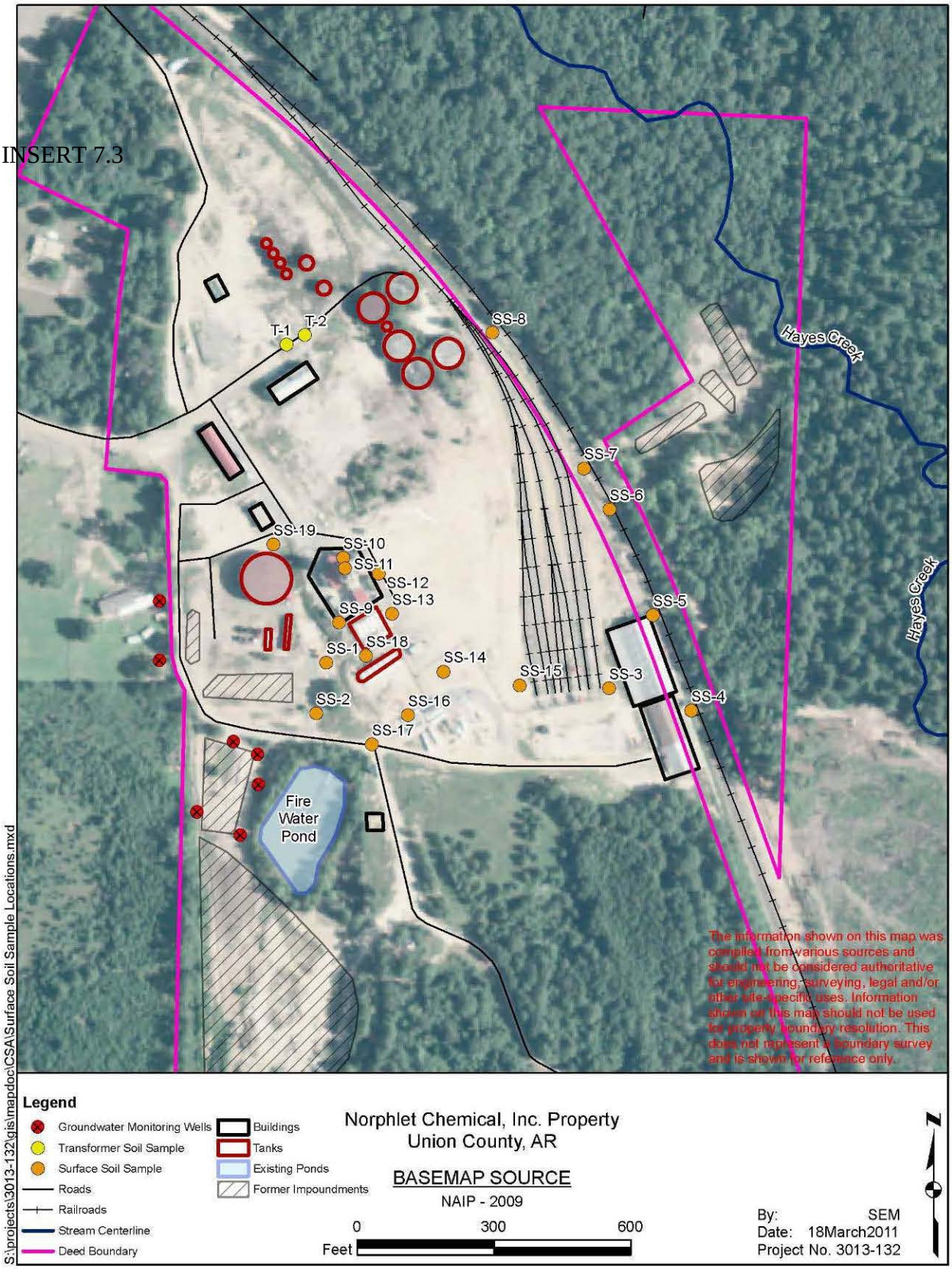


Figure 7.3. Location of surface soil sampling sites.

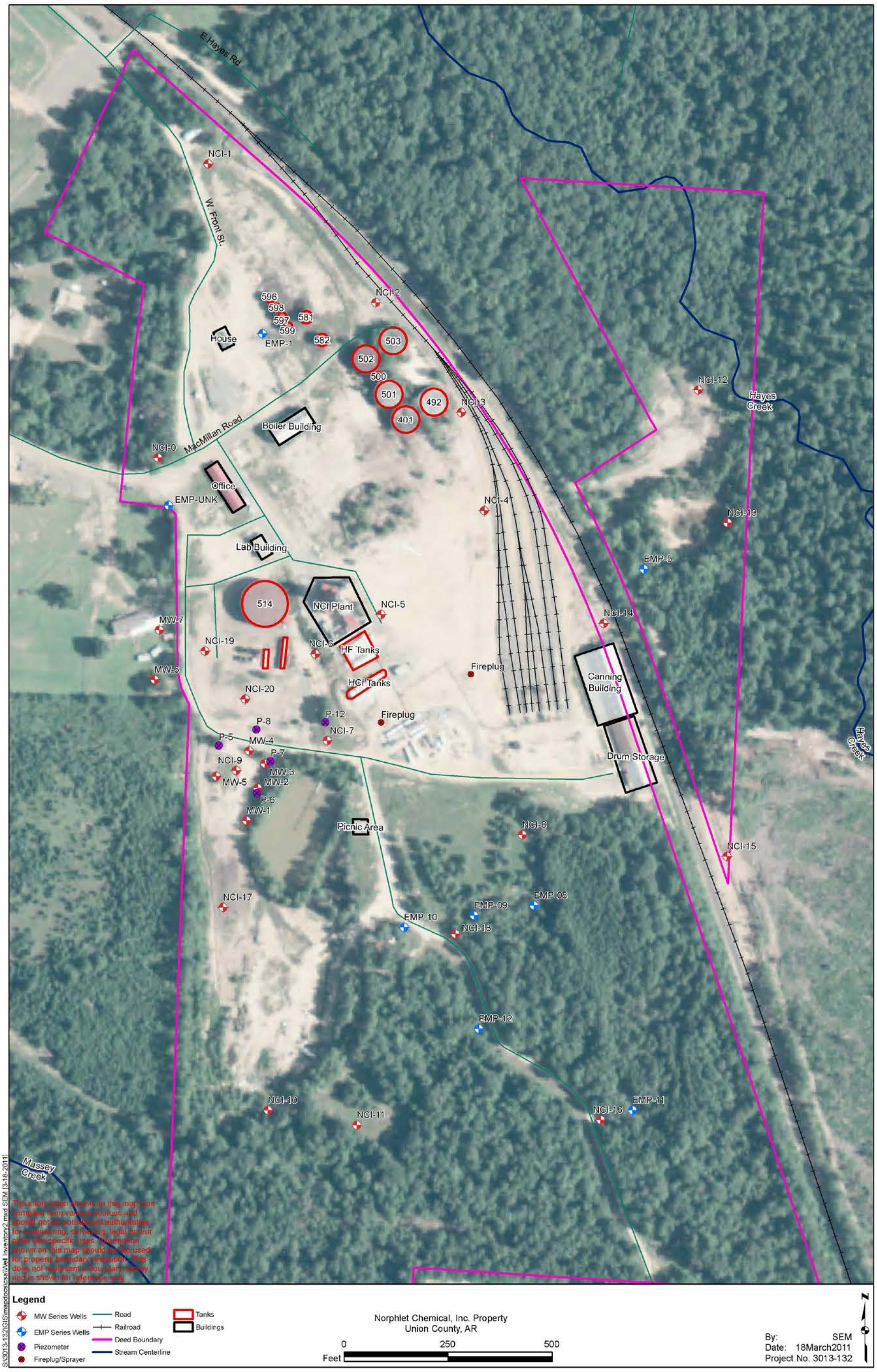


Figure 7.4. Well inventory sampling sites, NCI site.

8.0 QA/QC DATA EVALUATION

The CSAWP (FTN 2010) describes the specific quality assurance/quality control (QA/QC) activities that were executed to attain data quality objectives for data collected by FTN. This section presents the results of the QC review and data validation.

8.1 Review of Field Quality Control

Field QC included collection of QC samples and documenting pertinent information during field operations. Appendix D contains field documentation. QC samples included duplicate samples, equipment blanks, and trip blanks. QC samples were handled in the same manner as regular samples with respect to sample handling and COC procedures. The results of QC sample analysis are discussed in Section 8.2.2.

8.2 Review of Laboratory QC

An ADEQ-certified laboratory, ESC Lab Sciences in Mt. Juliet Tennessee, provided analytical services for this project. ESC report numbers L506156, L504696, L505914, L503993, L504017, L506344, L505164, L503461, L503434, and L508735 are provided on the CD that accompanies this report.

8.2.1 Analytical Procedures

The analytical methods included EPA Method 8260B (VOCs), EPA Method 8300 (PAHs), EPA Method 8015M (TPH-DRO and TPH-ORO), EPA Method 8015D (GRO or "TPH-low fraction"), EPA Methods 6010/6020 (metals, specifically chromium and lead), EPA Methods 3060A/7196A (chromium, hexavalent), EPA Method 9040C/D (pH), EPA Method 9056 (fluoride), and EPA Method 8082 (PCBs).

Select soil samples were analyzed for hexavalent chromium and pH, and soil samples collected at the base of transformer poles were analyzed for PCBs. Analysis of groundwater samples included dissolved metals, where totals analyses indicate concentrations above the MCL. Note, however, CTEH used total values for the risk assessment. Laboratory analyses

adhered to methods described in Test Methods for Evaluating Solid Waste-Physical/Chemical Methods SW-846 (EPA 1986 and online updates).

8.2.2 QC Data Review

Samples were received by the laboratory in good condition, properly preserved, properly labeled, and COC documentation was complete. All analyses were completed within holding times.

Following are the results for field QC samples:

1. Four trip blanks were analyzed for VOCs. All results were below detection limits for the parameters analyzed, except for low concentrations of methylene chloride in one trip blank (Laboratory Report #L503993, Sample # -08). Methylene chloride was detected below quantitation limits (estimated concentrations, or "J" values) in all samples from Laboratory Report #L503993 indicating that this chemical, a common laboratory contaminant, is a laboratory artifact because there is no significant source of methylene chloride on site.
2. A low level of fluoride was detected below laboratory quantitation limits in the surface soil field blank EB-1 (75J µg/L) but this detection did not affect data evaluation because fluoride detections in surface soil samples were well below the residential SSL.
3. Low levels of fluoride (51J µg/L) and naphthalene (0.0095J µg/L, Method 8310) were detected below laboratory quantitation limits in the groundwater field blank (EB-3). These detected concentrations were well below concentrations reported for groundwater samples thus there is no impact on the data.
4. Low levels of chromium (6.6J µg/L) and lead (2.3J µg/L) were detected at estimated values below laboratory quantitation limits in the soil equipment blanks EB-4 and EB-6, respectively. The data evaluation was not affected by these results as chromium and lead in the soil samples collected by the equipment were below SSLs.
5. A low level of naphthalene (0.033J µg/L, Method 8310) was detected in the surface water field blank (EB-7); however, this occurrence did not affect the data evaluation because none was detected in surface water samples.
6. Low levels of DRO (56J µg/L)), benzo(a)pyrene (0.017J µg/L), benzo(b)fluoranthene (0.02J µg/L), benzo(g,h,i)perylene (0.017J µg/L), benzo(k)fluoranthene (0.014J µg/L), dibenz(a,h)anthracene (0.017J µg/L), indeno(1,2,3-cd)pyrene (0.022J µg/L), and pyrene (0.021J µg/L) were detected at estimated concentrations below laboratory quantitation limits in sediment equipment blank (EB-9). The equipment blank was collected after collection of sediment sample SD-1, where no PAHs were detected. DRO was detected in the

sample and oil sheen was observed at the sample location, suggesting equipment decontamination may not have been complete.

7. To evaluate precision of groundwater sample collection and analysis, field duplicates representing 10% of the sample load for water were analyzed. Table 8.1 summarizes the results for parameters detected in duplicate samples and shows the relative percent difference (RPD) values, where applicable. RPD values for groundwater and surface water met the quality assurance objective for laboratory duplicates (i.e., less than 20%). RPD criteria is not applicable when data were qualified as an estimated value below the detection limit or where the sample or duplicate results was less than 5 times the detection limit.
8. Field duplicates representing 10% of the sample load for soil/sediment were analyzed. Table 8.2 summarizes the results for parameters that were detected and shows the RPD values, where applicable. Except as noted on the table in bold, RPD values for soil and sediment met the quality assurance objective for laboratory duplicates (i.e., less than 50%). RPD criteria is not applicable when data were qualified as an estimated value below the detection limit or where the sample or duplicate results was less than 5 times the detection limit. Surface soil sample duplicate agreement was poor for duplicate pairs SS-5/SS-5D and NCI-4-0.5/NCI-4-0.5D which may indicate the potential for matrix heterogeneity and/or sampling method to affect results.

The laboratory quality assurance samples included method blanks, MS/MSDs, and Laboratory Control Samples (LCS). The frequency of laboratory QC samples conformed to the laboratory's QA plan. The laboratory's QA acceptance criteria will be used to evaluate laboratory accuracy and precision. Following are the results for laboratory QC samples:

1. Method blank samples were reported as non-detect for parameters.
2. Some constituents were reported as estimated concentrations, or "J" values, which represent estimated values below the lowest laboratory calibration point, this is, between the method detection limit (MDL) and the practical quantitation limit (PQL), or reporting limit (RL).
3. Some results for laboratory control samples (LCS), laboratory control sample duplicate (LCSD), matrix spike (MS), and matrix spike duplicate (MSD) were outside established laboratory limit ranges, which is not uncommon due to the wide range of constituents and variety of matrices incorporated by most EPA methods. These exceptions were evaluated by the laboratory (J4, J5, and J6 flags), and reported data are considered valid.
4. Detection limits were elevated for some constituents and/or samples to reflect the necessary dilution factor needed due to matrix interference. Samples are flagged

with “O” in the laboratory reports. The elevated detection limits had no impact on data evaluation.

5. Surrogate recoveries were high for several constituents. The purpose of surrogates is to prove the extraction process worked. Unfortunately often times a sample matrix will interfere with the surrogate recoveries. In this case a high surrogate recovery could indicate a high bias in the sample results.

Table 8.1. Results for detected constituents in groundwater and surface water duplicates, Norphlet Chemical Inc., Norphlet, Arkansas.

GROUNDWATER

Sample ID	Fluoride µg/l	Lead µg/l	Chromium µg/l	Acetone µg/l	Methylene Chloride µg/l	C10-C28 Diesel Range µg/l	C28-C40 Oil Range µg/l	Naphthalene µg/l
DL	<100	1	<0.01	<50	<5.0	100	<0.1	<1
NCI-7D	220	2.6	7.4	21	<5.0	470	<0.1	<1
NCI-7	240	1.9	7.6	<50	<5.0	520	<0.1	<1
Difference	20	0.7	0.2	29	0	50	0	0
RPD	8.70	n/a	2.67	n/a	n/a	n/a	n/a	n/a
NCI-18D	<100	2	2.6 (J)	<50	2.8 (J)	390	54 (J)	0.008 (J)
NCI-18	<100	<1.0	<10	<50	2.9 (J)	380	50 (J)	0.038 (J)
Difference	0	1	7.4	0	0.10	10	4	0.03
RPD	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

SURFACE WATER

Sample ID	Lead µg/l	Chromium µg/l	C10-C28 Diesel Range µg/l	C28-C40 Oil Range µg/l
DL	<5	<10	<100	<100
SW-7D	3.4 (J)	4.3 (J)	3700	280
SW-7	4.5 (J)	<10	3200	250
Difference	1.1	5.7	500	30
RPD	n/a	n/a	14.49	n/a

DL = Detection Limit.
RPD = Relative % difference.
n/a = Not applicable.

Table 8.2. Detected constituents in soil and sediment duplicate samples, Norphlet Chemical Inc., Norphlet, Arkansas.
SOIL

Sample ID	Chromium mg/kg	Lead mg/kg	TPH mg/kg	Acetone mg/kg	Benzene mg/kg	sec-Butylbenzene mg/kg	Ethylbenzene mg/kg	Isopropylbenzene mg/kg	p-Isopropyltoluene mg/kg	Methylene Chloride mg/kg	Naphthalene mg/kg	n-Propylbenzene mg/kg	Toluene mg/kg	1,2,4-Trimethylbenzene mg/kg	1,2,3-Trimethylbenzene mg/kg	1,3,5-Trimethylbenzene mg/kg	Xylenes, Total mg/kg	C10-C28 Diesel Range mg/kg	C28-C40 Oil Range mg/kg	Acenaphthene mg/kg	Fluorene mg/kg	1-Methylnaphthalene mg/kg	2-methylnaphthalene mg/kg	Naphthalene mg/kg
DL	<0.5	<0.25	<0.50	<0.25	<0.005	<0.005	<0.005	<0.005	<0.005	<0.025	<0.025	<0.005	<0.025	<0.005	<0.005	<0.0050	<0.015	<4	<4	<0.020	<0.020	<0.020	<0.020	<0.025
SS-5	3.5	13	4.7	0.14	0.0058	n/a	0.01	n/a	0.013	<0.025	n/a	0.0023 (J)	0.15 (J)	0.032 (J)	n/a	0.017	0.2 (J)	3500 (J)	1600 (J)	0.12	0.1	0.1	0.018	n/a
SS-5D	5.5	16	1.8	0.14	<0.0050	n/a	0.011	n/a	0.019	<0.025	n/a	0.004 (J)	0.043	0.018	n/a	0.0079	0.074	6600 (J)	2000 (J)	0.43	0.32	0.32	0.19	n/a
Difference	2	3	2.9	0	0.0008	n/a	0.001	n/a	0.006	0	n/a	0.0017	0.107	0.014	n/a	0.0091	0.126	3100	400	0.31	0.22	0.22	0.172	n/a
RPD	44	21	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**113**	**105**	**105**	**165**	n/a
NCI-0-23	2	3.9	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	<0.025	n/a	n/a	<0.0050	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
NCI-0-23D	4.2	4.3	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.0027 (J)	n/a	n/a	0.0034 (J)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Difference	2.2	0.4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0.0223	n/a	n/a	0.0016	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
RPD	n/a	9.8	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
NCI-4-0.5	3.6	6.1	7.5	0.055	n/a	0.032	0.033	0.076	0.22	n/a	0.0075 (J)	0.038	n/a	0.38	0.12	0.56	0.33	11000	2800	n/a	n/a	<0.020	<0.020	<0.020
NCI-4-0.5D	5.3	10	360	<25	n/a	1	<0.50	0.54	3.1	n/a	1.9 (J)	0.4 (J)	n/a	10	6	9.7	1.3 (J)	3600	780	n/a	n/a	1.1	0.81	0.87
Difference	1.7	3.9	352.5	24.945	n/a	0.968	0.467	0.464	2.88	n/a	1.8925	0.362	n/a	9.62	5.88	9.14	0.97	7400	2020	n/a	n/a	1.08	0.79	0.85
RPD	38	48	**191.8**	n/a	n/a	**187.6**	n/a	**150.6**	n/a	n/a	n/a	n/a	n/a	**185**	**192**	**178**	n/a	**101.4**	**113**	n/a	n/a	n/a	n/a	n/a
NCI-4-2	9.7	12	920	n/a	n/a	1.4	0.32 (J)	1.1	6.1	n/a	2.4 (J)	0.96	n/a	14	5	13	2	3700	1700	n/a	n/a	0.28	0.62	0.54
NCI-4-2D	4.1	18	1500	n/a	n/a	3.5	0.47	2.4	10	n/a	4.6 (J)	2.1	n/a	39	14	27	4	7800	1600	n/a	n/a	4.8	6.6	4
Difference	5.6	6	580	n/a	n/a	2.1	0.15	1.3	3.9	n/a	2.2	1.14	n/a	25	9	14	2	4100	100	n/a	n/a	4.52	5.98	3.46
RPD	**81**	40	47.9	n/a	n/a	**86**	n/a	74.3	48	n/a	n/a	**74.5**	n/a	**94**	**95**	**70**	**67**	**71.3**	6.1	n/a	n/a	**178**	**166**	**152**
NCI-6-0.5	6.6	6	n/a	<0.25	n/a	<0.0050	n/a	n/a	<0.0050	n/a	n/a	<0.0050	n/a	<0.0050	<0.0050	<0.0050	<0.015	120	78	n/a	n/a	n/a	n/a	n/a
NCI-6-0.5D	10	8	n/a	0.084	n/a	0.0019 (J)	n/a	n/a	0.011	n/a	n/a	0.002	n/a	0.0068	0.006	0.0054	0.0086 (J)	290	76	n/a	n/a	n/a	n/a	n/a
Difference	3.4	2	n/a	0.166	n/a	0.0031	n/a	n/a	0.006	n/a	n/a	0.003	n/a	0.0018	0.001	0.0004	0.0064	170	2	n/a	n/a	n/a	n/a	n/a
RPD	41	29	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	**82.9**	2.6	n/a	n/a	n/a	n/a	n/a
NCI-6-2	10	5.5	n/a	<0.25	n/a	n/a	n/a	n/a	<0.0050	n/a	<0.025	n/a	<0.025	<0.0050	<0.0050	<0.0050	<0.015	n/a	n/a	n/a	n/a	n/a	n/a	n/a
NCI-6-2D	12	5.5	n/a	0.24	n/a	n/a	n/a	n/a	0.0064	n/a	0.0096	n/a	0.0018 (J)	0.0059	0.0039 (J)	0.0041 (J)	0.0082 (J)	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Difference	2	0	n/a	0.01	n/a	n/a	n/a	n/a	0.0014	n/a	-0.0154	n/a	0.0232	0.0009	0.0011	0.001	0.0068	n/a	n/a	n/a	n/a	n/a	n/a	n/a
RPD	18	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
NCI-8-0.5	8.2	8.3	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	130	160	n/a	n/a	n/a	n/a	n/a
NCI-8-0.5D	19	6.5	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	<4.0	<4.0	n/a	n/a	n/a	n/a	n/a
Difference	10.8	1.8	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	126	156	n/a	n/a	n/a	n/a	n/a
RPD	**79.4**	24	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
NCI-8 -2	14	7.2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	66	35	n/a	n/a	n/a	n/a	n/a
NCI-8-2D	10	7.6	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	78	45	n/a	n/a	n/a	n/a	n/a
Difference	4	0.4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	12	10	n/a	n/a	n/a	n/a	n/a
RPD	33	5.4	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	17	25	n/a	n/a	n/a	n/a	n/a

DL = Detection Limit.
RPD = Relative Percent Difference.
n/a = Not applicable.

Table 8.2. Detected constituents in soil and sediment duplicate samples (continued).

SEDIMENT

Sample ID	Chromium mg/kg	Lead mg/kg	TPH mg/kg	Acetone mg/kg	Naphthalene mg/kg	C10-C28 Diesel Range mg/kg	C28-C40 Oil Range mg/kg	1-Methylnaphthalen mg/kg	2-Methylnaphthalene mg/kg
DL	<0.50	<1.0	<0.5	<0.25	<0.025	<4.0	<4.0	<0.0034	<0.020
SD-1	3.9	13	0.42 (J)	<0.25	<0.025	810	210	0.028	0.017 (J)
SD-1-D	4.4	14	1.1	0.06	0.0017	1000	200	0.062	0.044
Difference	0.5	1	0.68	0.19	0.0233	190	10	0.034	0.027
RPD	12.05	7.41	n/a	n/a	n/a	20.99	4.88	**75.56**	n/a

DL = Detection Limit.
RPD = Relative Percent Difference.
n/a = Not applicable.

8.2.3 Data Quality Objectives

Data quality needs are for the identification of site contaminants, determination of constituent concentrations, and comparison of constituents Regional Screening Levels (RSLS). Thus data were initially reviewed to determine if constituents of concern were present at the site, and then they were compared to appropriate screening levels as discussed in Section 9.0 of this report. The data quality objectives were to collect representative samples that were analyzed using methods producing detection limits at or below screening levels, where USEPA SW-846 methods and quantification limits allow. In some cases the best method detection limits used by the laboratory were higher than some RSLs (e.g., laboratory screening levels for 1,2-Dibromoethane Method 8260).

Actual method detection limits are sample dependent and will vary as the sample matrix varies. Some samples were diluted due to matrix interferences that impaired the ability of the laboratory to make an accurate analytical determination (e.g., MW-1 groundwater results). The detection limit for these samples were consequently elevated and some detection limits were elevated above RSLs (e.g., lead at MW-1, RDL of <45 µg/L, MCL of 15 µg/L). Chemicals reported as “non-detect” but had detection levels above human health screening levels were excluded from the health risk assessment. The uncertainty associated with elevated detection limits is addressed by CTEH in the human health risk assessment.

8.3 Corrective Action

Corrective actions were performed to reduce uncertainty in the data set. The result for lead from surface soil sample SS-1 from 0-6 ft bgs was an order of magnitudes higher than other surface soil results for lead, thus the laboratory was contacted to review the data for possible transcription or other possible laboratory errors. The laboratory confirmed the results. Data results for the groundwater sample from MW-1 were diluted by a factor of 45 making comparison of detected constituents difficult. The laboratory was contacted and attempted to run the sample at a lower dilution factor but laboratory quality assurance criteria could not pass due to matrix interference of the sample. The laboratory was directed to analyze filtered groundwater

samples for dissolved lead and chromium. Dissolved chromium was non-detect but a significant concentration (210 µg/L) of lead was quantified.

9.0 COMPREHENSIVE SITE ASSESSMENT RESULTS

Groundwater, soil, surface water and sediment data used for the risk assessment were obtained from the site investigation performed by FTN in February and March 2011. Contamination of these media (i.e., chemicals of potential concern, COPCs) was identified by comparing detected concentrations with health-protective screening levels and typical background concentrations. This section also addresses the nature and extent of contamination.

Groundwater, surface water, soil, and sediment data were compared to United States Environmental Protection Agency (USEPA) Regional risk-based screening levels (RSLs) (USEPA, 2010). Maximum concentrations of chemicals detected in all media were compared to residential RSLs and other risk based screening levels to select COPCs in accordance with the approved work plan. USEPA RSLs for tap water and USEPA MCLs were used to assess concentrations of chemicals in groundwater, and these screening levels as well as national ambient water quality criteria (AWQC) for consumption of aquatic organisms were used to assess concentrations of chemicals in surface water. For soils, the USEPA RSLs address the ingestion, skin contact, and inhalation routes of exposure to a chemical; thus, residential soil RSLs were used to assess concentrations in surface soil (depth of 6 inches or less bgs), subsurface soil samples (deeper than 6 inches bgs), and sediment. In addition, soil RSLs for protection of groundwater quality were applied to detected chemical concentrations in subsurface soil. ADEQ screening levels (ADEQ TPH SLs) were used to evaluate petroleum hydrocarbons in site media. Complete data sets along with the appropriate screening values are presented in Appendix E. Chemicals detected in groundwater, soil, surface water, and sediment at concentrations below the health-protective screening levels were eliminated from further evaluation in the human health risk assessment (HHRA) (Section 10).

The selection of ecological COPCs is presented in Section 11.0 of this report, where chemicals detected in soil, surface water, and sediment were also screened using endpoints more appropriate for ecological receptors.

9.1 Previous Investigations

ADEQ files contain a number of compliance inspection reports, compliance monitoring reports, preliminary assessments by EPA, EPA Pollution Reports, and various internal memorandums that describe the magnitude of concerns that ADEQ has had about the site since 1979. A number of investigations have been conducted at the site and areas of environmental interest/concern have been identified. Some of these concerns were partially addressed through EPA response actions. Information from site documents was used to reconstruct the site regulatory history described in Section 4.3. During the historical regulatory actions and subsequent response actions, portions of the site have been evaluated, but the data are difficult to interpret due to lack of documentation. Residual contamination at the site is suspected due to previous oil refinery operations and to a limited extent by the failed NCI operation.

File documents also provide a historical perspective on the nature of past operations and extent of surface contamination at the site. B&F Engineering Inc. (B&F) completed a hydrogeologic characterization that was limited to the area used to manage hazardous wastes, but the report contains valuable geologic information that was used for planning the CSA. Two interim reports by Ecology and Environment, Inc. (E&E) offer summaries of water level and analytical data, but locations of many sampling points are not well defined. No final site assessment report prepared by E&E was found in ADEQ files.

This section describes environmental media data that were found in the files with the exception of data collected in relation to the site's NPDES permit, water discharged from the impoundments during emergency response actions, and the results of EPA's biotreatment of soils, except as they relate to ADEQ's concerns about the site. These data were not used in the data evaluation or risk assessment.

9.1.1 Surface Water and Sediment

Spills of crude oil and asphalt near Hayes creek were noted as early as 1979 (USEPA 1980) and 1981 (USEPA 1981). Sediment samples were collected during a 1985 FIT inspection (E&E 1985). Samples were collected in the drainage path from the impoundments on the east side of the facility and from Hayes Creek upstream and at a probable point of entry. Samples

were analyzed for VOCs, SVOCs, and metals. Data indicated that the drainage path had elevated concentrations of lead, and Hayes Creek was contaminated by organic chemicals both upstream and downstream from the site. E&E (1985) noted that oil wells were being operated in the area of Hayes Creek and an inactive oil reprocessing company appeared to have contributed to the contamination. E&E (1985) noted spills of asphalt to the creek by MacMillan.

Weston (1993) reported that an observed release to surface water was documented by a sediment sample collected from Hayes Creek at a probable point of entry. Analysis of the sample indicated VOC concentrations of methylene chloride (101 mg/kg) and acetone (0.54 mg/kg). During numerous site inspections, ADEQ and others documents asphalt covering the banks of sections of Hayes Creek. No other surface water or sediment data were found.

9.1.2 Groundwater

There is currently a groundwater monitoring system consisting of seven monitoring wells. These monitoring wells were installed by B&F Engineering, Inc. (1987) as part of closure of the impoundments comprising the hazardous waste management unit formerly located on the west side of the fire water pond. MW-1, MW-2, and MW-3 were located downgradient of the unit; MW-4 and MW-5 were side-gradient wells located north and west of the impoundments; and MW-6 and MW-7 were located upgradient of the facility on what was reportedly Norphlet Public School property, which now appears to be a private residence. Monitoring wells were sampled in June 1987 and samples were analyzed for total metals (including hexavalent chromium), pesticides, radiological parameters, total organic compounds (TOC), total halogenated compounds (TOX), and pH. Except for elevated TOC concentrations in all but background wells MW-6 and MW-7, no concerns were indicated by the data.

ADEQ sampled monitoring wells MW-1, MW-2, MW-4, MW-5, and MW-7 in 1987. Elevated levels of TOC were detected in all but the upgradient well and oil was observed in MW-1. Monitoring wells MW-1 and MW-7 were sampled in 1990. Samples were analyzed for VOCs, SVOCs, and metals. Elevated levels of PAHs were detected in the sample from MW-1, metals and VOCs were not detected. During the sampling event, 15 gallons of oil were removed from MW-1 before any appreciable amount of water was observed (ADEQ 1991).

E&E (1994) sampled these wells in September 1992. Elevated concentrations of semi-volatile organic compounds (SVOCs) napthalene and phenol were detected in samples from MW-3, MW-4, and MW-5.

E&E (1996) prepared an interim site assessment report presenting the results of groundwater sampling on September 24-25, 1996. There was no detailed description of this phase of the assessment but only summary tables of water level data and analytical results. Included in the report are data for monitoring wells MMW1 through MMW7 (presumably a new designation for the original B&F monitoring wells); MPZ7, MPZ9, MPZ10, and MPZ12 as well as MMP7, MMP9, MMP10, and MMP12 (locations unknown); and EMP1 through EMP12. Water level data were not contoured. Two ft of oil were observed in MMW1. Elevated levels of PAHs, including benzo(a)pyrene above the maximum contaminant level (MCL), and elevated total recoverable petroleum hydrocarbon were reported for the sample from MMW1 and EMW2; and lead was elevated in the sample from MMP7.

E&E (1997) prepared an interim site assessment report presenting the results of groundwater sampling on April 29-30, 1997. Again, there was no detailed description of this phase of the assessment but only summary tables of water level data and analytical results for the sampling points described in the 1996 report. E&E (1997) reported that monitoring well MMW1 contained “inches of oil”, and the number of PAHs that were detected in the sample from this well was fewer and TPH concentrations were an order of magnitude lower. Benzo(a)pyrene remained above the MCL in the sample from EMW2, which also had elevated TPH.

9.1.3 Soil

During the original site investigation conducted by B&F (1987) in the area of the former hazardous waste management unit, eleven test pits were excavated in the vicinity of the former hazardous waste management unit to depths ranging from 5 to 9.5 ft. Each test pit was logged, including descriptions of the structure and texture of the soil, location of groundwater seepage, and extent of petroleum hydrocarbons identified in soil or ground water. Contamination was noted in two test pits. Six borings were advanced to depths of approximately 40 ft bgs. A sample from one boring (B-4) was analyzed for EP-toxicity, lead, and chromium; results were below

reporting limits. Additional subsurface information was obtained during the installation of 12 piezometers, which that were installed for water level monitoring and to optimize monitoring well locations. Contamination was observed in the soil boring drilled on the southwest corner of the waste management unit.

E&E (1994) described plans for the installation of piezometers at the site. Found in ADEQ files was a report by E&E (1995) that contained no text only attachments, that included historical documents, tables with summary data for 12 “EMP-“ piezometers and a figure showing their locations. Also included are logs for 12 boreholes identified as “EMW-“. These are likely the logs for the piezometers, but there is no narrative confirming this assumption. No odor or visible contamination was observed in any borehole. Boreholes ranging in depth from 20.01 to 40 ft bgs showed the presence of interbedded sands and clays.

During USEPA emergency response activities, approximately 13,000 cubic yards of contaminated soil was bioremediated in land treatment units and used to backfill the impoundments. Concentrations of 13 toxic components of oil were used as cleanup criteria for the site. These components were primarily VOCs and PAHs. Based on these criteria, backfilled soil was considered to be clean; however, the analytical results also indicated that TPH in the diesel range having concentrations as high as 17,682 mg/kg remained in the soil. USEPA did consider this level of contamination to be “toxicologically significant” and did not have the financial resources to remediate to a cleanup criteria based on ADEQ’s proposed TPH concentration of 1,000 mg/kg (ADEQ 1995). Thus, it is likely that there are effected soils in these backfilled areas that do not meet ADEQ’s current screening level criteria. There was also a concern that contamination left in place (along the side-walls of excavations) may re-contaminate the backfill material (ADEQ 1995). EPA responded that the remaining bacterial population in the treated material had the opportunity to passively degrade the oily wastes in the adjacent contaminated soil.

The Union Pacific Railroad, under a consent order with the Coast Guard and in coordination with EPA, undertook a demolition and corrective action in the right-of-way leased to MacMillan (Union Pacific Company 1996). Approximately 6,000 cu yd of TPH-impacted soil were proposed for removal using a cleanup goal of 1,000 mg/kg. The work included demolition

of a rail spur and a steel unloading rack used for conveying refined product into rail cars for transportation. The area of concern in likely the liquid asphalt tank car loading dock referred to by Weston (1993), which was located northeast of Tank 503 on the northeast corner of the facility based on a drawing in the Weston document. There was no documentation of work completion in ADEQ files.

9.1.4 Air

Air monitoring was conducted during 1994 and 2009 response actions to stabilize imminent threats to human health and the environment. More recently, there have been no known releases of gas and particulates to the air migration pathway and/or reports of adverse health effects.

9.2 Groundwater Data Evaluation

This section presents an evaluation of groundwater data. COPCs are identified and the nature and extent of contamination is characterized. Tables E.1 – E.4 (Appendix E) summarize the chemicals detected in groundwater, the frequency of occurrence of the chemical, the minimum detected concentration, and the maximum detected concentration. Table 9.1 shows the results of field data collection.

Chemicals that were detected in groundwater samples include 17 VOCs, 5 PAHs, TPH, and total metals, as follows:

Benzene	1,3,5-TMB	Fluorene
Toluene	n-Propylbenzene	Pyrene
Ethylbenzene	n-Butylbenzene	Acetone
Xylene	sec-Butylbenzene	Methylene Chloride
Napthalene (VOC analysis)	tert-Butylbenzene	GRO
Napthalene (PAH analysis)	Isoproplybenzene	DRO
1-Methylnapthalene	p-Isopropyltoluene	ORO
2-Methylnapthalene	2-butanone (MEK)	Fluoride
1,2,4-Trimethylbenzene (TMB)	Trichloroethene	Chromium
1,2,3-TMB	cis-1,2-Dichloroethene	Lead

Table 9.1. Results for in-situ groundwater measurements, former NCI site, Norphlet, Arkansas.

Boring ID	pH (SU)	Temperature (˚C)	Specific Conductance (µS/cm)	Turbidity (NTU)	Color	Odor	Notes
MW-1	5.7	19.2	425	53	black	hydrocarbon	free product
MW-5	5.3	20.9	484	50	brown rust	none	-
MW-7	5.3	21.7	44	25	white to clear	hydrocarbon	cloudy/sheen
NCI-0	6.2	14.1	102	1050	brown	none	-
NCI-1	6.2	16.3	347	735	clear	none	-
NCI-2	5.9	15.6	471	649	brown	none	-
NCI-3	4.8	15.9	553	544	clear	none	-
NCI-4	5.1	20.3	31	172	gray	slight hydrocarbon	effervescent
NCI-5	5.7	19.3	166	459	brown	none	-
NCI-6	5.6	19.8	471	663	brown	slight chemical	-
NCI-7	4.8	19.5	517	40	clear	none	-
NCI-9	5.9	19.9	285	184	gray	none	cloudy
NCI-10	6.2	17.9	141	OOR	gray	none	-
NCI-11	5.7	19.7	298	355	cloudy	slight chemical	effervescent
NCI-12	6.2	13.8	694	OOR	brown	hydrocarbon	oil sheen
NCI-13	6.0	20.6	435	-	orange to gray	hydrocarbon	opaque
NCI-14	5.6	17.4	339	1027	gray orange	hydrocarbon	opaque
NCI-15	4.9	12.8	403	211	orange	hydrocarbon	opaque
NCI-16	5.6	16.7	363	542	gray	slight chemical	cloudy
NCI-17	6.6	15.5	900	OOR	brown	none	-
NCI-18	5.0	18.0	480	-	mild yellow	none	-
NCI-19	5.5	20.1	115	43	cloudy	none	-
NCI-20	5.7	21.4	241	956	brown	chemical	-

OOR: Out of range.

The highest frequency of detection among the organic chemicals (i.e., >8 of 26 analyses) was among the petroleum constituents (benzene, toluene, ethylbenzene, xylene, napthalene,

1-methylnapthalene, 2-methylnapthalene, 1,2,4-TMB, 1,2,3-TMB, 1,3,5-TMB, n-propylbenzene, GRO, DRO, and ORO). Acetone and methylene chloride concentrations, which were reported as estimated values, are likely laboratory artifacts (Section 8.2)

As shown on Table 9.1, turbidity readings were high in some wells indicating the potential for suspended solids to affect metals analyses. Where total metal results exceeded the MCL for lead or chromium, analysis of filtered samples was completed. The results, shown on Table E.4 indicate suspended sediment in these samples elevated the results because the metals were not detected in filtered samples. Except for dissolved lead in MW-1 (210 µg/L), total concentrations were used in evaluating human health risks.

Data from MW-7 and NCI-0 were intended for use in evaluating background, or upgradient groundwater conditions. Except for a low level of lead (0.30 µg/L), none of the chemicals listed above were detected in samples from MW-7. The lead concentration was well below the 15 µg/L MCL. Low levels of lead, chromium, toluene, and DRO were detected in the groundwater sample from NCI-0, but concentrations were below their respective screening levels. Although NCI-0 is located in a hydrologic “high” area of the site, the site cannot be ruled out as a source of DRO in this well given the historic operations at this site.

9.2.1 Chemicals of Potential Concern in Groundwater

Groundwater at the site is shallow (approximately 8 ft bgs) and is not currently used for potable purposes. Since future use of the site is not known, residential use of groundwater was evaluated in the human health risk assessment (Section 10). Benzene, chromium, lead, 1-methylnaphthalene, naphthalene, 1,2,4-trimethylbenzene (also 1,2,4-TMB), and TPH (DRO, GRO, and ORO) were detected above the RSL for tapwater, the MCL, or ADEQ screening levels for TPH. Tables E.1 – E.4 summarize these chemicals in groundwater, the frequency of occurrence of the chemical, the minimum detected concentration, and the maximum detected concentration, and Figure 9.1 shows locations where exceedances occurred.

9.2.2 Nature and Extent of Contamination for Groundwater

TPH, primarily DRO ranging in concentration from 52 µg/L to 41,000 µg/L, was detected in 25 of 27 groundwater samples collected at the site. Figures 9.2 through 9.4 show the distribution of TPH in groundwater beneath the site. The highest concentrations of TPH were detected in the groundwater samples from MW-1, which is located adjacent to the former hazardous waste management ponds. ADEQ (1991) observed free product in this well during previous sampling events, and approximately 0.9 ft of free product was measured in this well by FTN on March 2, 2011. Given the configuration of the potentiometric surface, offsite migration west of the site from this source area is not expected. Groundwater flows south-southeast, and the DRO plume likely discharges to Massey Creek. Relatively high concentrations of TPH were also observed in the vicinity of the historical tank farm and canning and drum storage buildings on the east side of the property. Data from wells in this area (NCI-14 and NCI-15) indicate offsite migration of GRO and ORO has occurred. Data from these wells and NCI-12 and NCI-13 indicate the off-site migration of DRO. Off-site migration has also occurred on the northeast side of the property. Although the extent of migration has not been defined by the data, it is likely the maximum extent of plume migration is Hayes Creek.

Where detected, concentrations of benzene ranged from 0.38 µg/L to 8 µg/L. Concentrations of benzene above the MCL (5 µg/L) were detected at NCI-4 (6.5 µg/L) and NCI-15 (8 µg/L) Figure 9.5 shows the distribution of benzene in groundwater. Based on current groundwater flow conditions the source of benzene appears to be the vicinity of the historical tank farm and canning and drum storage buildings. Off-site contamination is indicated by the data from NCI-15. Although the southeastern extent of the benzene plume has not been defined, the plume likely discharges to Hayes Creek.

Figure 9.6 shows the distribution of napthalene in groundwater beneath the site. The source and extent of contamination are similar to that described for benzene and are likely related to GRO contamination. Concentrations of 1-methylnapthalene and 1,2,4-TMB were elevated on the east side of the property in association with the GRO observed at sampling locations (Figure 9.1).

Total chromium was detected above the 100 µg/L MCL in two samples, NCI-12 (110 µg/L) and NCI-14 (160 µg/L). While it is possible that former ponds east of the railroad tracks and the former tank farm/canning and drum storage buildings are a source of chromium, field data show high levels of suspended sediment in the groundwater samples and chromium was not detected in the dissolved fraction. Total lead was detected in 21 of 27 groundwater samples that were analyzed and exceeded the 15 µg/L MCL at six locations (Figure 9.1). Except for the sample from MW-1 (210 µg/L), lead was not detected in the dissolved fraction.

9.3 Surface Soil Data Evaluation

The potential for human exposure to chemicals in soil is affected by the depth and spatial distribution of contaminants in soil. Chemicals present in soils at or near the soil surface (0 to 0.5 ft bgs) are much more likely to be directly contacted than chemicals in deeper soils. Surface soil samples were collected at a depth from 0 – 0.5 ft bgs and analyzed for VOCs, PAHs, metals, PCBs and TPH. No PCBs were detected in surface soil samples. Except for MEK, 28 chemicals that were detected in groundwater samples were also detected in surface soil samples. In addition, the PAHS — benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, acenapthene and fluoranthene — were detected. Maximum concentrations for most of these chemicals were below RSLs for residential direct exposure.

Tables E.5 – E.9 (Appendix E) summarize surface soil data results, the frequency of occurrence of the chemical, the minimum detected concentration, and the maximum detected concentration.

9.3.1 Chemicals of Potential Concern in Surface Soil

Figure 9.7 shows the chemicals that were retained as retained as COPCs in surface soil. These chemicals include DRO, benzo(a)pyrene, benzo(b)fluoranthene, and benzo(k)fluoranthene. Except for DRO, the selection of COPCs was based on a single detection of the chemical (i.e., one in 40 samples). Potentially carcinogenic PAHs (benzo(a)pyrene, benzo(b)fluoranthene, and benzo(k)fluoranthene) in surface soil occur primarily in the sample location SS-19-0.5.

The USGS Professional Paper 1270: *Element Concentrations in Soils and Other Surficial Materials of the Conterminous United States*, (Shacklette and Boerngen, 1984) was used as a source of background soil concentrations for metals in soil. Data were available for Union County. The maximum detected chromium (41mg/kg) and lead (690 mg/kg) concentration was above the background level for Union County (10 mg/kg) and above the background concentrations published in the Arkansas Brownfields Program User's Guide (ADEQ 2007). Only a single detection of lead (SS-1) exceeded both background and the residential SSL (400 mg/kg) and is thus shown on Figure 9.7. In addition, a limited number of samples were analyzed for hexavalent chromium, which was detected at the site (NCI-9) and retained as a COPC for the risk assessment.

9.3.2 Nature and Extent of Contamination in Surface Soil

Surface soil staining (black, petroleum hydrocarbon) is extensive in the area of the former tank farms and in drainage ditches on the site. Oil sheens were observed on the surface of former ponds after rainfall events. Yellow and green stains were observed in the area of the former NCI plant.

Where detected, DRO concentrations ranged from 6.2 to 22,000 mg/kg in surface soil samples. Figure 9.8 shows the distribution of DRO in surface soils. Elevated detections of DRO in surface soil included areas surrounding former ponds on the west and east side of the property, the former tank farm, and in the vicinity of the canning and drum storage buildings, where off-site contamination is evident. TPH constituents, benzo (a) pyrene, benzo(b) fluoranthene, and benzo(k)fluoranthene were detected above residential RSLs at a single location (SS-19) within a surface drainage feature downgradient of Tank 514.

Although chromium concentrations were typically within background, chromium levels were relatively elevated in surface soil associated with the former hazardous waste management impoundments and at the location of SS-1. Surface soil sample SS-1 was collected from a drainage pathway that is located down gradient from a containment structure for a former NCI tank (Appendix A, Photo 3). This is also the location where the highest lead concentration (690 mg/kg) and single exceedance of the residential SSL was observed. Soil pH at this location was

slightly acidic (pH 6 su), which is not indicative of chemical contamination; thus, elevated lead and chromium may be related to corroding metal in the area.

Table 9.2 shows the results of soil pH analysis at the site. Surface soils (0.05 ft) are considered very strongly acid to alkaline and are capable of supporting a variety of plant life. Ultra acid soil having a pH <3.5 and very strongly alkaline soil (pH>9) are not conducive for plant growth. None of the pH measurements indicated the presence of potential hazardous wastes.

9.4 Subsurface Soil Data Evaluation

Direct contact with chemicals in subsurface soils may occur during excavation of soils for a construction project. Subsurface soil samples were collected deeper than 0.5 ft bgs and were analyzed for VOCs, PAHs, metals, PCBs, and TPH. PCB 1260 was detected in the 2-ft sample from T-2-2; however, the concentration was below residential SSLs. Chromium and lead levels in subsurface soils were within background concentration ranges. Concentrations of benzene, n-butylbenzene, sec-butylbenzene, tert-butylbenzene, n-propylbenzene, styrene, toluene, 1,2,4-TMB, 1,2,3-TMB, 1,3,5-TMB, fluoranthene, 1-methylnapthalene, and 2-methylnapthalene were detected in subsurface soil samples, but concentrations did not exceed residential SSLs.

Tables E.10 – E.14 (Appendix E) summarize surface soil data results, the frequency of occurrence of the chemical, the minimum detected concentration and the maximum detected concentration.

9.4.1 Chemicals of Potential Concern in Subsurface Soil

Chemicals detected above residential soil RSLs and retained as COPCs in subsurface soil for the non-hotspot area are hexavalent chromium, TPH-DRO, TPH-GRO, and naphthalene (Figure 9.9). In the risk assessment (Section 10), CTEH retained benzo(a)pyrene, benzo(b)fluoranthene, and benzo(k)fluoranthene as COPCs in subsurface soil for the hotspot area (SS-19) because there was no subsurface data to demonstrate chemical attenuation at that location. Other chemicals were retained as COPCs in relation to exceedances of groundwater protection screening levels as discussed in Section 9.4.3.

Table 9.2. Results for soil pH analyses.

Client Sample ID	Collect Date	pH (su)
NCI-12-0.5	2/24/2011	7.6
NCI-12-2	2/24/2011	8.3
NCI-12-10	2/24/2011	8.7
NCI-12-14	2/24/2011	7.0
NCI-5-0.5	2/22/2011	4.7
NCI-5-2	2/22/2011	4.5
NCI-5-6	2/22/2011	4.5
NCI-5-29	2/22/2011	5.4
NCI-5-41	2/22/2011	4.8
NCI-6-0.5	2/23/2011	5.4
NCI-6-0.5D	2/23/2011	4.7
NCI-6-2	2/23/2011	4.8
NCI-6-2D	2/23/2011	4.4
NCI-6-15	2/23/2011	4.2
NCI-6-24	2/23/2011	4.9
NCI-7-0.5	2/23/2011	6.0
NCI-7-2	2/23/2011	5.1
NCI-7-14	2/23/2011	5.7
NCI-7-23	2/23/2011	4.1
NCI-8-0.5	2/24/2011	5.0
NCI-8-0.5D	2/24/2011	4.9
NCI-8-2	2/24/2011	4.6
NCI-8-2D	2/24/2011	5.0
NCI-8-10	2/24/2011	4.5
NCI-8-34	2/24/2011	9.0
NCI-9-0.5	2/23/2011	5.3
NCI-9-2	2/23/2011	7.7
NCI-9-10	2/23/2011	5.7
NCI-9-12	2/23/2011	6.1
SS-1	2/22/2011	6.0
SS-2	2/22/2011	5.8
SS-9	2/22/2011	6.4
SS-10	2/22/2011	7.7
SS-11	2/22/2011	7.0
SS-12	2/22/2011	8.4
SS-13	2/22/2011	6.6
SS-14	2/22/2011	4.8
SS-15	2/22/2011	5.1
SS-16	2/22/2011	4.3
SS-16D	2/22/2011	4.3
SS-17	2/22/2011	4.6
SS-18	2/22/2011	4.4
SS-19	2/22/2011	4.5

9.4.2 Nature and Extent of Contamination in Sub-Surface Soil

DRO was detected in 31 of 53 subsurface soil samples that were analyzed. Elevated DRO levels were observed in association with the former ponds on the east and west sides of the property, Tank 514, and beneath the former tank farm located north of the canning/drum storage buildings. Figure 9.10 shows the distribution of DRO in the 1-2 ft interval, and Figure 9.11 shows DRO from 2 ft to the top of the water table. The highest DRO concentrations are found at relatively shallow depths.

Elevated concentrations of GRO were observed at NCI-4 (Figure 9.12). This is the location of the former tank farm. GRO concentrations were observed to decrease with depth in this area. GRO contamination appears to be contained within the two tracts of land that comprise the property.

Napthalene concentrations in subsurface soil, where detected, ranged from 0.0019 mg/kg to 7.5 mg/kg. Concentrations exceeded the residential SSL in subsurface soil samples from NCI-4, located in the area of the former tank farm, and NCI-19, which is located in former pond 701.

A hydrocarbon odor, usually a strong odor, was observed in subsurface soils at 15 of 20 boring locations. The odor was typically associated with hydrocarbon soil stains. Additionally, oil seeps and/or sheens were observed in subsurface soil samples collected at NCI-10 (located south of the 5-ac pond, aka “704”), NCI-12 (location of former pond 712 adjacent to Hayes Creek, and NCI-19 (location of former pond 701).

9.4.3 Exceedances of the Groundwater Protection Screening Levels

Chemical concentrations for a number of chemicals detected in subsurface soil samples were below health-based screening levels but above the more stringent groundwater protection (GWP) screening levels. These chemicals were detected in groundwater at low concentrations, and for this reason lead, benzene, napthalene, 1,2,4-TMB, 1,3,5-TMB, 1-methylnapthalene, and 2-methylnapthalene were retained as COPCs. Hexavalent chromium also exceeded the GWP screening level. Figure 9.13 shows locations where the GWP screening level was exceeded.

9.5 Surface Water Data Evaluation

Surface water samples were collected and analyzed for PAHs, metals, PCBs, and TPH. No PAHs were detected in surface water samples. Low levels of lead and chromium were detected but their concentrations were below health-based limits. No GRO was detected in surface water samples but DRO and/or ORO were detected in samples from Hayes Creek, Massey Creek, and the on-site firewater pond.

Tables E.15 – E.17 (Appendix E) summarize surface soil data results, the frequency of occurrence of the chemical, the minimum detected concentration, and the maximum detected concentration. Table 9.3 presents field data collected at the time of sampling. This section presents an evaluation of surface water data. COPCs are identified and the nature and extent of contamination is characterized.

Table 9.3. Results for in-situ surface water measurements, NCI site Norphlet, Arkansas.

Sample ID	Sample Location	Total Depth (ft)	pH (SU)	Temperature (˚C)	Specific Conductance (µS/cm)	Turbidity (NTU)	Odor	Surface Oils
SW-1	Hayes Creek	0.5	5.5	17.0	108	turbid	fishy	sheen
SW-2	Hayes Creek	1.5	7.6	16.9	917	clear	other	slick/sheen
SW-3	Hayes Creek	0.2	6.7	17.3	563	opaque	normal/none	none
SW-4	Massey Creek	0.4	6.4	17.8	643	clear	normal/none	none
SW-5	Massey Creek	0.5	6.2	15.3	660	clear	normal/none	none
SW-6	Fire Water Pond	0.5	6.6	16.5	671	slightly turbid	fishy	none
SW-7	Drainage Ditch	0.2	7.1	18.4	183	clear	petroleum	sheen

9.5.1 Chemicals of Potential Concern in Surface Water

Only DRO (3,200 µg/L) in the sample collected from an area of seepage located between the former tank farm and former impoundments east of the railroad tracks (SW-7, Figure 7.1) exceeded health based limits.

9.5.2 Nature and Extent of Contamination

Sewage odor and oil sheen were observed during the collection of Hayes Creek background samples (SW-1), and low levels of DRO were observed at this location, indicating possible upgradient source of contamination. Surface water in the drainage pathway on the east side of the property ultimately enters Hayes Creek, thus elevated levels of DRO from surface water sample SW-7 indicates the potential to impact water quality in the creek.

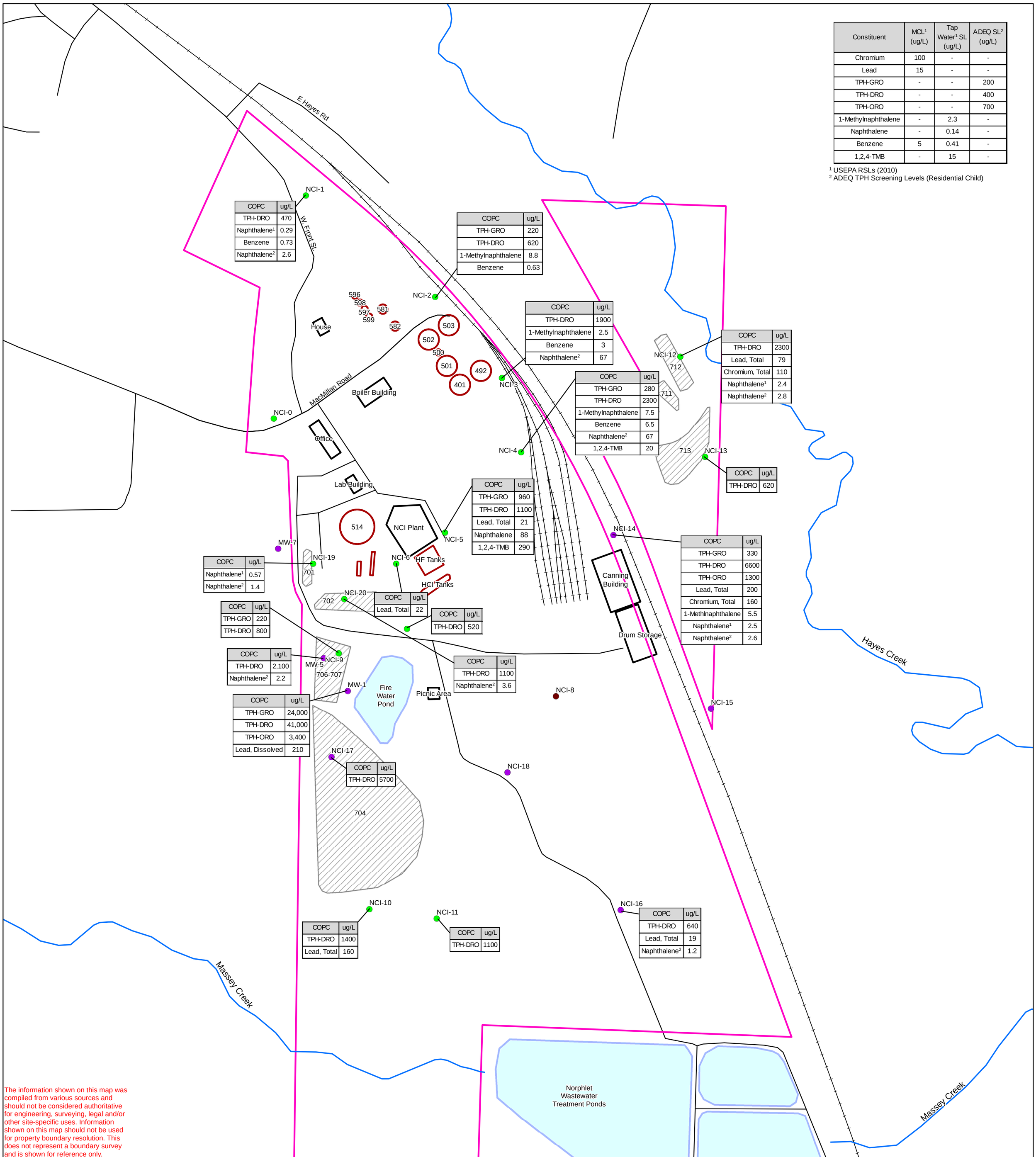
9.6 Sediment Data Evaluation

Sediment samples were analyzed for the presence of VOCs, PAHs, TPH, chromium, and lead. Background sediment samples were collected from Hayes Creek (SD-1) and Massey Creek (SD-4). Sewage odor and oil sheen were observed in surface water during the collection of Hayes Creek background samples (SD-1/SW-1), and low levels of TPH and 1-methylnapthalene and 2-methylnapthalene were detected in this background sediment sample indicating the potential for an off-site source for these chemicals. Low levels of GRO, DRO, ORO, isopropylbenzene, napthalene, fluoranthene, 1-methylnapthalene, 2-methylnapthalene, phenanthrene, pyrene, chromium, and lead were detected in samples from Hayes Creek, but chemicals concentrations were below health-based screening levels thus they were not retained as COPCs. Likewise, low levels of DRO and ORO, chromium, and lead were detected in sediment samples from Massey Creek but none were retained as COPCs.

Tables E.18 – E.21 (Appendix E) summarizes the chemical retained as COPC in and sediment, the frequency of occurrence of the chemical, the minimum detected concentration, and the maximum detected concentration.

Constituent	MCL[1] (ug/L)	Tap Water[1] SL (ug/L)	ADEQ SL[2] (ug/L)
Chromium	100	-	-
Lead	15	-	-
TPH-GRO	-	-	200
TPH-DRO	-	-	400
TPH-ORO	-	-	700
1-Methylnaphthalene	-	2.3	-
Naphthalene	-	0.14	-
Benzene	5	0.41	-
1,2,4-TMB	-	15	-

[1] USEPA RSLs (2010)
[2] ADEQ TPH Screening Levels (Residential Child)



COPC	ug/L
TPH-DRO	470
Naphthalene[1]	0.29
Benzene	0.73
Naphthalene[2]	2.6

COPC	ug/L
TPH-GRO	220
TPH-DRO	620
1-Methylnaphthalene	8.8
Benzene	0.63

COPC	ug/L
TPH-DRO	1900
1-Methylnaphthalene	2.5
Benzene	3
Naphthalene[2]	67

COPC	ug/L
TPH-DRO	2300
Lead, Total	79
Chromium, Total	110
Naphthalene[1]	2.4
Naphthalene[2]	2.8

COPC	ug/L
TPH-GRO	280
TPH-DRO	2300
1-Methylnaphthalene	7.5
Benzene	6.5
Naphthalene[2]	67
1,2,4-TMB	20

COPC	ug/L
TPH-DRO	620

COPC	ug/L
TPH-GRO	960
TPH-DRO	1100
Lead, Total	21
Naphthalene	88
1,2,4-TMB	290

COPC	ug/L
TPH-GRO	330
TPH-DRO	6600
TPH-ORO	1300
Lead, Total	200
Chromium, Total	160
1-Methlnaphthalene	5.5
Naphthalene[1]	2.5
Naphthalene[2]	2.6

COPC	ug/L
Naphthalene[1]	0.57
Naphthalene[2]	1.4

COPC	ug/L
Lead, Total	22

COPC	ug/L
TPH-DRO	520

COPC	ug/L
TPH-GRO	220
TPH-DRO	800

COPC	ug/L
TPH-DRO	2,100
Naphthalene[2]	2.2

COPC	ug/L
TPH-DRO	1100
Naphthalene[2]	3.6

COPC	ug/L
TPH-GRO	24,000
TPH-DRO	41,000
TPH-ORO	3,400
Lead, Dissolved	210

COPC	ug/L
TPH-DRO	5700

COPC	ug/L
TPH-DRO	1400
Lead, Total	160

COPC	ug/L
TPH-DRO	1100

COPC	ug/L
TPH-DRO	640
Lead, Total	19
Naphthalene[2]	1.2

The information shown on this map was compiled from various sources and should not be considered authoritative for engineering, surveying, legal and/or other site-specific uses. Information shown on this map should not be used for property boundary resolution. This does not represent a boundary survey and is shown for reference only.

S:\projects\3013-132\gis\mapdoc\COPCS IN GROUNDWATER SizeC.mxd

1 Naphthalene Analysis by EPA Method 3510C/8310 PAH
2 Naphthalene Analysis by EPA Method 8260B VOC

Legend

- Groundwater Sample
- Soil and Groundwater Sample
- Soil Sample
- Streams
- Deed Boundary
- Roads
- Railroads
- Buildings
- Tanks
- Existing Ponds
- Former Impoundments

Figure 9.1 Chemicals of Potential Concern in Groundwater
Norphlet Chemical, Inc. Property
Union County, AR

0 100 200 400 Feet

Basemap Source:
NAIP 2009
Union County, AR

Norphlet Chemical, Inc.
Union County, AR

By: SEM
Revised Date: 13April2011
Project No. 3013-132

ftn Associates Ltd.

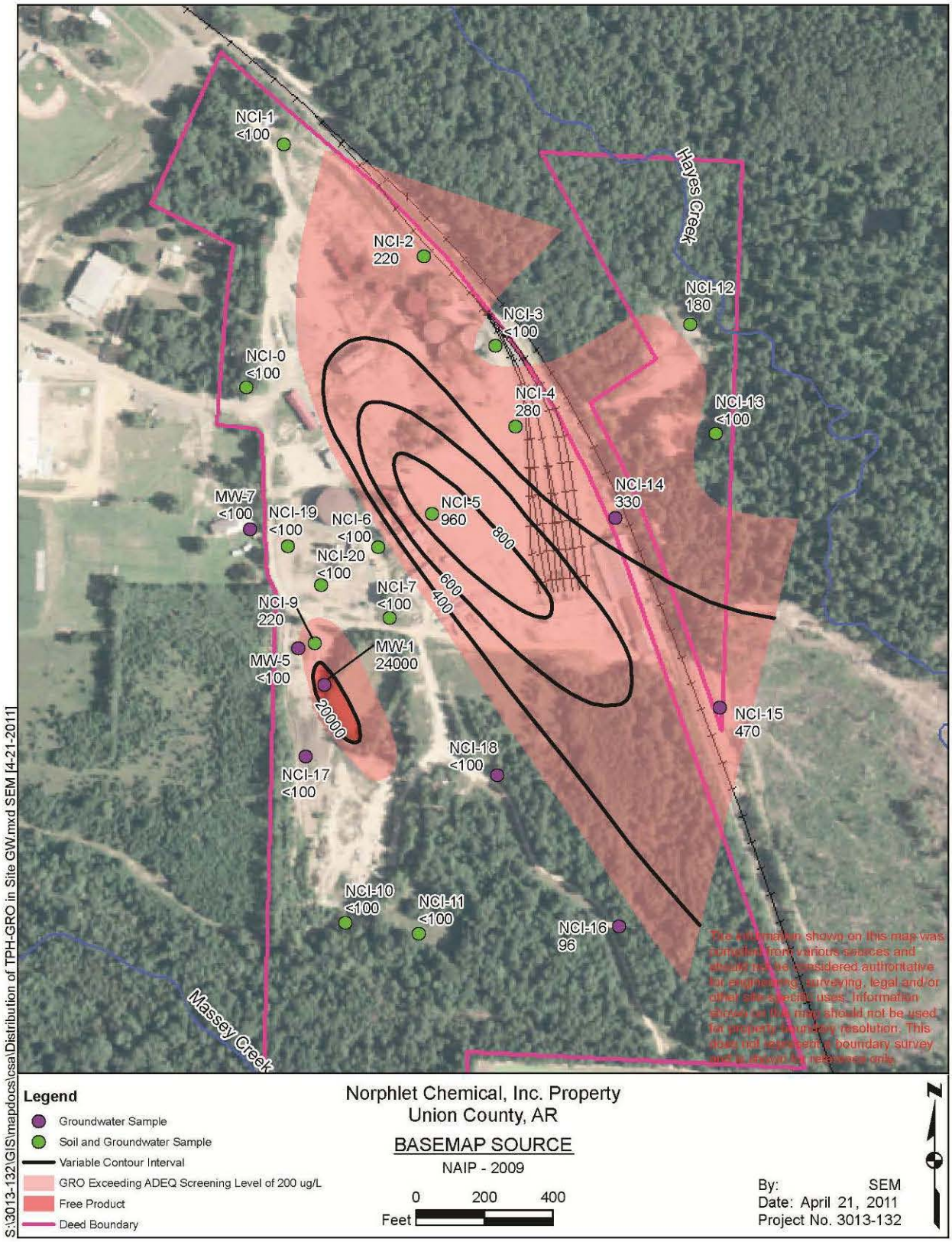


Figure 9.2. Distribution of GRO (µg/L) in groundwater.

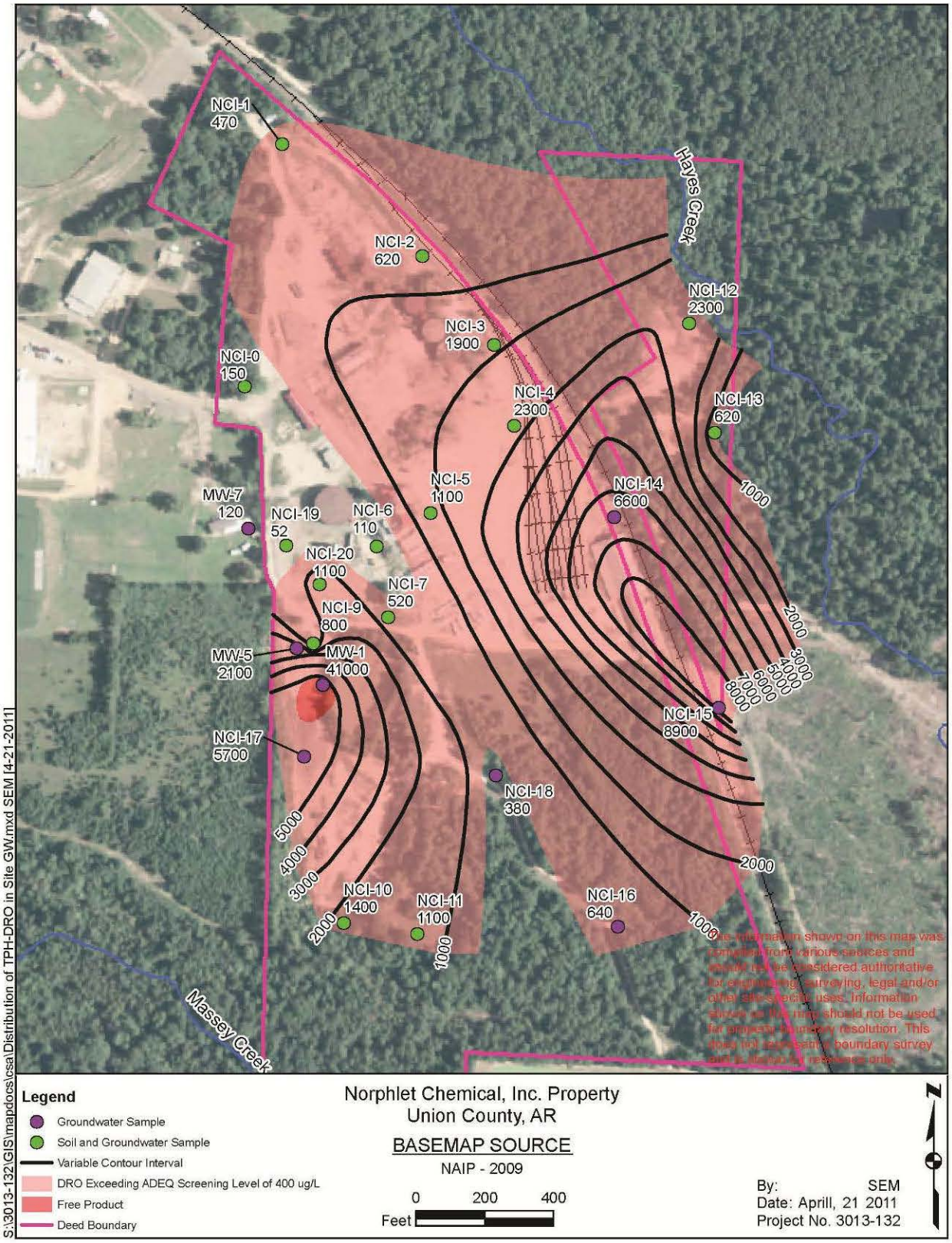


Figure 9.3. Distribution of DRO (µg/L) in groundwater.

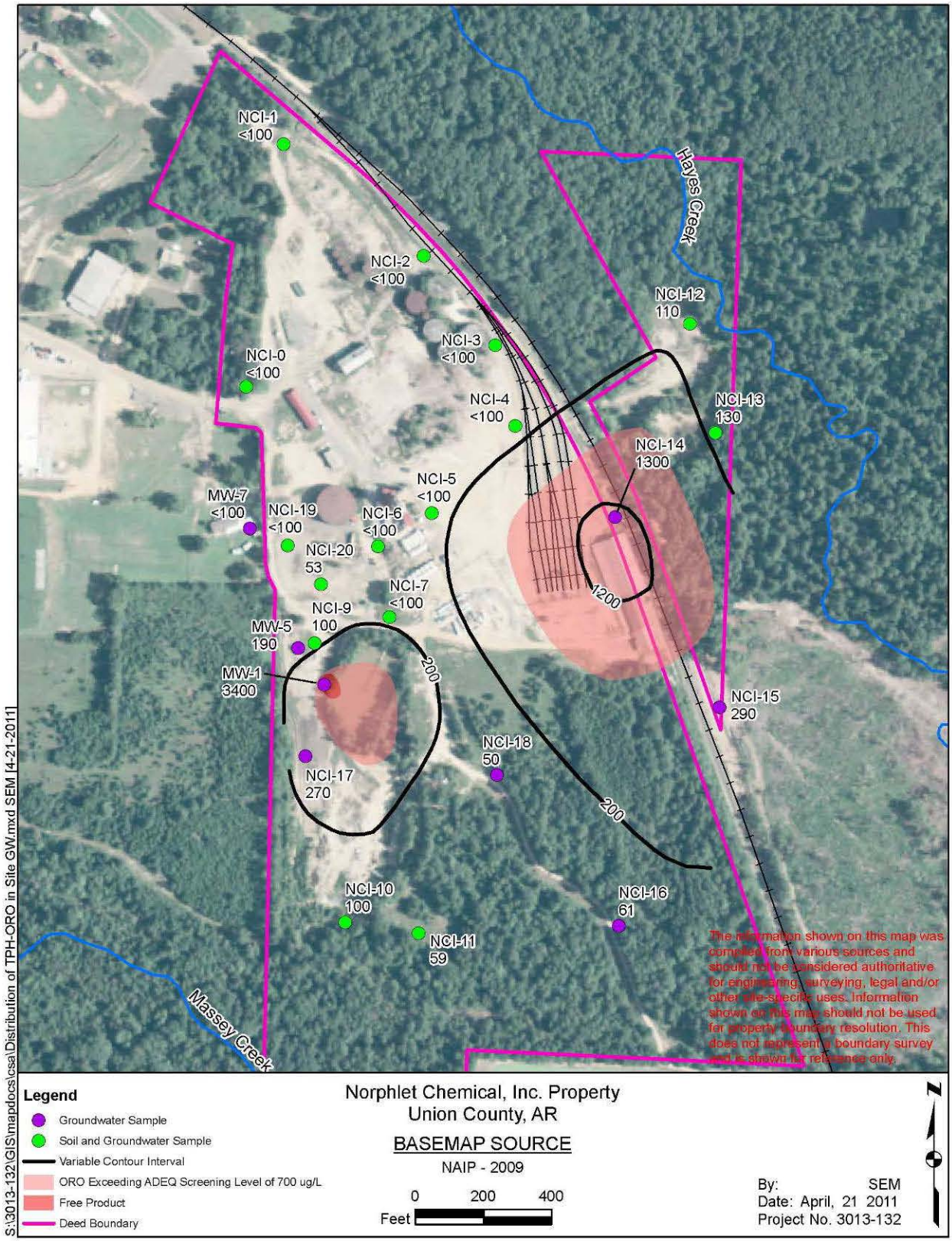


Figure 9.4. Distribution of ORO (µg/L) in groundwater.

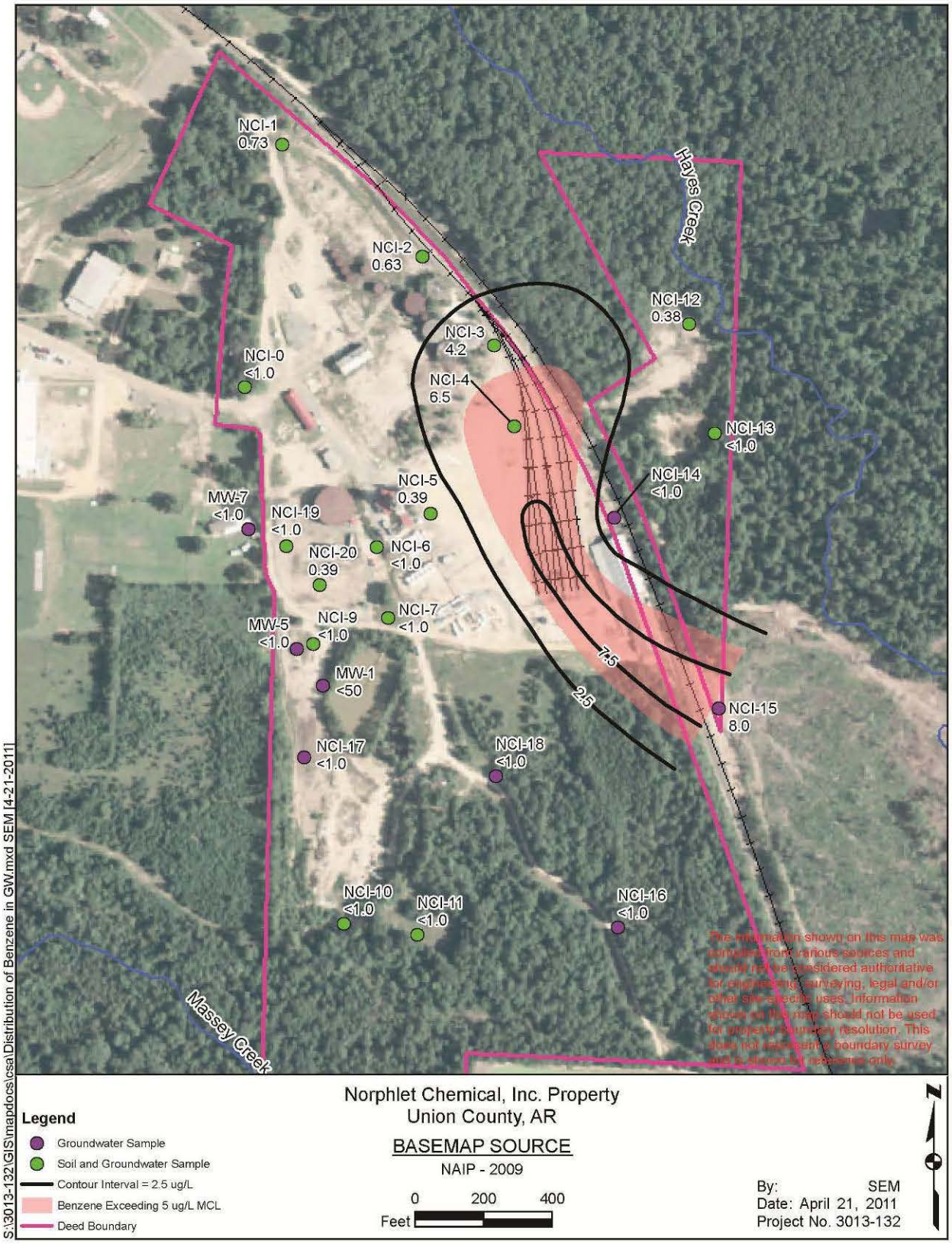


Figure 9.5. Distribution of benzene (µg/L) in groundwater.

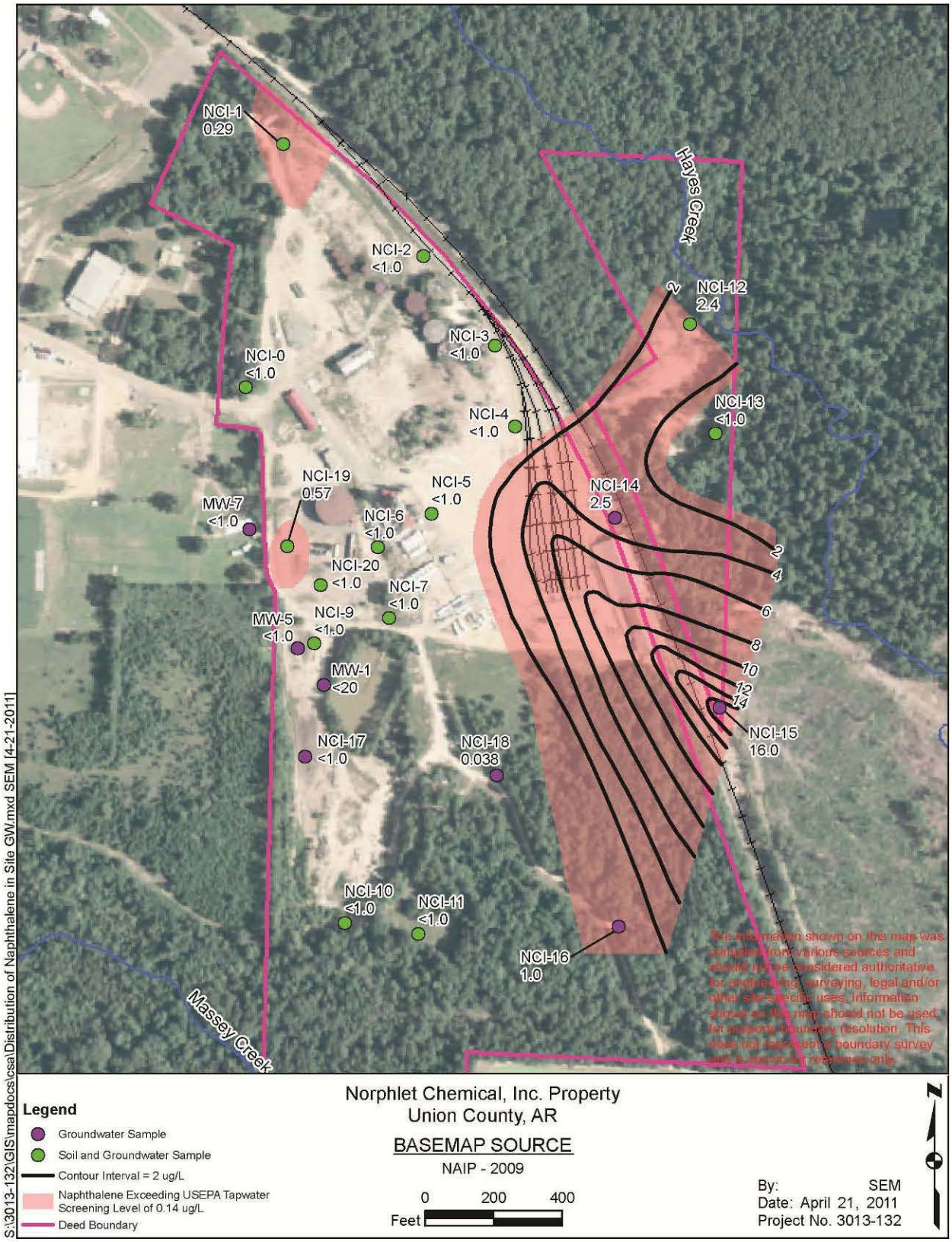
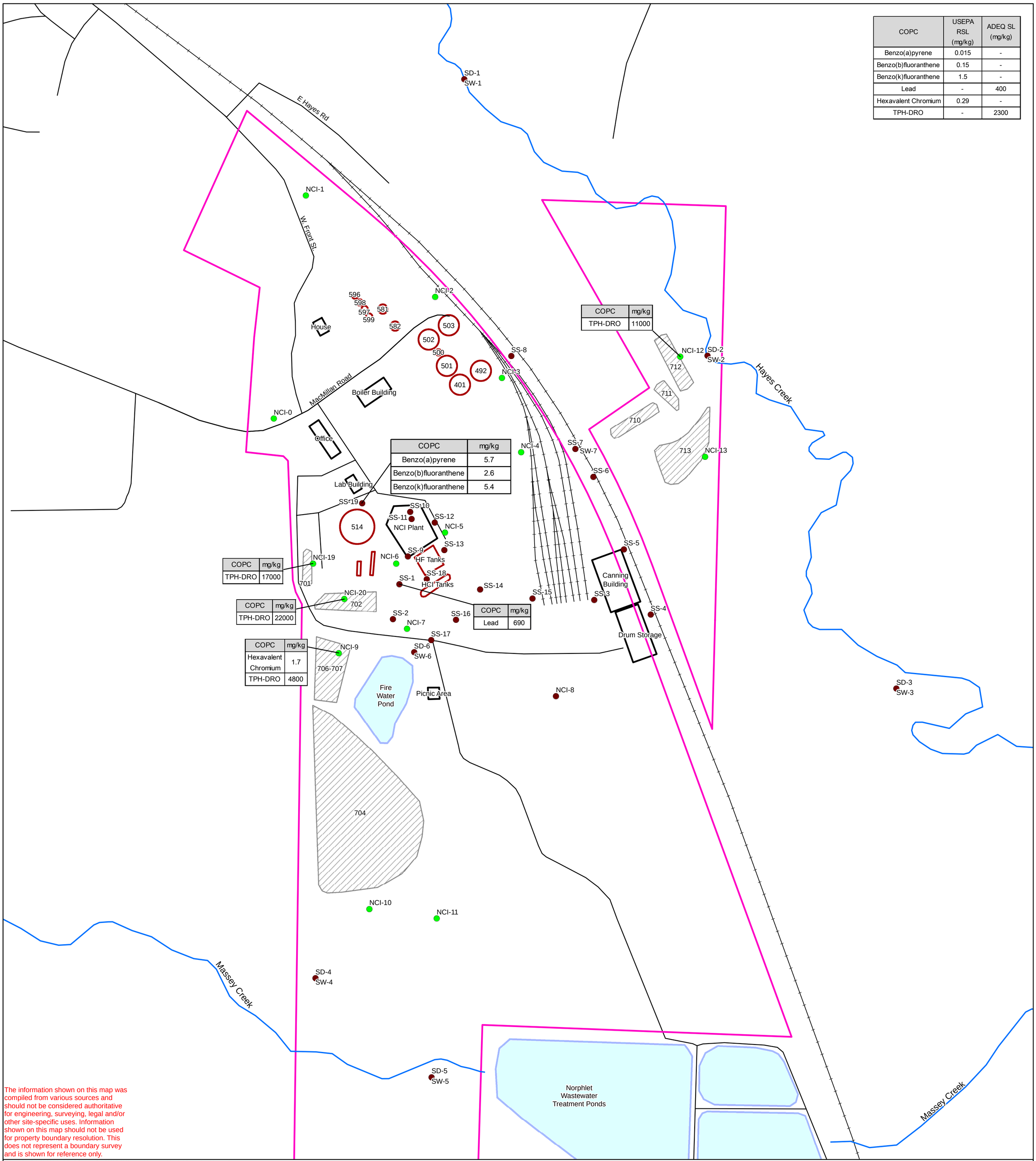


Figure 9.6. Distribution of naphthalene (µg/L) in groundwater.

COPC	USEPA RSL (mg/kg)	ADEQ SL (mg/kg)
Benzo(a)pyrene	0.015	-
Benzo(b)fluoranthene	0.15	-
Benzo(k)fluoranthene	1.5	-
Lead	-	400
Hexavalent Chromium	0.29	-
TPH-DRO	-	2300



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S:\projects\3013-132\gis\mapdoc\COPCS IN SURFACE SOIL SizeC.mxd

Legend

- Soil Sample
- Soil and Groundwater Sample
- Streams
- Deed Boundary
- Roads
- Railroads
- Buildings
- Tanks
- Existing Ponds
- Former Impoundments

Figure 9.7 Chemicals of Potential Concern in Surface Soil
Norphlet Chemical, Inc. Property
Union County, AR

0 100 200 400 Feet

Basemap Source:
NAIP 2009
Union County, AR

Norphlet Chemical, Inc.

Union County, AR

By: SEM
Revised Date: April 25, 2011
Project No. 3013-132

ftn Associates Ltd.

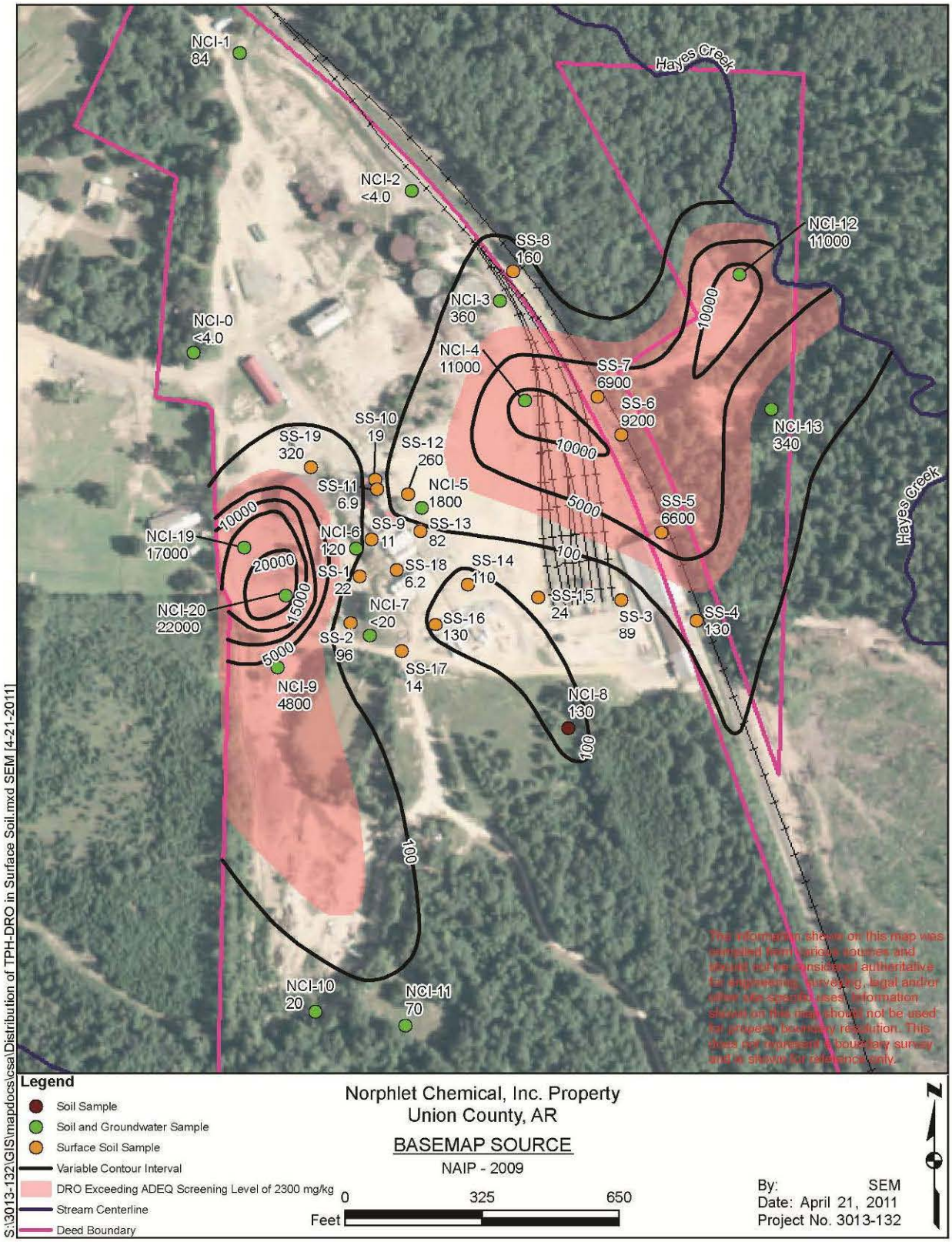
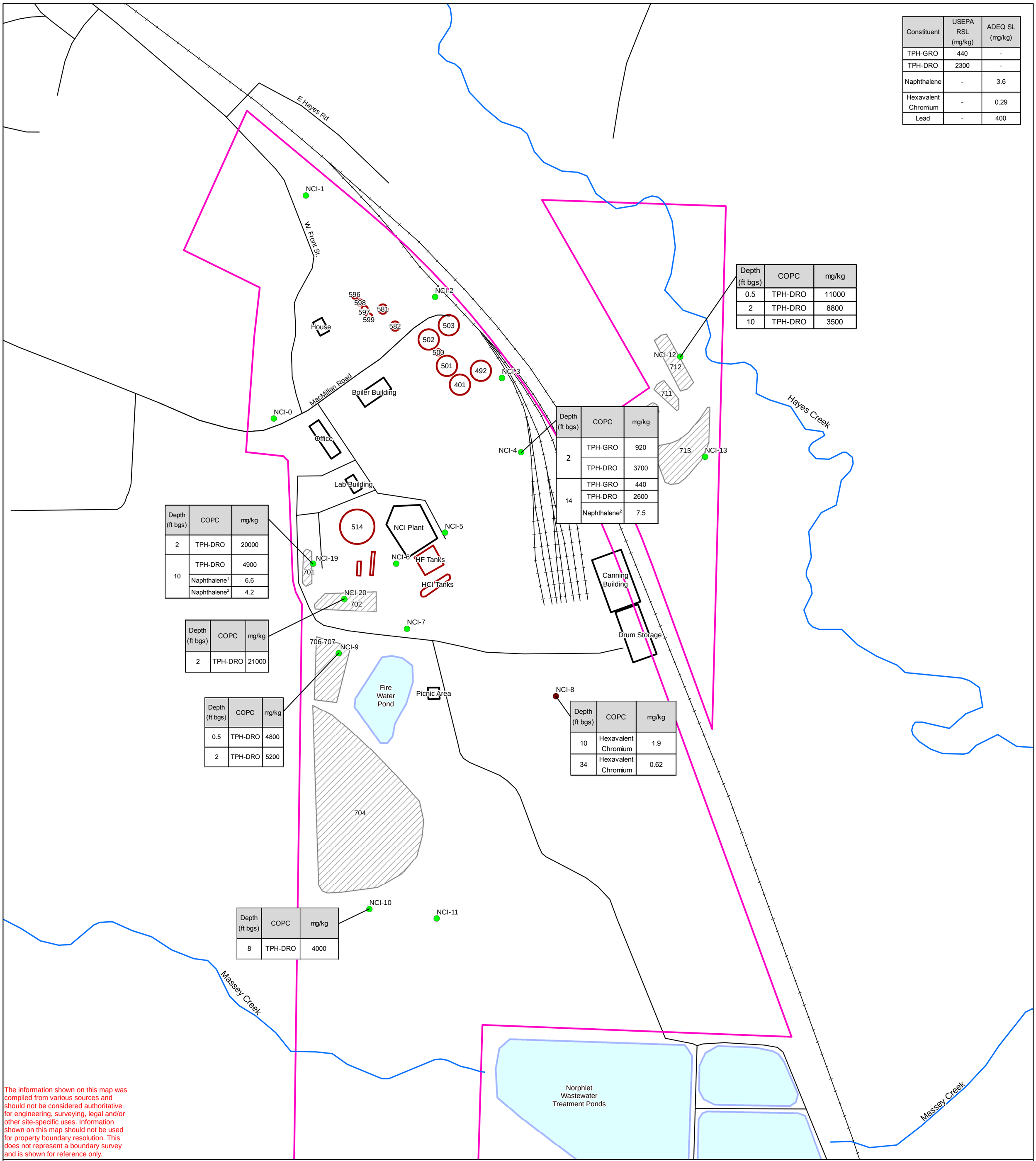


Figure 9.8. Distribution of DRO (mg/kg) in surface soil.

Constituent	USEPA RSL (mg/kg)	ADEQ SL (mg/kg)
TPH-GRO	440	-
TPH-DRO	2300	-
Naphthalene	-	3.6
Hexavalent Chromium	-	0.29
Lead	-	400



Depth (ft bgs)	COPC	mg/kg
0.5	TPH-DRO	11000
2	TPH-DRO	8800
10	TPH-DRO	3500

Depth (ft bgs)	COPC	mg/kg
2	TPH-GRO	920
	TPH-DRO	3700
14	TPH-GRO	440
	TPH-DRO	2600
	Naphthalene[2]	7.5

Depth (ft bgs)	COPC	mg/kg
2	TPH-DRO	20000
10	TPH-DRO	4900
	Naphthalene[1]	6.6
	Naphthalene[2]	4.2

Depth (ft bgs)	COPC	mg/kg
2	TPH-DRO	21000

Depth (ft bgs)	COPC	mg/kg
0.5	TPH-DRO	4800
2	TPH-DRO	5200

Depth (ft bgs)	COPC	mg/kg
10	Hexavalent Chromium	1.9
34	Hexavalent Chromium	0.62

Depth (ft bgs)	COPC	mg/kg
8	TPH-DRO	4000

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1 Naphthalene Analysis by EPA Method 8260B VOC

2 Naphthalene Analysis by EPA Method 3510C/8310 PAH

Legend

- Soil and Groundwater Sample
- Soil Sample
- Streams
- Deed Boundary
- Roads
- Railroads
- Buildings
- Tanks
- Existing Ponds
- Former Impoundments

Figure 9.9 Chemicals of Potential Concern in Subsurface Soil
Norphlet Chemical, Inc. Property
Union County, AR

0 100 200 400 Feet

Basemap Source:
NAIP 2009
Union County, AR

Norphlet Chemical, Inc.

Union County, AR

By: SEM
Revised Date: April 25, 2011
Project No. 3013-132

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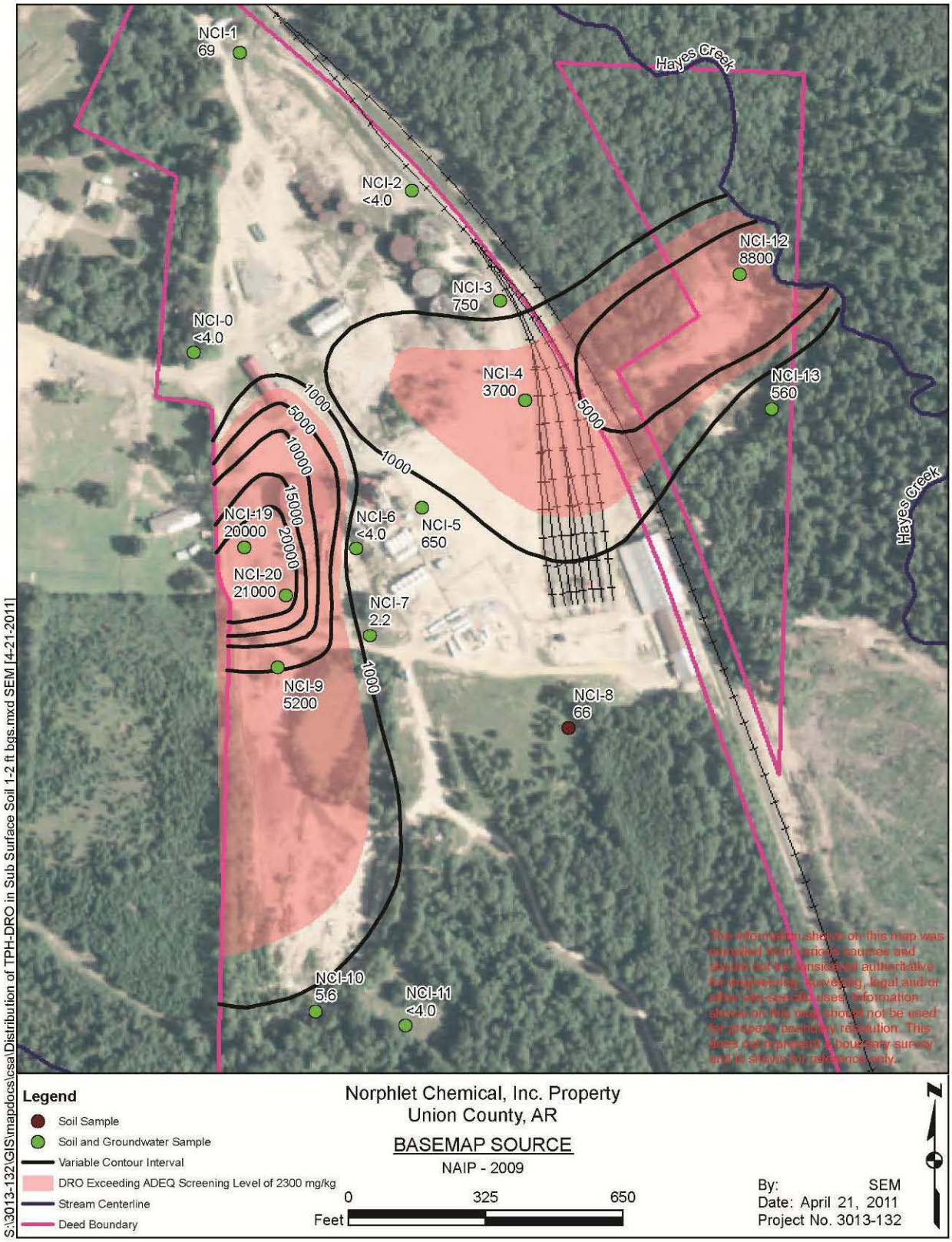


Figure 9.10. Distribution of DRO (mg/kg) in subsurface soil (1–2 ft).

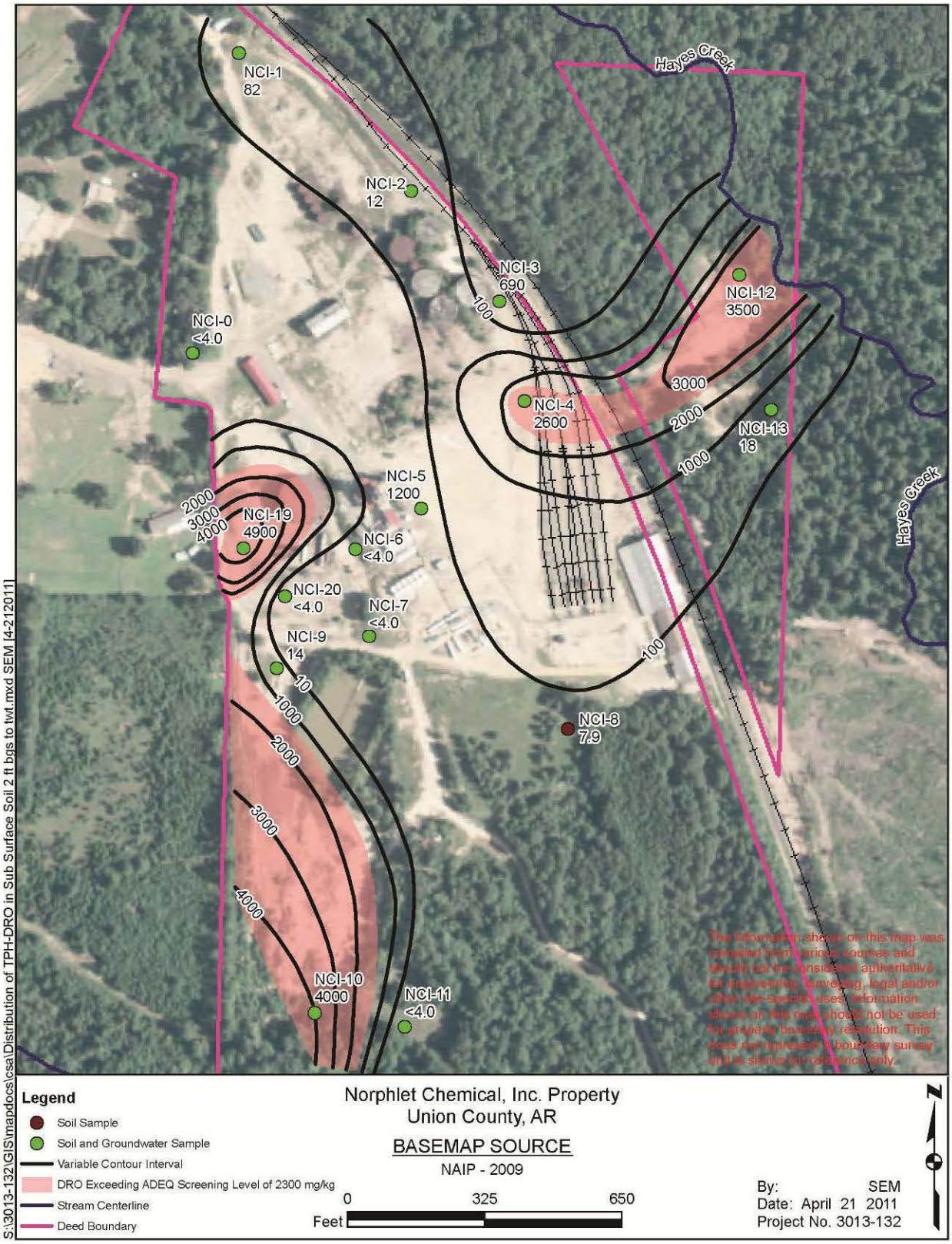


Figure 9.11. Distribution of DRO (mg/kg) from 2 ft to the top of water table.

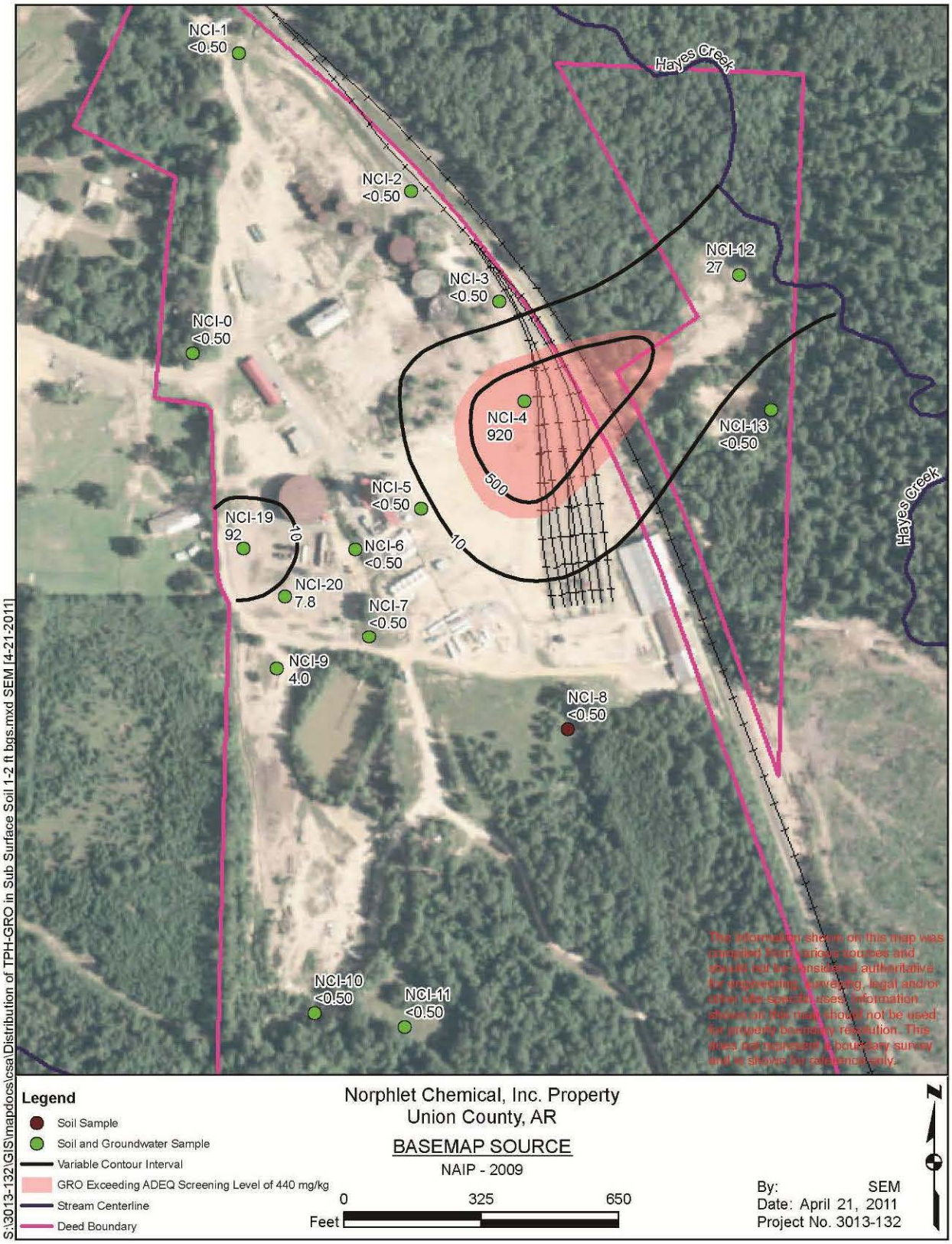
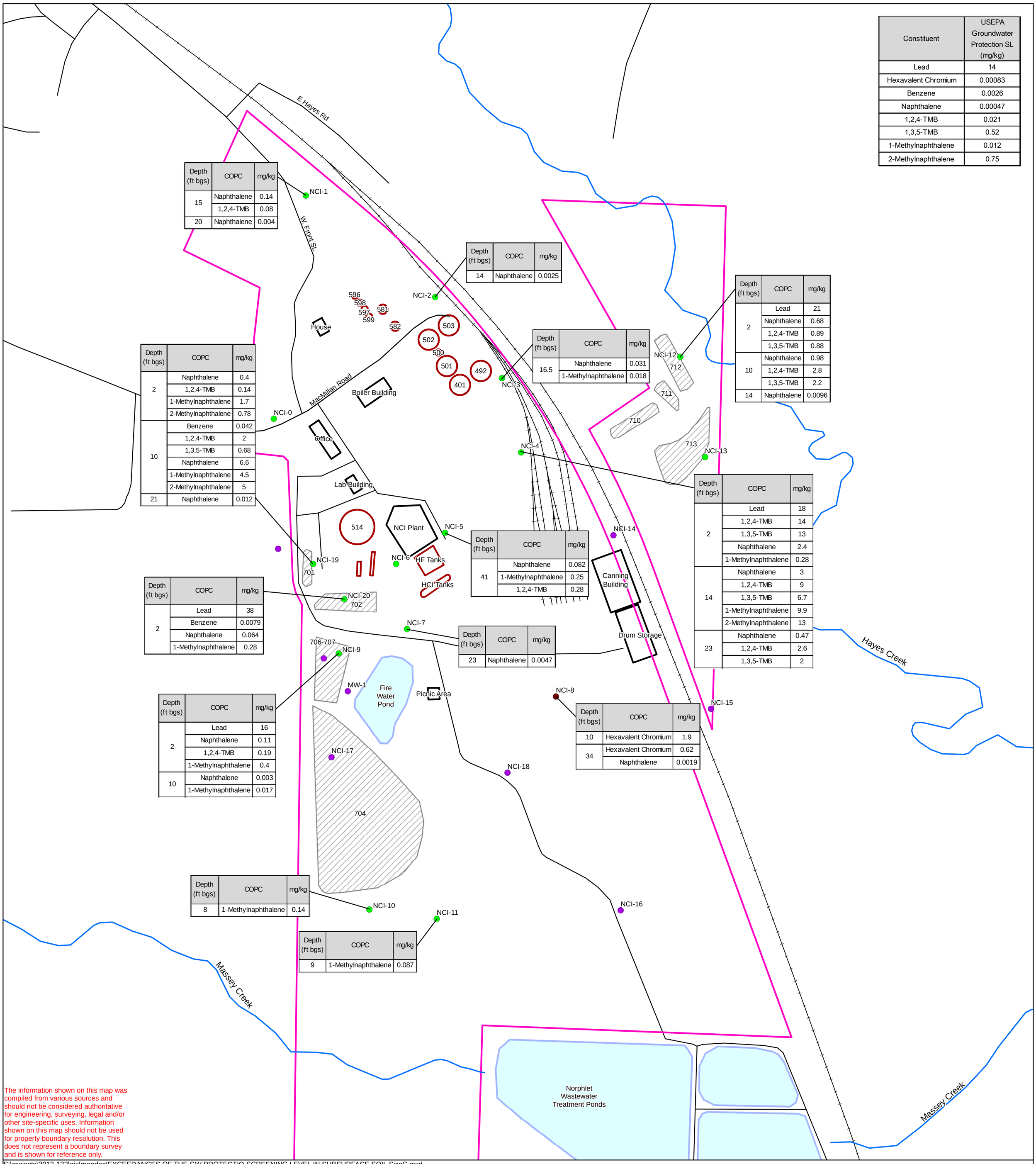


Figure 9.12. Distribution of GRO (mg/kg) in subsurface soil.

Constituent	USEPA Groundwater Protection SL (mg/kg)
Lead	14
Hexavalent Chromium	0.00083
Benzene	0.0026
Naphthalene	0.00047
1,2,4-TMB	0.021
1,3,5-TMB	0.52
1-Methylnaphthalene	0.012
2-Methylnaphthalene	0.75



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S:\projects\3013-132\gis\mapdoc\EXCEEDANCES OF THE GW PROTECTIO SCREENING LEVEL IN SUBSURFACE SOIL SizeC.mxd

1 Naphthalene Analysis by EPA Method 3510C/8310 PAH
2 Naphthalene Analysis by EPA Method 8260B VOC

Legend

- Groundwater Sample
- Soil and Groundwater Sample
- Soil Sample
- Streams
- Deed Boundary
- Roads
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- Former Impoundments

Figure 9.13 Chemicals Exceeding Groundwater Protection Screening Levels
Norphlet Chemical, Inc. Property
Union County, AR

0 100 200 400 Feet

Basemap Source:
NAIP 2009
Union County, AR

Norphlet Chemical, Inc.
Union County, AR

By: SEM
Revised Date: 13April2011
Project No. 3013-132

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10.0 HEALTH RISK ASSESSMENT

CTEH prepared the human health risk assessment (HHRA) using the methods and assumptions outlined in the CSAWP (FTN 2010). Appendix F contains CTEH's full report, a summary of which is provided in this section. The objective of the human health risk assessment (HHRA) for the future NCI site was to assess potential human health risks that may result from exposure to chemicals in on-site groundwater, soil, surface water, and sediment. Sampling of the site indicated that media concentrations of some VOCs, PAHs, and metals exceeded typical background levels or appropriate residential soil screening levels.

10.1 Risks from Current Land Use and Exposure to COPCs in Surface Soil

The NCI site is an inactive site with and there is no current use of the property. A pond used for former facility processes is located on-site. Based on current site conditions, the trespasser was considered the most representative current on-site receptor for possible exposure to chemicals present in surface soil.

The calculated hazard index (HI) and cumulative theoretical lifetime cancer risks (LCR) for the trespasser are presented below.

Trespasser:

Exposure to COPCs in hotspot surface soils:	HI = NA	LCR = 1E-05
Exposure to COPCs in non-hotspot surface soils:	HI = 1E-04	LCR = 2E-08

The noncancer hazard for exposure to hotspot surface soils could not be calculated for the trespasser because noncancer toxicity values are not available for the retained COPCs. The noncancer hazard for exposure to non-hotspot surfaces soils is 1E-04. The cumulative theoretical lifetime cancer risks for potential exposure to hotspot and non-hotspot surface soils are 1E-05 and 2-08, respectively. The risks are within or below the range of USEPA acceptable cancer risk values.

10.2 Risks from Future Land Use and Exposure to COPCs in Groundwater, Surface Soil, Subsurface Soil, and Sediment

The future use of the former NCI site is unknown. However, because the surrounding properties are zoned residential and commercial use, C/I workers, construction workers, and on-site residents are considered future receptors at the site.

The calculated HIs and LCRs for the indoor C/I worker, outdoor C/I worker, construction worker, and resident (child and adult) are presented below.

Indoor C/I Worker:

Exposure to COPCs in groundwater (vapor intrusion):	HI = 2E-01	LCR = 6E-07
Exposure to COPCs in groundwater (direct contact):	HI = 4E-02	LCR = 1E-04
Exposure to COPCs in subsurface soil (vapor intrusion):	HI = 1E+01	LCR = 3E-05

The noncancer hazard for the indoor C/I worker's potential exposure to groundwater via direct contact and vapor intrusion is 2E-01 and 4E-02, respectively. The noncancer hazards for direct and indirect contact with groundwater are below 1. The noncancer hazard for exposure to COPCs in subsurface soil via vapor intrusion is 1E+01. The main risk driver for this pathway is the presence of 1,2,4-trimethylbenzene in subsurface soil. Cumulative theoretical lifetime cancer risks are below or within the range of USEPA acceptable excess cancer risks.

Outdoor C/I Worker:

Exposure to COPCs in hotspot surface soil:	HI = NA	LCR = 3E-05
Exposure to COPCs in non-hotspot surface soil:	HI = 6E-04	LCR = 3E-07

The noncancer hazard could not be calculated for the outdoor C/I worker's potential exposure to hotspot surface soils due to the lack of noncancer toxicity values. The noncancer hazard associated with the outdoor C/I worker's potential exposure to non-hotspot surface soils is 6E-04. Cumulative theoretical lifetime cancer risks for exposure to hotspot and non-hotspot surface soils are 3E-05 and 3E-07, respectively. The theoretical cancer risks are below or within the range of USEPA acceptable excess cancer risks.

Construction Worker:

Exposure to COPCs in hotspot subsurface soil:	HI = 2E-05	LCR = 3E-06
Exposure to COPCs in non-hotspot subsurface soil:	HI = 2E+00	LCR = 7E-07

The noncancer hazard associated with the construction worker's exposure to hotspot and non-hotspot subsurface soils are 2E-05 and 2E+00. The risk driver for the non-hotspot subsurface soil is the construction worker's potential exposure to 1,3,5-trimethylbenzene via the inhalation pathway. The cumulative theoretical lifetime cancer risks associated with potential exposure to hotspot and non-hotspot subsurface soils are 3E-06 and 7E-07, respectively. The theoretical cancer risks are below or within the USEPA acceptable cancer risks.

On-Site Resident*:*

Exposure to COPCs in groundwater (direct contact):		
Child:	HI = 9E+01	
Adult:	HI = 5E+01	
	Summed LCR = 2E-03	
Exposure to COPCs in groundwater (vapor intrusion):	HI = 3E+00	LCR = 1E-05
Exposure to COPCs in hotspot surface soils:	HI = NA	LCR = 4E-04
Exposure to COPCs in non-hotspot surface soils:		
Child:	HI = 7E-03	
Adult:	HI = 8E-04	
	Summed LCR = 1E-06	
Exposure to COPCs in subsurface soil (vapor intrusion):	HI = 2E+02	LCR = 6E-04

The noncancer hazard associated with the child and adult resident's potential exposures to groundwater via direct contact are 9E+01 and 5E+01. The noncancer hazard can be attributed to potential inhalation exposure to 1,2,4-trimethylbenzene and naphthalene and dermal exposure to chromium. The summed cumulative theoretical lifetime cancer risks for direct contact with groundwater for the resident is 2E-03. Potential exposure to chromium and naphthalene also resulted in theoretical lifetime cancer risks above the USEPA acceptable cancer risks. A hazard index of 3E+00 for the resident's indirect exposure to groundwater via vapor intrusion is primarily due to the presence of 1,2,4-trimethylbenzene.

The noncancer hazard associated with the child and adult resident's potential exposures to hotspot surface soils via direct contact could not be calculated due to the unavailability of noncancer toxicity values. The noncancer hazards associated with the child and adult resident's potential exposures to non-hotspot surface soils via direct contact are 7E-03 and 8E-04. Hazard indices less than one indicate that individuals coming in contact with non-hotspot surface soils would unlikely experience noncancer adverse health effects. The cumulative theoretical lifetime cancer risks for direct contact with hotspot surface soils for the resident is 4E-04 due to the presence PAHs. The summed cumulative theoretical lifetime cancer risks for direct contact with non-hotspot surface soils is 1E-06 for the future resident.

The noncancer hazards associated with the resident's potential exposures to COPCs in subsurface soils via vapor intrusion is 2E+02. The noncancer hazard for the vapor intrusion pathway is above the USEPA's acceptable target risks for noncancer health effects. The cumulative theoretical lifetime cancer risk for potential exposures to COPCs in subsurface soils via vapor intrusion is 6E-04. The cumulative theoretical lifetime cancer risks for the vapor intrusion pathway is above the USEPA the range of acceptable cancer risk values.

11.0 ECOLOGICAL RISK ASSESSMENT

This section is taken from the screening-level ecological risk assessment (SLERA) prepared by CTEH (Appendix F). The SLERA for the NCI site was conducted in accordance with guidance presented in the June 1997 Interim Final Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments (USEPA, 1997). This SLERA is based on a screening level problem formulation (involving a site visit), toxicity evaluation, exposure estimation, and risk calculation. The functions of problem formulation and ecological effects analysis in more detailed ecological risk assessments are performed, but on a screening level.

11.1 Problem Formulation

The SLERA for the NCI site addresses the possible ecotoxicity of VOCs, PAHs, metals, PCBs, and TPH detected in soil, surface water, and sediment at the site. The screening level problem formulation addresses the following:

1. The environmental setting of the NCI site and the chemicals of potential concern (COPCs) in soil, surface water, and sediment;
2. The fate and transport of COPCs in soil, surface water, and sediment;
3. The ecotoxicity of the COPCs and the likely categories of ecological receptors that may be affected;
4. Complete exposure pathways to COPCs in soil, surface water and sediment; and
5. Selection of endpoints to screen for ecological risk.

11.2 Environmental Setting

Section 6.0 of this report describes the environmental setting. Section 6.4 describes the site's ecological characteristics.

11.3 Chemicals of Potential Concern for the SLERA

Soil, surface water, and sediment samples collected at the NCI site by FTN were evaluated in the SLERA. All media were analyzed for VOCs, PAHs, metals, PCBs, and TPH.

Generally, if a detected substance is present at levels similar to background, it is eliminated as a COPC. In the case of soils, detected concentrations of chemicals were also compared to USEPA Ecological Soil Screening Levels (Eco SSLs)(2005), USEPA Region 4 Ecological Screening Levels (2001), and Preliminary Remediation Goals (PRGs) for Ecological Endpoints developed by Efroymson (1997). Eco SSLs are based on adverse effects on sensitive plants, soil invertebrates, mammals, and avian species. When multiple Eco SSLs were available, the lowest of the available Eco SSLs was used for screening COPCs in soil. Those chemicals that exceeded both the background soil concentration and the Eco SSL were considered COPCs for soil. Tables E.5 – E.9 presents the comparison of detected chemicals in site soils to background concentrations and Eco SSLs.

Surface water samples were collected from the on-site pond. Surface water sample results are presented in Tables E.15 – E.17 (Appendix E). If a chemical was present in a surface water sample, it was also evaluated by comparing the detected concentration to a hierarchy of comparative values beginning with Arkansas Regulation 2 surface water quality standards, federal ambient water quality criteria for the protection of aquatic organisms (AWQC), USEPA Region 4 ecological screening levels for surface water and PRGs (Efroymson, 1997) were used for comparison. If Reg. 2 standards were unavailable, criteria and benchmarks in the above hierarchy were consulted for comparison.

Sediment data are available from the on-site pond. Surface water samples collected by FTN are presented in Tables E.18 – E.21 (Appendix E). Detected concentrations of chemicals in sediment were compared to USEPA Region 4 Ecological Screening Levels (2001), USEPA Region 5 Ecological Screening Levels (2003) and Preliminary Remediation Goals for Ecological Endpoints (Efroymson et al., 1997) based on sediment criteria.

11.3.1 COPCs for Soil

Based on a comparison of maximum detected concentrations to Eco-SSLs determined by USEPA and ecological PRGs determined by Efroymson, benzo(a)pyrene, chromium, ethylbenzene, fluoranthene, lead, naphthalene, PCB 1260, phenanthrene, pyrene, toluene, trichloroethene, and total xylene were retained as COPCs for soils.

11.3.2 COPCs for Surface Water

Only lead was detected in surface water samples above ecological screening levels and retained as COPC for surface water.

11.3.3 COPCs for Sediment

Based on a comparison to ecological screening levels for sediment, acetone, fluoranthene, lead, phenanthrene, and pyrene were identified as COPCs for evaluation in the SLERA. However, acetone is a common laboratory contaminant and it is not considered to be a risk to ecological receptors. In addition, although acetone is highly water soluble it, was not detected in surface water, indicating that acetone is unlikely to be a COPC in sediment.

11.4 Fate and Transport of COPCs

The fate and transport of COPCs detected in soil, surface water and sediment are affected by numerous environmental and chemical-specific conditions. These include soil and water pH, sorption to clays, the amount of organic matter present in soil, the presence of iron oxide and other soil/surface water constituents, oxidation/reduction conditions, and the chemical form of the metal. For each constituent discussed below, the exact chemical species present in soil and surface water at the NCI site is not known. The following information for each chemical was obtained from the Hazardous Substances Data Bank (HSDB, 2011).

<u>Acetone</u>
Based on a vapor pressure of 231 mm Hg at 25 deg C, acetone is expected to exist solely as a vapor in the ambient atmosphere. Vapor-phase acetone is degraded in the atmosphere by reaction with photochemically-produced hydroxyl radicals with an estimated atmospheric half-life of about 79 days. Acetone also undergoes photodecomposition by

sunlight with an estimated half-life of about 80 days. Acetone is expected to have very high mobility in soils based upon an estimated Koc value of 1. Volatilization from dry soil surfaces is expected based upon the vapor pressure of this compound. Volatilization from moist soil surfaces is also expected based upon the measured Henry's Law constant of 3.97×10^{-5} atm-cu m/mol. This compound is expected to biodegrade under aerobic and anaerobic conditions based upon the results of numerous screening tests. If released into water, acetone is not expected to adsorb to suspended solids or sediment based upon its estimated Koc value. Volatilization from water surfaces is expected to be an important environmental fate process given its Henry's Law constant. The volatilization half-life of acetone applied to the surface of a shallow stream was in the range of 8-18 hours. Acetone is not expected to undergo hydrolysis in the environment due to the lack of functional groups that hydrolyze under environmental conditions.

An estimated BCF of 3 suggests the potential for bioconcentration in aquatic organisms is low.

Benzo(a)pyrene

If released to air, benzo(a)pyrene will exist solely in the particulate phase in the atmosphere. Particulate-phase benzo(a)pyrene will be removed from the atmosphere by wet or dry deposition. If released to soil, benzo(a)pyrene is expected to have very low to no mobility based upon measured soil Koc values of 930 to 6,300. Volatilization from moist soil surfaces is not expected to be an important fate process based upon a Henry's Law constant of 4.57×10^{-7} atm-cu m/mole. The persistence of benzo(a)pyrene in soil is expected to vary depending upon the nature of compounds accompanying it and the nature and previous history of the soil. If released into water, benzo(a)pyrene is expected to adsorb to suspended solids and sediment based upon the measured Koc values. Biodegradation of benzo(a)pyrene is expected to occur in aquatic systems. Volatilization from water surfaces is not expected to be an important fate process based upon this compound's Henry's Law constant.

Measured BCF values ranging from 8.7 to 1×10^{5} suggest bioconcentration in aquatic organisms can be low to very high. Hydrolysis is not expected to be an important environmental fate process since this compound lacks functional groups that hydrolyze under environmental conditions.

Chromium

If released to air, chromium compounds will exist solely in the particulate phase in the ambient atmosphere. Particulate-phase chromium compounds will be removed from the atmosphere by wet and dry deposition. If released to soil, the fate of chromium is greatly dependent upon the speciation of chromium, which is a function of redox potential and the pH of the soil. In most soils, chromium will be present predominantly in the chromium(III) state. This form has very low solubility and low reactivity resulting in low mobility in the environment. Under oxidizing conditions chromium(VI) may be present in soil as chromate and HCrO4- ion. In this form, chromium is relatively soluble and

mobile. In contrast to Cr(III), the adsorption of Cr(VI) decreases as pH increases. If released into water, most chromium compounds will ultimately be deposited in sediments. The adsorption of Cr(III) and Cr(VI) on suspended solids and sediment is complicated by redox changes that can occur. Chromium(VI) predominates under highly oxidizing conditions; whereas chromium(III) predominates under reducing conditions. Chromium(III) occurs mostly as suspended solids adsorbed onto clay materials, organics, or iron oxide (eg, Fe2O3) present in water. In natural groundwater, the pH is typically 6 to 8, and chromate (eg, CrO4-2) is the predominant species of Cr(VI), while Cr(OH)2+ ion will be the dominant species of Cr(III). Chromium compounds are expected to exist as ions in the environment and therefore volatilization from moist soil and water surfaces is not expected to be an important fate process because ions are not expected to volatilize.

A BCF for chromium(VI) in rainbow trout of one suggests the potential for bioconcentration in aquatic organisms is low. There is no indication of biomagnification of chromium along the terrestrial food chain (soil-plant-animal).

Ethylbenzene

If released to soil, ethylbenzene is expected to have moderate mobility based upon an estimated Koc of 520. Volatilization from moist soil surfaces is expected to be an important fate process based upon a Henry's Law constant of 7.88X10-3 atm-cu m/mole. Ethylbenzene may volatilize from dry soil surfaces based upon its vapor pressure. If released into water, ethylbenzene may adsorb to suspended solids and sediment in water based upon the estimated Koc.

Measured BCFs of 0.67 to 15 suggest the potential for bioconcentration in aquatic organisms is low.

Fluoranthene

If released to air, a vapor pressure of 9.22×10^{-6} mm Hg at 25 deg C indicates fluoranthene will exist in both the vapor and particulate phases in the ambient atmosphere. Vapor-phase fluoranthene will be degraded in the atmosphere by reaction with photochemically-produced hydroxyl radicals; the half-life for this reaction in air is estimated to be 8 hours. Particulate-phase fluoranthene will be physically removed from the atmosphere by wet and dry deposition. The atmospheric lifetime of vapor-phase fluoranthene due to reaction with nitrate radicals has been calculated as approximately 85 days. If released to soil, fluoranthene is expected to have no mobility based upon a Koc range of 29,500-295,000. Volatilization from moist soil surfaces is not expected to be an important fate process based upon a Henry's Law constant of 9.45×10^{-6} atm-cu m/mole. Volatilization from dry soil surfaces should not be important given the vapor pressure of this compound. If released into water, fluoranthene is expected to adsorb to suspended solids and sediment in water based on the Koc. Volatilization from water surfaces is not expected to be an important fate process based on its Henry's Law constant. The Koc of 29,500-295,000 suggests that volatilization could be greatly attenuated by adsorption to suspended solids and sediments in water.

A BCF of 2,640-6,110 in sunfish, 380 in rainbow trout and 3,981 in fathead minnows suggests bioconcentration in aquatic organisms is high to very high. Hydrolysis is not expected to occur due to the lack of hydrolyzable functional groups.

Lead

Lead in soil is relatively immobile and persistent whether added to the soil as halides, hydroxides, oxides, carbonates, or sulfates. When released to soil, lead is normally converted from soluble lead compounds to relatively insoluble sulfate or phosphate derivatives. It also forms complexes with organic matter and clay minerals which limits its mobility. The efficient fixation of lead in soils limits the transfer of lead to aquatic systems. However, leaching of lead can be relatively rapid from some soils, especially at highly contaminated sites or landfills. Lead is most available from acidic sandy soils which contain little material capable of binding lead. Concentrations of lead in soil solution reach a minimum between pH 5 and 6 because metalorganic complexes form in this pH range. Only a small fraction of lead in lead-affected soil appears to be in water soluble form (0.2-1%). The uptake of lead by plants also depends on other factors including cation exchange capacity, soil composition (e.g., organic matter content, calcium content), metal concentrations, precipitation, light, and temperature. Lead uptake by plants is favored at lower pH values and in soils with low organic carbon content.

The chemistry of lead in surface water is highly complex because lead can be found in multiple forms. Lead has a tendency to form compounds of low solubility with the major anions found in natural waters. The amount of lead dissolved in surface waters is dependent on the pH and the dissolved salt content of the water. The maximum solubility of lead in hard water is about 30 μg/L at pH>5.4 and the maximum solubility of lead in soft water is approximately 500 μg/L at pH>5.4. In the environment, the divalent form (Pb2+) is the stable ionic species of lead. Hydroxide, carbonate, sulfide, and, more rarely, sulfate may act as solubility controls in precipitating lead from water. At pH<5.4, the formation of lead sulfate limits the concentration of soluble lead in water, while at pH>5.4, the formation of lead carbonates limits the amount of soluble lead.

Naphthalene

If released to air, a vapor pressure of 0.085 mm Hg at 25 deg C indicates naphthalene will exist primarily as a vapor in the ambient atmosphere. Vapor-phase naphthalene will be degraded in the atmosphere by reaction with photochemically-produced hydroxyl radicals and nitrate radicals; the half-life for these reactions in air are estimated to be 18 and 60 hours, respectively. Naphthalene also absorbs light in the environmental UV spectrum and is subject to direct photolysis. If released to soil, naphthalene is expected to have moderate to low mobility based on Koc values of 440-1300, measured in soil and sediment. Volatilization from moist soil surfaces is expected to be an important fate process based upon a Henry's Law constant of 4.4×10^{-4} atm-cu m/mole. Biodegradation is expected to be an important fate process based upon soil degradation half-lives of 2-18 days. If released into water, naphthalene is expected to adsorb to suspended solids and

sediment based upon the Koc data. Naphthalene has been shown to biodegrade in water with half-lives ranging from about 0.8 to 43 days. Photolysis in sunlit surface waters may be an important fate process based upon an aqueous photolysis half-life of 71 hours. Hydrolysis is not expected to be an important environmental fate process since this compound lacks functional groups that hydrolyze under environmental conditions. Volatilization from water surfaces is expected to be an important fate process based upon this compound's Henry's Law constant.

BCF values of 23-168 in fish suggest bioconcentration in aquatic organisms is low to high.

PCBs

PCBs, particularly the highly chlorinated congeners contained in PCB-1260, adsorb strongly to sediment and soil where they tend to persist with half-lives on the order of months to years. There is no abiotic process known that significantly degrades PCBs in soil and sediment. Biodegradation has been shown to occur under both aerobic and anaerobic conditions and is a major degradation process for PCBs in soil and sediment. Due to their lack of water solubility, movement of PCBs in the environment is likely to occur as the soil- or sediment-bound form.

Phenanthrene

If released to air, a vapor pressure of 1.21×10^{-4} mm Hg at 25 deg C indicates phenanthrene will exist in both the vapor and particulate phases in the atmosphere. Vapor-phase phenanthrene will be degraded in the atmosphere by reaction with photochemically-produced hydroxyl radicals; the half-life for this reaction in air is estimated to be 36-1570 hrs. Particulate-phase phenanthrene will be removed from the atmosphere by wet or dry deposition. If released to soil, phenanthrene is expected to be immobile based upon Koc values of 9,180-25,300. Volatilization from moist soil surfaces is expected to be an important fate process based upon a Henry's Law constant of 4.23×10^{-5} atm-cu m/mole. However, adsorption to soil is expected to attenuate volatilization. Biodegradation of phenanthrene in soil is expected. If released into water, phenanthrene is expected to adsorb to suspended solids and sediment based upon the Koc values. Phenanthrene has biodegradation half-lives ranging from 19 days (SC water incubated at 27 deg C) to 11,000 days (RI water incubated at 2 deg C). Volatilization from water surfaces is expected to be an important fate process based upon this compound's Henry's Law constant. However, volatilization from water surfaces is expected to be attenuated by adsorption to suspended solids and sediment in the water column. The estimated volatilization half-life from a model pond is 26-70 months if adsorption is considered.

BCF values of 700 to 1,623 suggest bioconcentration in aquatic organisms is high to very high. Phenanthrene had direct aquatic photolysis half-lives of 6.3 hrs and 100 midday hrs.

Pyrene

If released to air, a vapor pressure of $4.5x10^{-6}$ mm Hg at 25 deg C indicates pyrene will exist in both the vapor and particulate phases in the atmosphere. Vapor-phase pyrene will be degraded in the atmosphere by reaction with photochemically-produced hydroxyl radicals; the half-life for this reaction in air is estimated to be 8 hours. The atmospheric lifetime of pyrene due to reaction with nitrate radicals has been estimated as about 30 days. Particulate-phase pyrene will be removed from the atmosphere by wet or dry deposition. If released to soil, pyrene is expected to have no mobility based upon Koc values of 61,936-90,000. Volatilization from moist soil surfaces is expected to be an important fate process based upon a Henry's Law constant of $1.19x10^{-5}$ atm-cu m/mole. However, adsorption to soil is expected to attenuate volatilization. Direct photolysis by natural sunlight is also expected to be an important environmental fate process. Biodegradation is expected to occur slowly, with estimated half-lives ranging from several weeks to years. If released into water, pyrene is expected to adsorb to suspended solids and sediment based upon the Koc values. Volatilization from water surfaces is expected to be an important fate process based upon this compound's Henry's Law constant. However, volatilization from water surfaces is expected to be attenuated by adsorption to suspended solids and sediment in the water column.

BCFs of 72-970 in trout suggest bioconcentration in aquatic organisms is moderate to high. Hydrolysis is not expected to be an important environmental fate process since this compound lacks functional groups that hydrolyze under environmental conditions.

Toluene

If released to air, a vapor pressure of 28.4 mm Hg at 25 deg C indicates toluene will exist solely as a vapor in the ambient atmosphere. Vapor-phase toluene will be degraded in the atmosphere by reaction with photochemically-produced hydroxyl radicals; the half-life for this reaction in air is estimated to be 3 days. Toluene may also be degraded in the atmosphere by reaction with nitrate radicals and ozone molecules, but these reactions are too slow to be environmentally important. If released to soil, toluene is expected to have high to moderate mobility based upon Koc values in the range of 37-178. Volatilization from moist soil surfaces is expected to be an important fate process based upon a Henry's Law constant of $6.64x10^{-3}$ atm-cu m/mole. Toluene may volatilize from dry soil surfaces based upon its vapor pressure. Biodegradation is expected to occur rapidly in soil surfaces, with half-lives in the range of several hours to 71 days. If released into water, toluene is not expected to adsorb to suspended solids and sediment based upon a Koc of 166 measured in lake sediment. Biodegradation is expected to occur rapidly in water, with reported half-lives of 4 and 56 days in aerobic and anaerobic water, respectively. Volatilization from water surfaces is expected to be an important fate process based upon this compound's Henry's Law constant. Estimated volatilization half-lives for a model river and model lake are 1 hour and 4 days, respectively.
Measured BCF values of 13 and 90 in fish suggest bioconcentration in aquatic organisms is low to moderate. Hydrolysis is not expected to be an important environmental fate process for toluene due to lack of hydrolyzable functional groups.

Trichloroethene
If released to soil, TCE is expected to have high mobility based upon an average Koc of 101, measured in 32 soils. Volatilization from moist soil surfaces is expected to be an important fate process based upon a Henry's Law constant of 9.85X10-3 atm-cu m/mole. TCE is expected to volatilize from dry soil surfaces based upon its vapor pressure. If released into water, TCE is not expected to adsorb to suspended solids and sediment based on an average Koc value of 101. Volatilization from water surfaces will be an important fate process based upon this compound's Henry's Law constant.

BCF values in fish ranging from 4 to 39 suggest bioconcentration in aquatic organisms is moderate to low.

Xylenes
If released to soil, xylenes are expected to have very high to moderate mobility based upon Koc values ranging from 39-365 for the individual isomers. Volatilization from moist soil surfaces is expected to be an important fate process based upon Henry's Law constant values ranging from $5.18x10^{-3}$ to $7.18x10^{-3}$ atm-cu m/mole for the individual isomers. Xylenes may volatilize from dry soil surfaces based upon the range of vapor pressure values. If released into water, xylenes are not expected to adsorb to suspended solids and sediment based upon the range of Koc values. Volatilization from water surfaces is expected to be an important fate process based upon the range of Henry's Law constant values.

BCF values ranging from 6-23.4 for the individual isomers suggest the potential for bioconcentration in aquatic organisms is low.

11.5 Potential Ecological Receptors and Exposure Pathways Assessment

No animal species of special interest is known to exist within one mile of the NCI site. Red-breasted robins and hawks were observed during the NCI site by CTEH during the November 30, 2010 site visit. It is possible that tree-covered portions of the site may serve as a typical forest habitat. On-site soils and ponds represent possible ecological habitats where receptors may be exposed to COPCs in soil, surface water, and sediment.

Habitats may be characterized by the types of food webs that are present in them. Food webs are interlocking patterns of food chains, which are the straightline transfer of energy from a food source (e.g., plants) to a series of organisms feeding on the source or on other organisms feeding on the food source. While energy and, therefore, transfer of a COPC in a food chain, is not always linear, COPCs may be transferred to a higher trophic level. The importance of a food

chain as an exposure pathway primarily depends on receptor dietary habits, the receptors in the food chain, and other factors including bioavailability, bioconcentration, bioaccumulation, and the ability of the organism to eliminate the absorbed COPC. For bioaccumulative COPCs (such as PCBs), body burdens and risks to higher trophic level organisms may increase as they consume lower trophic level organisms that have absorbed the COPC.

Terrestrial animals may be directly exposed to chemicals in soil primarily via uptake through the skin and consumption of soil. Generally, metals are not taken up through the skin in appreciable amounts and consumption in soil is likely to be the predominant direct exposure pathway. In addition, terrestrial animals may be indirectly exposed to chemicals in soil via consumption of plants or by ingestion of soil invertebrates (earthworms, etc.) that have taken up the COPCs in soil.

On-site ponds represent potential firewater ecological habitat. However, there has been no systematic evaluation of the types of aquatic organisms that may be present in the ponds. It is reasonable to assume that the ponds may serve as a habitat for a variety of aquatic macroinvertebrates, amphibians, reptiles, passerine birds, piscivorous birds, and mammals.

Benthic organisms inhabit the sediment and directly absorb COPCs in interstitial water through dermal contact as well as through ingestion of contaminated food items. For other aquatic organisms including fish and water column invertebrates, direct contact with water is the primary exposure route for these organisms. Fish absorb COPCs through dermal exposure and through respiration. Fish may also be exposed to COCs through the ingestion of contaminated food items that have taken up COPCs from the water.

The primary exposure routes for herbivorous mammals are the ingestion of affected vegetation and water. Similarly, omnivorous mammals are primarily exposed through the ingestion of contaminated vegetation and water but also are exposed through the ingestion of potentially contaminated prey items. Carnivorous mammals may feed on fish, invertebrates, amphibian, reptiles, and other small mammals that utilize the aquatic habitat. Therefore, carnivorous mammals may be exposed to COPCs primarily through ingestion of contaminated food items. They may also be exposed to COPCs through ingestion of water, direct contact with

water and sediment; however, dermal exposure to water is insignificant relative to the ingestion of contaminated food items and water.

It is possible that piscivorous birds, such as herons, could eat fish from the on-site pond ecosystem. Habitat for insectivorous shorebirds and other wading birds is absent.

Amphibians and reptiles may be exposed to contaminants through direct contact with water, direct contact and ingestion of contaminated food items.

11.6 Assessment and Measurement Endpoints

For the purpose of this screening level ecological risk assessment, assessment endpoints are non-specific adverse effects on ecological receptors, where receptors are plant and animal populations that may be part of the forest or a freshwater food web. Exposure concentrations of the COPCs in non-hotspot soils serve as measures of ecological receptor exposure in the forest food web-type habitat. COPC concentrations in surface water and sediment serve as measures of ecological receptor exposure and therefore, measurement endpoints for the freshwater/wetland receptors.

11.7 Screening Level Ecological Effects Evaluation

The preliminary ecological effects evaluation establishes contaminant exposure levels that represent thresholds for adverse effects to plants and wildlife that may be exposed to COPCs in non-hotspot soils and aquatic organisms that may be exposed to COPCs in surface water. Physical stresses unrelated to site contaminants are not addressed in this SLERA. By design, the SLERA is a conservative assessment that provides information to determine whether it is necessary to conduct a baseline ecological risk assessment. The SLERA is not intended to provide a definitive estimate of actual ecological risk.

Several alkylbenzene (ethylbenzene, toluene, xylenes), polycyclic aromatic hydrocarbons (benzo(a)pyrene, fluoranthene, naphthalene, phenanthrene, and pyrene), and trichloroethene exceeded USEPA Region 4 ecological soil screening levels (ESSLs). In addition, chromium and lead also exceeded USEPA Region 4 ESSLs in one of 40 surface soil samples. Lastly, PCB 1260

was detected in one shallow subsurface soil sample (0.023 mg/kg at 2 ft bgs) barely above its USEPA Region 4 ESSL of 0.02 mg/kg.

The source of USEPA Region 4 ESSLs for alkylbenzenes and PAHs is the report of Beyer (1990). Beyer states that the values selected by USEPA Region 4 for ESSLs "refer to background concentrations in soil or detection limits." Thus, the USEPA Region 4 ESSLs are not based on ecotoxicity but instead on "background" or "detection limits". For this reason, these criteria cannot be used to predict whether or not the alkylbenzenes or PAHs in soil are associated with ecotoxicity. The USEPA Region 4 ESSL for trichloroethene (0.001 mg/kg) is also set below the typical soil detection limit and has no basis in ecotoxicity.

In the case of chromium, one sample (41 mg/kg) out of 40 surface soil samples exceeded the USEPA (headquarters) Ecological Screening Level for Soil of 26 mg/kg. Based on this low frequency of exceedance of the screening level, chromium in soil is unlikely to pose an ecological risk.

Similarly, lead was detected in one of 40 surface soil samples above the USEPA Region 4 ESSL of 200 mg/kg. Based on this low incidence of occurrence in soil at concentrations above the screening level, it is unlikely that lead poses a risk to ecological receptors exposed to soil.

PCBs (as PCB 1260) were detected in a single shallow subsurface soil sample (0.023 mg/kg at 2 ft bgs). Because this sample is in subsurface soil and is essentially at the USEPA Region 4 ESSL (0.02 mg/kg), it is unlikely that PCBs in soil pose a risk to ecological receptors.

11.8 Uncertainty Associated with Evaluation of Ecological Risks

As described by Suter (1997), TPH analysis provides little information necessary to characterize the composition and ecological toxicity of petroleum hydrocarbon mixtures. Although there are established methods for assessing the human health risks of petroleum hydrocarbon fractions of varying composition, there is no similar method available for ecological receptors. As with the human health risk assessment performed for the site, the SLERA may underestimate the ecological risk for petroleum hydrocarbons since only certain petroleum indicator chemicals (i.e., benzene, ethylbenzene, toluene, xylenes, polycyclic aromatic hydrocarbons) are evaluated.

12.0 SUMMARY AND CONCLUSIONS

The site is approximately 100 acres and the location of the former MacMillan Ring-Free Oil Refinery, which closed in 1987. The facility was inactive from 1987 until it was refurbished by NCI as a chemical manufacturing plant in early 2007 that was designed to produce Freon 134A. The plant failed to produce the product, and the plant has never operated as intended. The site is in a rural area at the end of MacMillan Road, off Highway 335. It is bordered by a residential subdivision and the Norphlet Public School on the west, Hayes Creek on the north and east, and Massey Creek and bottomlands associated with the creek to the southwest. Future plans for the use of the property are unknown; however, the surrounding property is used for commercial and residential purposes.

The objectives of this CSA were to determine the nature and extent of hazardous substances released into the environment, the potential for additional releases of hazardous substances, and the current and possible future risks to human health and the environment from the site. A summary of findings and conclusions follows:

Site Soil

Surface soils consists of fine sandy loam to sandy loam that is underlain by discontinuous gray to white to brown, well graded, very fine to medium grained sand interbedded with silt, sandy silt, and clay. These soils comprise the Cockfield Formation, which is approximately 42 ft thick beneath the site.

Surface soil staining (black, petroleum hydrocarbon) is extensive in the area of the former tank farms and in drainage ditches on the site. Oil sheens were observed on former ponds after rainfall events. Yellow and green stains were observed on surface soil in the area of the former NCI plant. There were 20 chemicals detected in surface soil samples, but only a small number were found at levels of concern. A hot spot area of surface soil contamination was identified near Tank 514 consisting of elevated levels of benzo(a)pyrene, benzo(b)fluoranthene, and benzo(k)fluoranthene. DRO is the primary COPC in surface soil with large areas of

contamination associated with the former impoundments located on the east and west sides of the facility and beneath the former tank farm.

Strong to very strong hydrocarbon odors and staining was observed in the majority of borehole soil samples, and oil seeps and/or sheens were observed in subsurface soil samples collected in the vicinity of the former 5-ac pond ("704") and former ponds 712 and 701 located adjacent to Hayes Creek and on the west side of the property, respectively. DRO contamination in subsurface soils is also associated with the former impoundments located on the east and west sides of the facility and beneath the former tank farm. GRO contamination is associated with the former tank farm on the east side of the site and appears to be more or less confined to the property and within near surface soil. Elevated levels of napthalene are also associated with the former tank farm and pond 701 located on the west side of the site.

Several chemicals were detected in subsurface soil at concentrations below risk-based RSLs but above the more stringent GWP values. Although it is not believed that these chemicals pose a risk to human health, they were detected in groundwater at low concentrations. For this reason, benzene, 1-methylnaphthalene, 2-methylnaphthalene, 1,2,4-trimethylbenzene, and 1,3,5-trimethylbenzene, were retained as COPCs in subsurface soil. The presence of these chemicals in groundwater indicates the migration pathway is complete.

Site Groundwater

The Cockfield Formation comprises the uppermost aquifer beneath the site and discharges to local streams and rivers. Groundwater was encountered in saturated intervals ranging at depths as shallow as 8 ft bgs in lower elevations to approximately 40 ft bgs in topographically high areas. A groundwater divide beneath the site controls the flow of groundwater to north-northeast towards Hayes Creek, south-southeast towards Massey Creek, and south towards the convergence of the two creeks. Shallow groundwater from the Cockfield Formation is not used a source of water supply at the site.

Many of the groundwater samples collected during the CSA had hydrocarbon odors; some were effervescent indicating the presence of methane gas; an oil sheen was observed in groundwater beneath former pond 712 located on the east side of the property; and free product

was encountered in monitoring well MW-1, located adjacent to the former hazardous waste management unit. The data indicate the presence of 29 chemicals in groundwater beneath the site but only benzene, 1-methylnaphthalene, naphthalene, 1,2,4-trimethylbenzene (1,2,4-TMB), TPH (DRO, GRO, and ORO) and lead were detected above an applicable screening level. DRO is ubiquitous beneath the site, and GRO and ORO plumes are associated with the former hazardous waste impoundments and the former tank farm. Benzene, napthalene, 1-methylnapthalene, and 1,2,4-TMB plumes are associated with the GRO plume on the east side of the property, and there is a napthalene plume associated with DRO observed beneath the former hazardous waste impoundments. Elevated levels of dissolved lead were also detected is a sample associated with these impoundments.

Given the configuration of the potentiometric surface, offsite plume migration west of site source areas is not expected. Although the extent of migration has not been defined by the data, it is likely the maximum extent of plume migration is represented by Hayes Creek and Massey Creek. However, offsite plume migration has likely occurred northeast and southeast the railroad tracks beneath property owned by others.

Surface Water and Sediment

The site is drained by a number of ditches. Runoff from the site flows generally from northwest to southeast via two unnamed tributaries that are referred to as Massey Creek and Hayes Creek in project documents. Hayes Creek lies north and east of the site, and Massey Creek and bottomlands associated with the creek lies to the southwest. The city's wastewater treatment ponds are located on southeast side of the property.

Sewage odor and oil sheen were observed during the collection of samples from Hayes Creek upgradient from the site and low levels of DRO were observed in the data, indicating a possible upgradient source of contamination. DRO in a sample from the drainage pathway on the east side of the property was identified as a concern because of the potential to impact Hayes Creek, and lead in surface water and lead and some PAHs in sediment were identified as a potential concern from an ecological standpoint.

Human Health Risks

The calculated noncancer hazards and cumulative theoretical cancer risks associated with direct contact with soils are below the range of target hazards and risks considered acceptable by the USEPA for the C/I worker. For the construction worker, the noncancer hazard that exceeded the value of 1 is primarily due to the potential exposure to trimethylbenzene isomers in non-hotspot subsurface soils. However, it should be noted that the estimated air exposure concentration for total trimethylbenzenes for this receptor is 0.147 mg/m^3. Compared to the ACGIH TLV-TWA of 123 mg/m^3 for mixed trimethylbenzene isomers, the estimated air exposure concentration for the future on-site construction worker is 837 times lower than the air level considered acceptable for an 8-hour work shift. Therefore, it is likely that the estimated risk for the construction worker is overestimated.

Although the noncancer hazards and risks associated with the resident's direct contact with groundwater (i.e., ingestion, bathing, and other domestic purposes) were above the target risk values considered acceptable by the USEPA, groundwater is not used on-site and this pathway is unlikely to occur.

Noncancer hazards and theoretical cancer risks were also elevated for the vapor intrusion pathway for groundwater and subsurface soil. As stated previously, risks calculated from vapor intrusion into indoor air from subsurface soils should be considered very uncertain. In addition, sand (most porous soil type) was used as the soil type in the model and is likely to result in an overestimation of risks.

Ecological Risks

Alkylbenzenes, PAHs, chromium, lead, and PCBs were detected in surface soil or shallow subsurface soil. However, because the ecological screening levels for alkylbenzenes and PAHs are not based on ecotoxic endpoints, the relative ecological impact of relatively low concentrations of these chemicals in soil cannot be determined with any certainty. Exceedance of the USEPA Region 4 ESLs may be interpreted from the standpoint that these chemicals exceed "background" or "detection limits" that serves as the bases for the USEPA Region 4 ESSLs. Chromium and lead concentrations in soil exceed protective ecological soil screening levels in

less than three percent of samples analyzed. For this reason, these metals are unlikely to pose an ecological risk to receptors exposed to site soils. PCBs were barely detected in subsurface soil at a concentration similar to the ecological screening level. Based on the depth of the sample (2 ft bgs), it is unlikely that ecological receptors would be exposed to PCBs in soil.

The ANHC indicates that there are no occurrences of plant or animal species of interest recorded within one mile of the NCI site. Detected concentrations of organic and inorganic chemicals in site soils are unlikely to pose a significant ecological risk. However, the detection of relatively high concentrations of TPH in soil may impact soil ecological receptors. Because of the industrial character of the former operational portion of the site, it is unlikely to be an important terrestrial habitat.

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APPENDIX A

Photos

NCI SITE PHOTOGRAPHS

11/30/2010
Western entrance gate to the NCI site.

11/30/2010
NCI west entrance, office, boiler house, and tank farm.

11/30/2010
Home/building near northwest site entry.

11/30/2010
Boiler building and transformers.

11/30/2010
Surface soil staining near tank farm.

11/30/2010
Drainage and soil staining near tanks, view to the east.

2/25/2011
Drainage near NCI-4 and railroad.

11/30/2010
Surface water drainage north of canning building.

11/30/2010
View east of the railroad tracks of culvert discharging to east ponds.

11/30/2010
Eastern drainage with oil sheen.

11/30/2010
Drainage east of railroad discharging to east ponds.

2/28/2011
Staind soil in pond near NCI-13.

11/30/2010
Impoundment for NCI plant surface water, view to the east.

11/30/2010
NCI plant operations area, view to north.

3/2/2011
Tank 514 and NCI plant.

3/2/2011
Leaking valve on tank 514, view to the west.

11/30/2010
South slope of NCI facility looking toward tank 514

11/30/2010
Surface water collection area and Tank 514.

11/30/2010
View to the west of monitoring well and school.

11/30/2010
View NE toward former NCI operation and tank 514.

11/30/2010
Railroad offloading area west of canning builidng.

11/30/2010
Canning and drum storage buildings.

11/30/2010
View inside of the drum storage building.

2/25/2011
Fire water pump located near railcar off-load area.

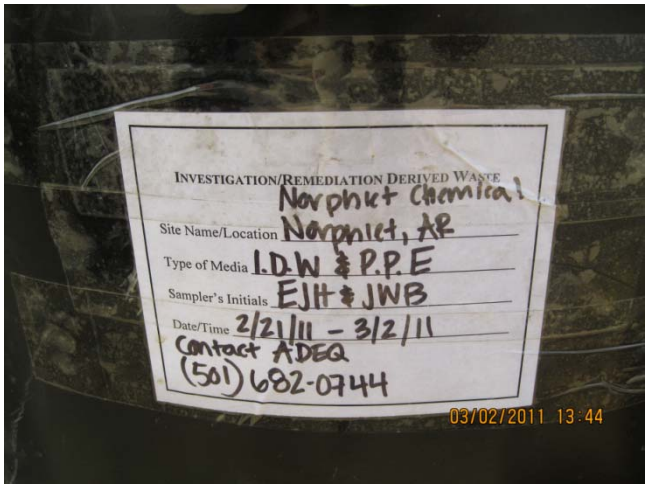
2/25/2011
NCI site laboratory.

11/30/2010
Grilling and picnic area.

2/25/2011
Dumping near NCI-11.

2/25/2011
Dummping near NCI-10/NCI-17.

3/2/2011
NCI site CSA IDW located west of the office building.



3/2/2011
NCI site CSA IDW lable.

NCI SAMPLING LOCATION PHOTOGRAPHS

2/24/2011
Soil sample location SS-1.

2/24/2011
Soil sample location SS-3.

2/24/2011
Soil sample location SS-4, west of canning building.

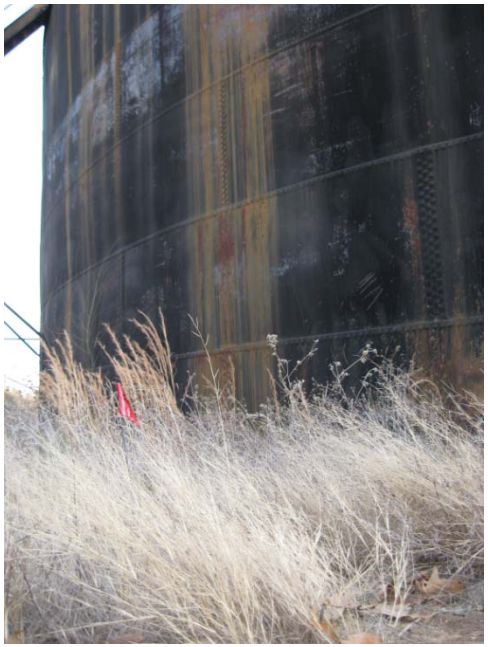
2/24/2011
Soil sample location SS-5.

2/25/2011
Soil sample location SS-9.

2/25/2011
Soil sample location SS-12.

2/25/2011
Soil sample location SS-13.

2/25/2011
Soil sample location SS-14.



2/25/2011
Soil sample location SS-19.

2/25/2011
Soil sample location SS-8.

2/21/2011
NCI-1 sample location.

2/21/2011
NCI-2 sample location.

2/21/2011
NCI-3 sample location.

2/25/2011
NCI-0 sample location.

2/22/2011
NCI-4 sample location.

2/22/2011
NCI-5 sample location.

2/23/2011
NCI-6 sample location.

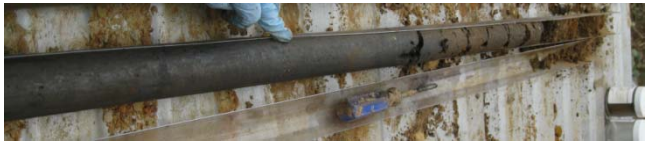
2/24/2011
NCI-8 sample location.

2/28/2011
NCI-13 sample location.

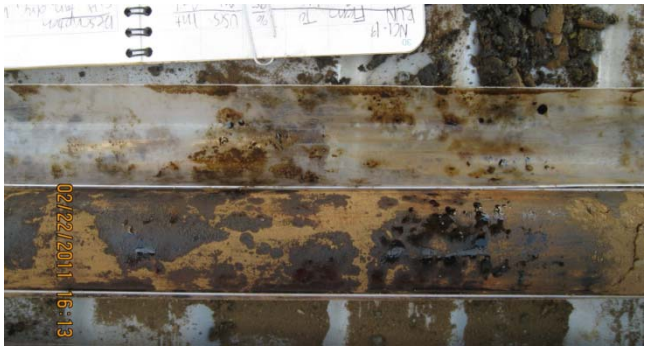
2/28/2011
NCI-15 sample location.

2/25/2011
NCI-16 sample location.

2/25/2011
NCI-17 sample location.



2/23/2011
Stained/sheened soil NCI-9.



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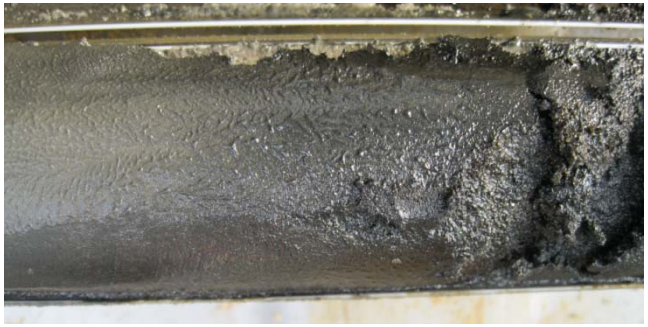
Stained/sheened soil at NCI-19.



2/23/2011
Free product 6-8ftbgs at NCI-10.

2/24/2011
Cook Mountain formation at NCI-8.

2/24/2011
Stained/sheened soil at NCI-12.

2/24/2011
stained/sheened soil at NCI-12.

2/24/2011
Stained/sheened soil at NCI-12.

3/1/2011
MW-7 sample location.

3/1/2011
MW-7 sample location.

3/2/2011
MW-1 free product.

2/25/2011
MW-1 free product.

2/24/2011
SW-2/SD-2 sample location.

2/24/2011
Sheen at SW-2.

2/25/2011
SW-1/SD-1 sample location.

NCI DRUM STORAGE BUILDING PHOTOGRAPHS

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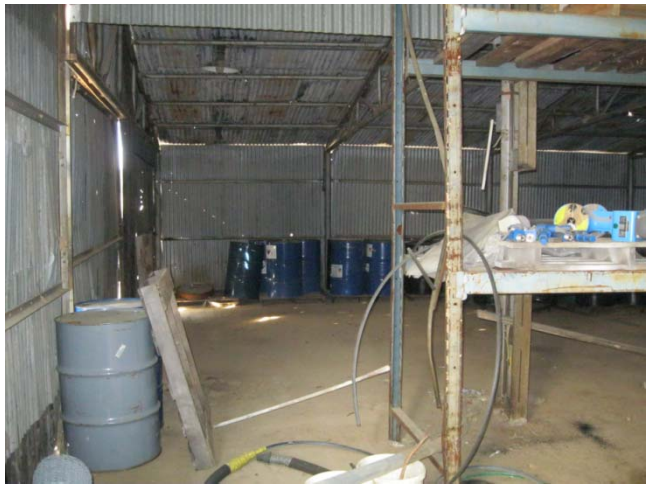

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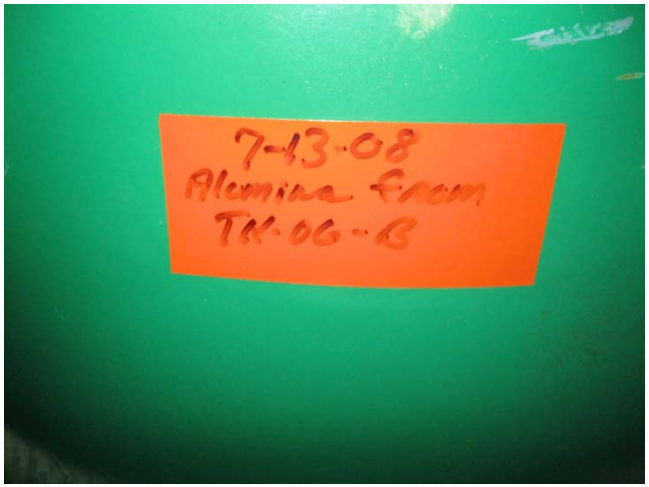

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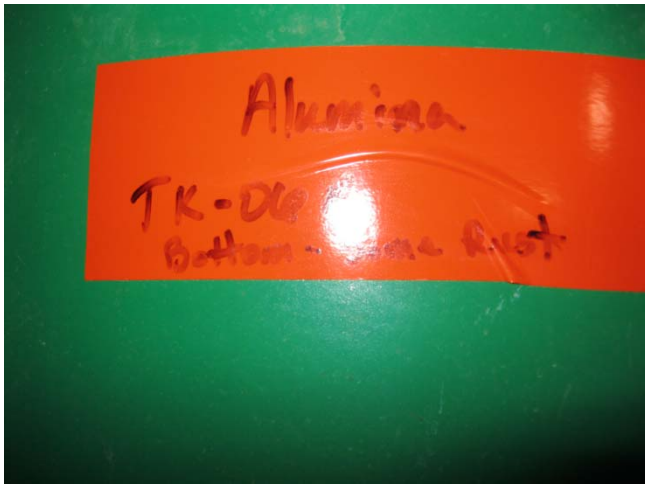

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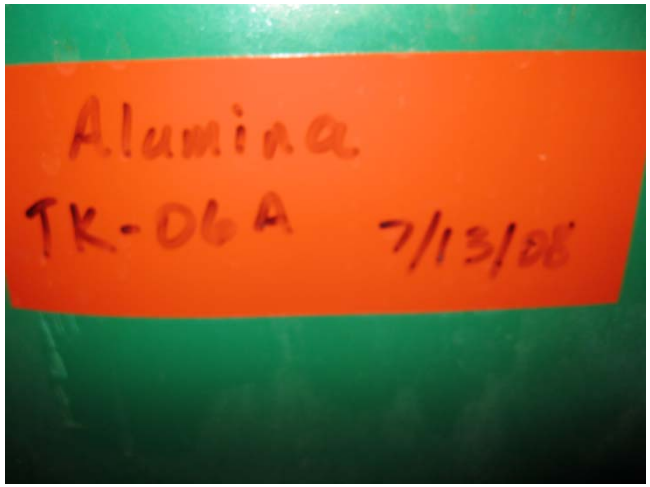

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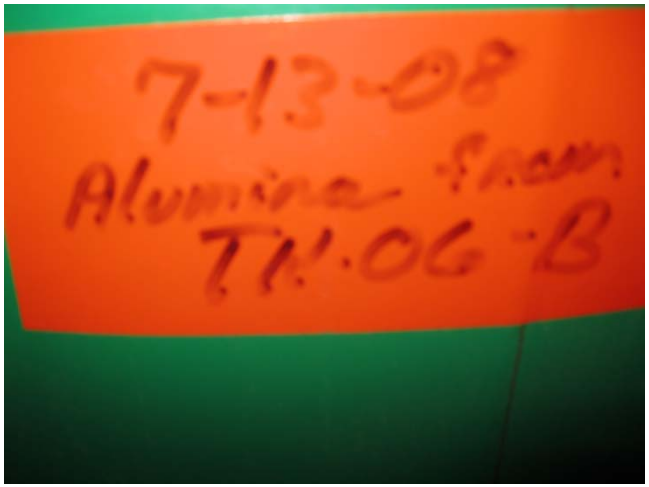

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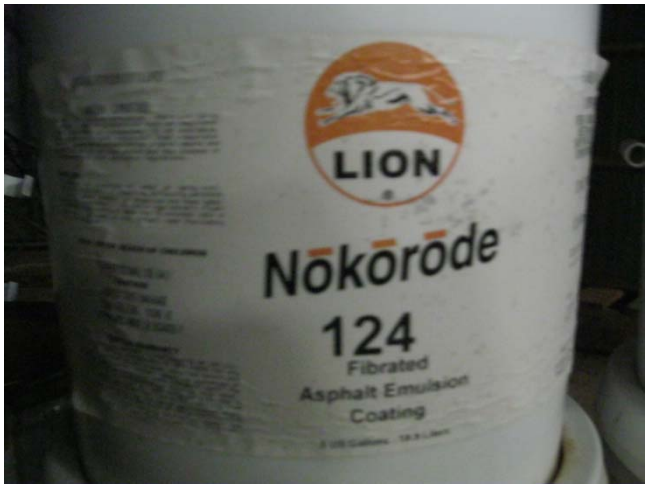

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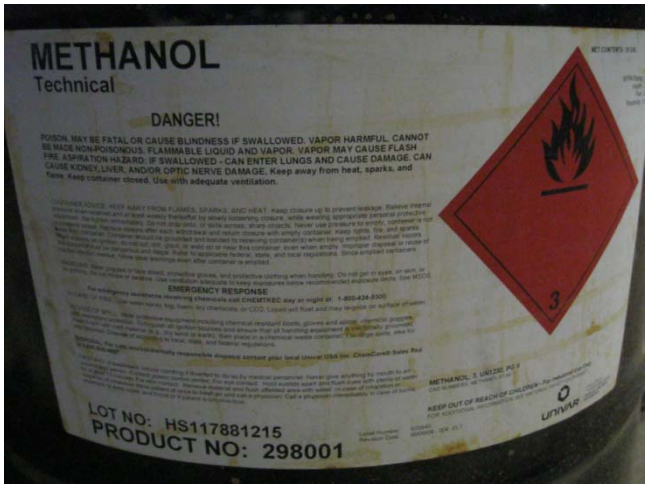

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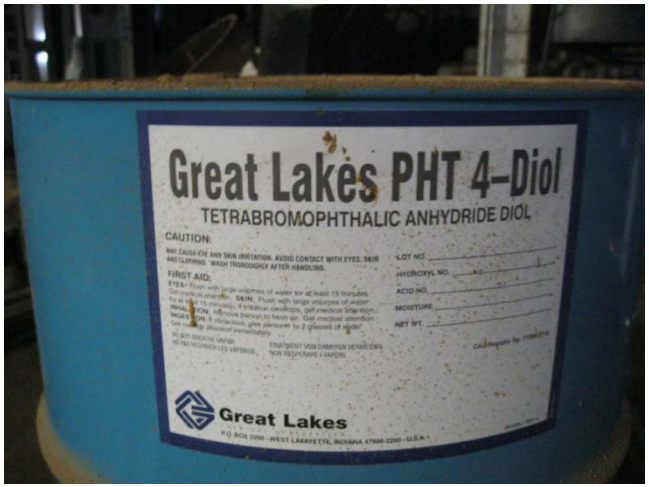

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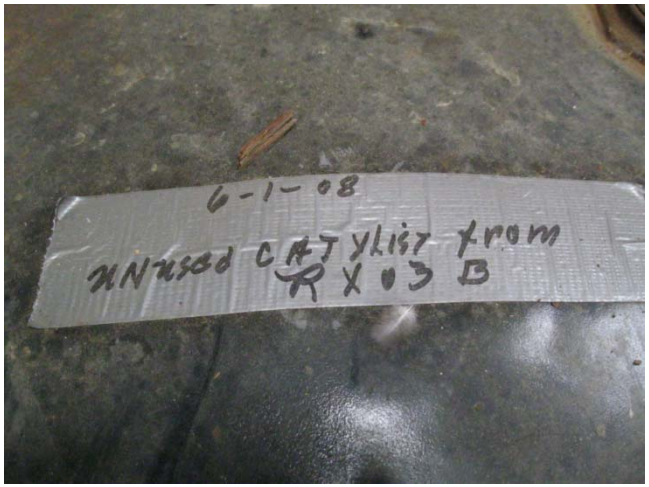

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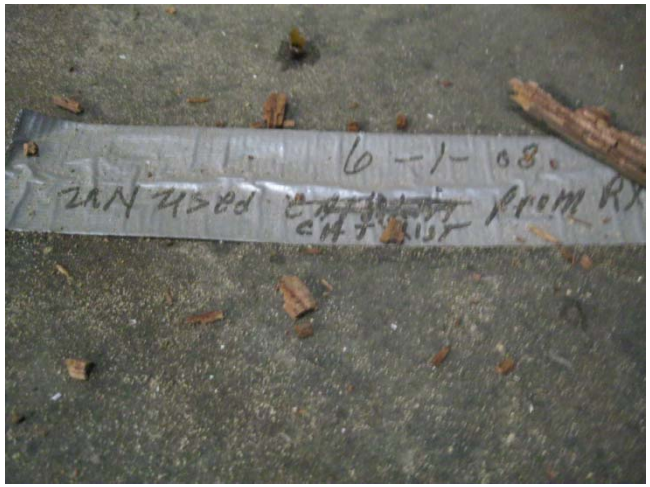

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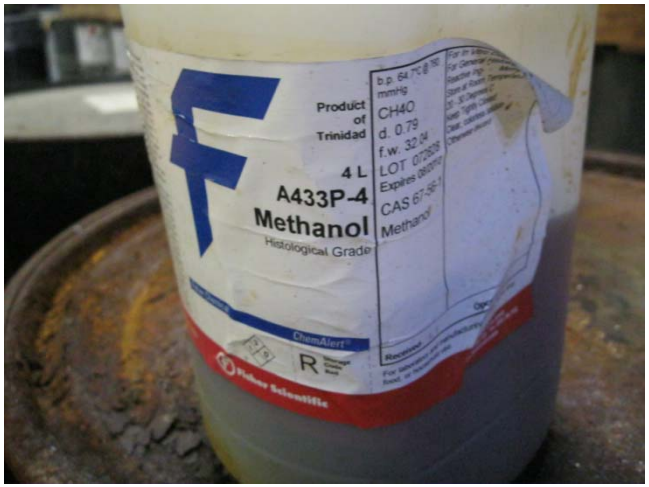

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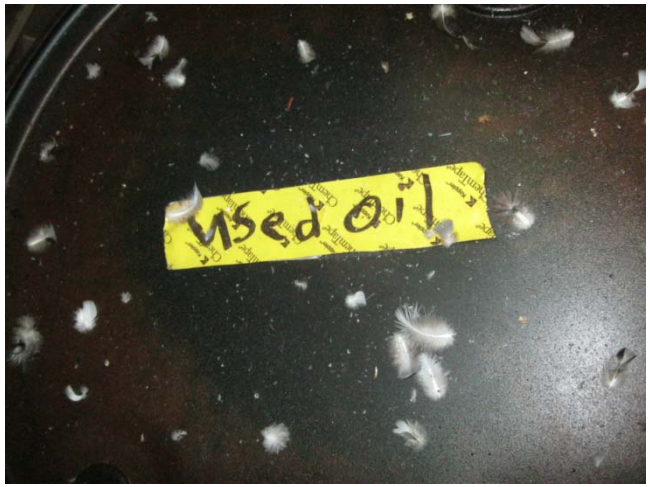

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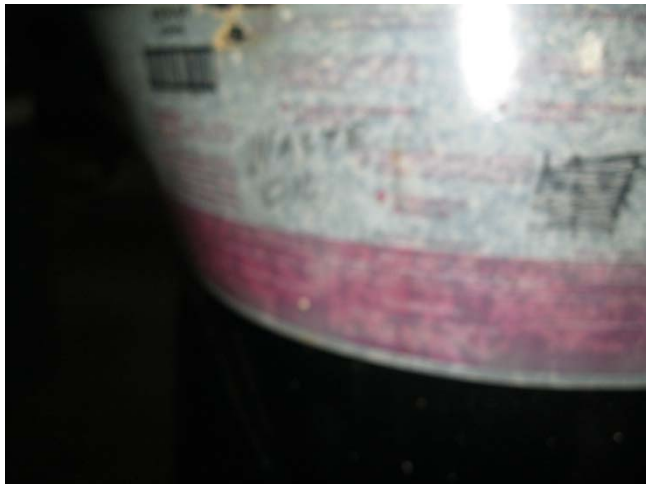

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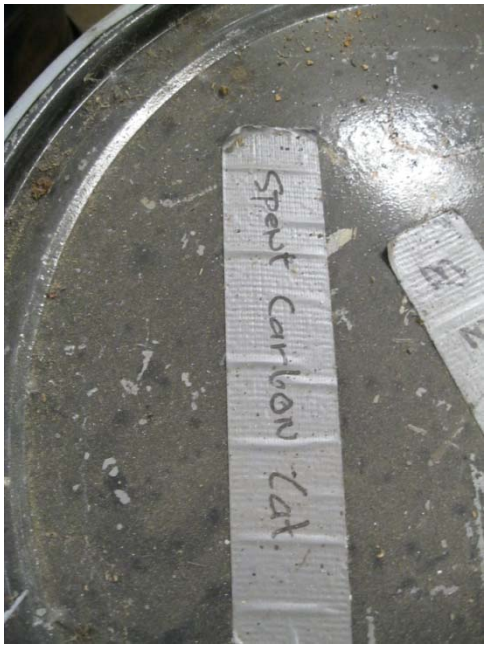

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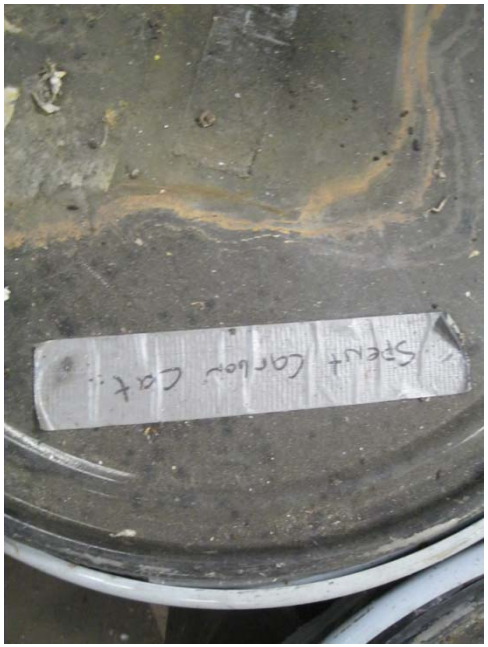

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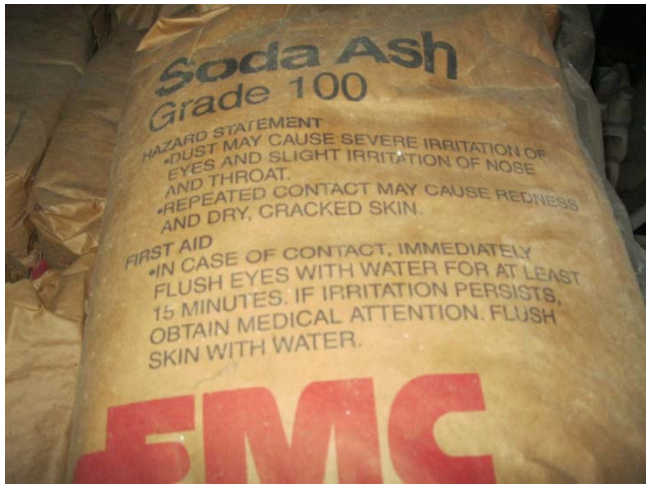

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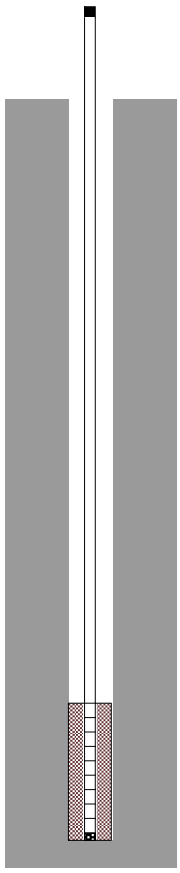
APPENDIX B

Boring Logs

ftn Associates Ltd. water resources / environmental consultants	PROJECT: **Norphlet Chemical CSA**	BORING ID: **NCl-0**	
	LOCATION: **Norphlet, AR**	WELL ID: **NCl-0**	
	DRILLING CONTRACTOR: **Tri-State Testing Services**	NORTHING: **1547263.72**	EASTING: **1111451.481**
	DRILLING EQUIPMENT: **GEOPROBE 5410**	GROUND SURFACE ELEV.: **162.57 ft**	TOC ELEVATION: **165.69 ft**
	DRILLING METHOD: **Direct Push Technology (DPT)**	TOTAL DEPTH: **27 ft**	DEPTH TO WATER: **23 ft**
LOGGED BY: **EJH**	SAMPLING METHOD: **2" dia., 4-ft. sampler with plastic sleeves**	DATE STARTED: **2/25/11**	DATE COMPLETED: **2/25/11**

Depth (feet)	USCS	Graphic Log	Description	% REC	FID READING (ppm)
-5					
0	SM		SILTY SAND, tan with some gray and brown mottling, medium SAND, medium dense, moist	95	
	ML		SILT with medium SAND, tan with 10% rust-color mottling, medium stiff, moist		0.3
5	SP		SAND with SILT, gray with orange and yellow mottling, loose to medium dense, dry to moist @ 5 ft tan, loose, dry @ 6 ft to 8 ft tanish orange, dry to moist @ 8 ft to 11 ft orange with 10% yellow, 15% orange, and 5% gray mottling, dense @ 10 ft to 10.5 ft with SILT	100 100 100	0 0 0 0
10	SM		SILTY SAND with some CLAY, orange with yellow, orange, and gray mottling, very dense @ 15 ft to 18.5 ft medium dense	100 100	0 0 0
15	SW		SAND, tan to orange, medium grained, loose to medium dense, dry to moist @ 20 ft moist @ 22 ft orange with 5% black mottling @ 23 ft saturated @ 25 ft orange	90 100	0 0
20					
25					
30					
35					
40					
45					

Temporary Well Construction Diagram



3.12 ft of stick up.

25.12 ft of 3/4 in dia., PVC.

5 ft of 3/4 in dia, 0.010 in slot, Sch 40 PVC pre-packed screen from 22 ft bgs to 27 ft bgs.

BOH @ 27'

Notes: FID - flame ionization detector
BOH - bottom of hole

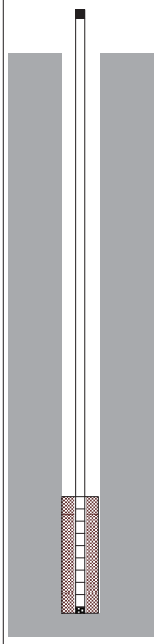
ftn Associates Ltd. water resources / environmental consultants	PROJECT: **Norphlet Chemical CSA**	BORING ID: **NCI-1**	
	LOCATION: **Norphlet, AR**	WELL ID: **NCI-1**	
	DRILLING CONTRACTOR: **Tri-State Testing Services**	NORTHING: **1547973.545**	EASTING: **1111560.771**
	DRILLING EQUIPMENT: **GEOPROBE 5410**	GROUND SURFACE ELEV.: **154.81 ft**	TOC ELEVATION: **156.33 ft**
	DRILLING METHOD: **Direct Push Technology (DPT)**	TOTAL DEPTH: **24 ft**	DEPTH TO WATER: **20.75 ft**
LOGGED BY: **EJH**	SAMPLING METHOD: **2" dia., 4-ft. sampler with plastic sleeves**	DATE STARTED: **2/21/11**	DATE COMPLETED: **2/21/11**

Photographic Log

Depth (feet)	USCS	Graphic Log	Description	% REC	FID READING (ppm)
	SP		SAND, black to tan, medium dense, moist		
	GP		LIMESTONE GRAVEL, tan, angular gravel and cobbles with fine sand, shco	90	
	SP		SAND, tan, fine grained, medium stiff, moist, black staining @ 3.5 ft dark black and shco		
	CL		LEAN CLAY, bright red, very hard and brittle, very dry		
	SP		SAND, black, medium grained, loose to dense, moist, hco and staining @ 4.5 ft red CLAY, shco and dark black staining	95	9
	CL		LEAN CLAY, dark black, extremely stiff, wet to saturated, shco		
	SP		@ 6.25 ft to 6.35 ft SAND, blonde, medium grained, loose, dry, staining throughout	95	4
	SC		SAND, tanish gray, fine grained, loose, dry, hco @ 8.75 ft to 9 ft transitions to dark black with organics		1.9
	CH		@ 9 ft gray, very fine grained, medium stiff, moist, shco and staining @ 9.75 ft with clay	100	0
	SW		CLAYET SAND, gray with 20% orange mottling, coarse SAND, stiff, dry to moist @ 12 ft to 12.5 ft up to 30% SAND, yellow @ 12.5 ft to 13 ft LEAN CLAY with SILT, bright orange	100	
	CL		FAT CLAY, gray to white with 10% black and 10% orange mottling, very stiff, dry, shco and staining		
	SW		SAND, black, fine grained, loose, moist to wet, shco @ 17.25 ft to 20 ft tan to white with orange laminae @ 19 ft moist to wet @ 20 ft medium grained, medium dense, wet	100	
			LEAN CLAY, dark brown to black, loose, wet to saturated		
			SAND, orange and white, fine grained, medium loose to loose, saturated, shco		

Depth (feet): -5, 0, 5, 10, 15, 20, 25, 30, 35, 40, 45

Temporary Well Construction Diagram



1.52 ft of stick up.

20.52 ft of 3/4 in dia., PVC.

5 ft of 3/4 in dia, 0.010 in slot, Sch 40 PVC pre-packed screen from 19 ft bgs to 24 ft bgs.

BOH @ 24'

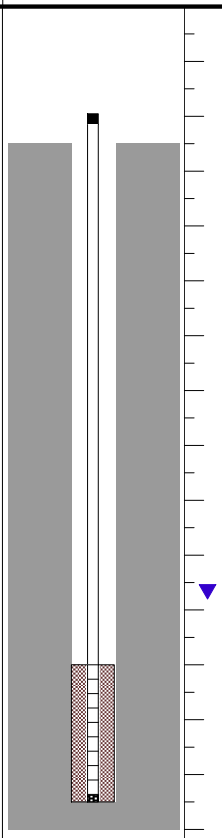
Notes: FID - flame ionization detector
BOH - bottom of hole

hco - hydrocarbon odor
shco - strong hydrocarbon odor

ftn Associates Ltd. water resources / environmental consultants	PROJECT: **Norphlet Chemical CSA**	BORING ID: **NCl-2**	
	LOCATION: **Norphlet, AR**	WELL ID: **NCl-2**	
	DRILLING CONTRACTOR: **Tri-State Testing Services**	NORTHING: **1547646.267**	EASTING: **1111969.299**
	DRILLING EQUIPMENT: **GEOPROBE 5410**	GROUND SURFACE ELEV.: **155.78 ft**	TOC ELEVATION: **156.49 ft**
	DRILLING METHOD: **Direct Push Technology (DPT)**	TOTAL DEPTH: **24 ft**	DEPTH TO WATER: **16.25 ft**
LOGGED BY: **EJH**	SAMPLING METHOD: **2" dia., 4-ft. sampler with plastic sleeves**	DATE STARTED: **2/21/11**	DATE COMPLETED: **2/21/11**

Depth (feet)	USCS	Graphic Log	Description	% REC	FID READING (ppm)
	SP		SAND, tan, fine to medium grained, loose, dry to moist	95	0
	SC		CLAYEY SAND, tan with 20% red mottling, medium SAND, dense, moist, slight hco @ 3 ft to 3.5 ft 1/2" dia. concretions		
	CH		FAT CLAY, gray with 10% tan, 10% orange, and 5% black mottling, medium stiff, moist, hco @ 6 ft stiff to hard	100	
	ML		SILT with very fine SAND, gray with 30% orange mottling, extremely hard, moist	100	0
	CL		CLAY, gray with 15% orange mottling, medium stiff, fat to lean, moist @ 13 ft light gray, very stiff, dry below 13 ft tan, moist, shco	100	4
	SW		SAND, dark black transitioning to light gray, medium grained, dense, dry to moist, shco and staining @ 16.25 dark black and dark gray, saturated @ 17 ft white with orange mottling, loose, shco	100 100 100	

Temporary Well Construction Diagram



0.71 ft of stick up.

19.71 ft of 3/4 in dia., PVC.

5 ft of 3/4 in dia, 0.010 in slot, Sch 40 PVC pre-packed screen from 19 ft bgs to 24 ft bgs.

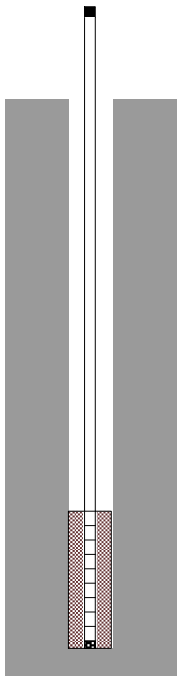
BOH @ 24'

Notes: FID - flame ionization detector **hco - hydrocarbon odor**
BOH - bottom of hole **shco - strong hydrocarbon odor**

ftn Associates Ltd. water resources / environmental consultants	PROJECT: **Norphlet Chemical CSA**	BORING ID: **NCI-3**	
	LOCATION: **Norphlet, AR**	WELL ID: **NCI-3**	
	DRILLING CONTRACTOR: **Tri-State Testing Services**	NORTHING: **1547385.887**	EASTING: **1112179.349**
	DRILLING EQUIPMENT: **GEOPROBE 5410**	GROUND SURFACE ELEV.: **154.38 ft**	TOC ELEVATION: **157.39 ft**
	DRILLING METHOD: **Direct Push Technology (DPT)**	TOTAL DEPTH: **20 ft**	DEPTH TO WATER: **16 ft**
LOGGED BY: **EJH**	SAMPLING METHOD: **2" dia., 4-ft. sampler with plastic sleeves**	DATE STARTED: **2/21/11**	DATE COMPLETED: **2/21/11**

Depth (feet)	USCS	Description	% REC	FID READING (ppm)
0	SP	SAND, tan to blackish-tan, very fine grained, medium dense, dry, hco @ 0.5 ft black, hard, laminated		
	GP	SANDSTONE GRAVEL, rounded GRAVEL and COBBLES with coarse grained orange SAND, dry	100	2
	SP	SAND, tan, medium dense, moist to dry, occasional brown laminae		
5	CL	CLAY, tan with 5% orange mottling, very stiff, fat to lean, moist @ 4 ft 10% red mottling and 20% orange mottling, medium stiff	100	6
	SW	SAND, gray with 20% orange mottling and 20% red mottling, medium grained, medium dense, moist @ 8 ft hco	100	1.5 6
10	ML	SILT, gray with 40% dark orange mottling, extremely hard, moist		4
15	SW	SAND, tan, fine grained, medium dense, moist @ 12 ft to 12.5 ft black staining @ 12.5 ft white to gray, fine grained, wet @16 ft saturated, hco and stain	100 25	
20				

Temporary Well Construction Diagram



3.01 ft of stick up.

18.01 ft of 3/4 in dia., PVC.

5 ft of 3/4 in dia, 0.010 in slot, Sch 40 PVC pre-packed screen from 15 ft bgs to 20 ft bgs.

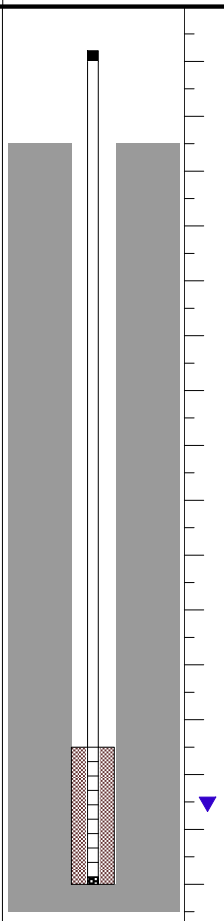
BOH @ 20'

Notes: FID - flame ionization detector **hco - hydrocarbon odor**
BOH - bottom of hole

ftn Associates Ltd. water resources / environmental consultants	PROJECT: **Norphlet Chemical CSA**	BORING ID: **NCl-4**	
	LOCATION: **Norphlet, AR**	WELL ID: **NCl-4**	
	DRILLING CONTRACTOR: **Tri-State Testing Services**	NORTHING: **1547149.254**	EASTING: **1112238.177**
	DRILLING EQUIPMENT: **GEOPROBE 5410**	GROUND SURFACE ELEV.: **152.49 ft**	TOC ELEVATION: **155.45 ft**
	DRILLING METHOD: **Direct Push Technology (DPT)**	TOTAL DEPTH: **27 ft**	DEPTH TO WATER: **23 ft**
LOGGED BY: **EJH**	SAMPLING METHOD: **2" dia., 4-ft. sampler with plastic sleeves**	DATE STARTED: **2/22/11**	DATE COMPLETED: **2/22/11**

Depth (feet)	USCS	Graphic Log	Description	% REC	FID READING (ppm)
-5					
0	SP		SAND, tan, fine grained, loose to medium dense, moist @ 0.75 ft to 2 ft dark black	75	58
5	SC		CLAYEY SAND, brown with 20% orange mottling, fine to medium SAND, dense, moist to wet, shco	100	1000
10	CL		CLAY with SAND, gray with 10% orange, 5% red, and 5% tan mottling, stiff, fat to lean @ 7.75 ft to 7.9 ft very fine SAND seam, hco @ 10.75 ft to 11.75 ft very stiff @ 12 ft shco and staining	100 100	49 16
	SW		SAND, black, very fine grained, loose, wet, staining	100	95
15	SC		CLAYEY SAND, gray with 20% orange mottling, very fine SAND, dense, moist, shco		
20	SW		SAND, light gray with yellow mottling, very fine grained, dense, dry to moist, hco @ 18 ft to 19 ft loose, wet, shco and staining @ 19 ft to 20 ft dense, moist @ 20 ft to 22 ft medium to fine grained, loose to dense, moist to wet @ 22.75 ft light gray, loose, wet to saturated @ 23 ft saturated	100 100 100 100	7
25					
30					
35					
40					
45					

Temporary Well Construction Diagram



2.96 ft of stick up.

24.96 ft of 3/4 in dia., PVC.

5 ft of 3/4 in dia, 0.010 in slot, Sch 40 PVC pre-packed screen from 22 ft bgs to 27 ft bgs.

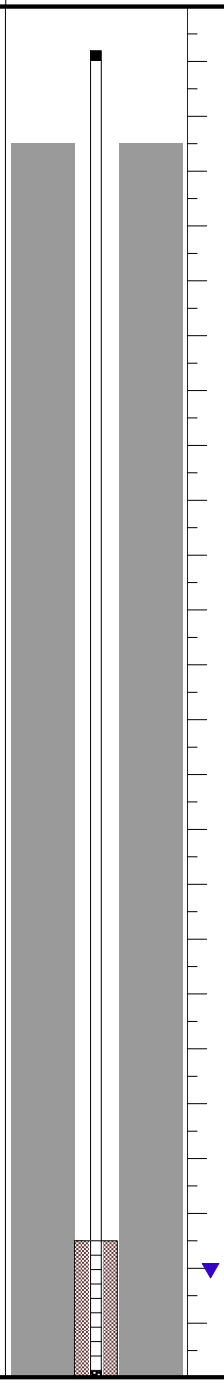
BOH @ 27'

Notes: FID - flame ionization detector **hco - hydrocarbon odor**
BOH - bottom of hole **shco - strong hydrocarbon odor**

ftn Associates Ltd. water resources / environmental consultants	PROJECT: **Norphlet Chemical CSA**	BORING ID: **NCI-5**	
	LOCATION: **Norphlet, AR**	WELL ID: **NCI-5**	
	DRILLING CONTRACTOR: **Tri-State Testing Services**	NORTHING: **1546895.183**	EASTING: **1111993.418**
	DRILLING EQUIPMENT: **GEOPROBE 5410**	GROUND SURFACE ELEV.: **174.85 ft**	TOC ELEVATION: **177.87 ft**
	DRILLING METHOD: **Direct Push Technology (DPT)**	TOTAL DEPTH: **45 ft**	DEPTH TO WATER: **41 ft**
LOGGED BY: **EJH**	SAMPLING METHOD: **2" dia., 4-ft. sampler with plastic sleeves**	DATE STARTED: **2/22/11**	DATE COMPLETED: **2/22/11**

Depth (feet)	USCS	Description	% REC	FID READING (ppm)
-5				
0	SP	SAND, tanish red, coarse grained, medium dense, dry to moist @ 0.5 ft GRAVEL		
	SC	CLAYEY SAND, brown @ 3.5 ft black angular GRAVEL with 20% yellow mottling	90	
5	SP	SAND, tanish red, coarse grained, medium dense, dry to moist below 6 ft dark black staining and hco	100	41 10
	CH	FAT CLAY with rounded GRAVEL, gray with 40% dark red mottling, very stiff, dry to moist		
	SP	SAND, tan, medium grained, dry to moist		143
	CL	CLAY with rounded GRAVEL, gray with 40% dark red mottling, medium stiff, fat to lean, dry	100	
10	ML	SILT, gray with 30% red mottling, medium stiff to stiff, dry		
	SP	SAND, tan, medium grained, moist		
	ML	SILT, gray with 20% orange mottling, stiff, dry @ 12.5 to 12.75 ft orange @ 13.5 ft very stiff, gray below 15 ft orange with blackish-purple mineralization	100 100	21 17
15			100	75
	SP/CL	SAND layer 18.75 ft to 19 ft, tan, medium to fine grained, loose, dry to moist	100	
20	ML	@ 19 ft to 19.25 ft CLAY layer, gray with 30% black and 60% orange mottling, medium stiff, fat to lean, moist SILT, gray, very stiff, dry @ 19.75 ft to 19.85 ft SAND @ 20 ft to 24 ft SANDY SILT @ 22.5 ft o 22.75 ft orange @ 22.75 ft 5% orange mottling below 25 ft orange with black and gray mottling, loose to medium loose, dry	100 100 100	82 82 390
25				
	SW	SAND, light gray to white, very fine sand, loose to medium dense, moist @ 27 ft to 27.2 ft hco and staining @ 28.28 ft to 28.5 ft hco and staining @ 28.75 ft to 29.5 ft hco and staining @ 29.5 ft prominent dark staining	100	90
30	ML	SILT with SAND, gray with 5% brown mottling, very stiff, dry to moist below 30 ft orange and yellow mottling @ 30.75 ft to 31 ft, SAND, white, very fine grained, well graded, moist below 31 ft SILT with SAND, gray with orange mottling, stiff, moist	100	
	SW	SAND, white, very fine grained, moist		
35	ML	SILT with SAND, gray with orange mottling, stiff, moist @ 33.5 ft to 33.75 ft 1" SAND seam	100	102
	SW	SAND, white, very fine grained, moist		
	ML	SILT with SAND, gray with orange mottling, stiff, moist		
	SW	SAND, white, very fine grained, moist, hco	100	
40	ML	SILT with SAND, gray with orange mottling, stiff, moist, @ 39.75 ft to 39.85 ft SAND, white, very fine grained, moist, shco below 40 ft shco and slight staining	100	>10,000
	SW	SAND, white, very fine grained, wet to saturated below 41 ft saturated, shco		
45			100	

Temporary Well Construction Diagram



3.02 ft of stick up.

43.02 ft of 3/4 in dia., PVC.

5 ft of 3/4 in dia, 0.010 in slot, Sch 40 PVC pre-packed screen from 40 ft bgs to 45 ft bgs.

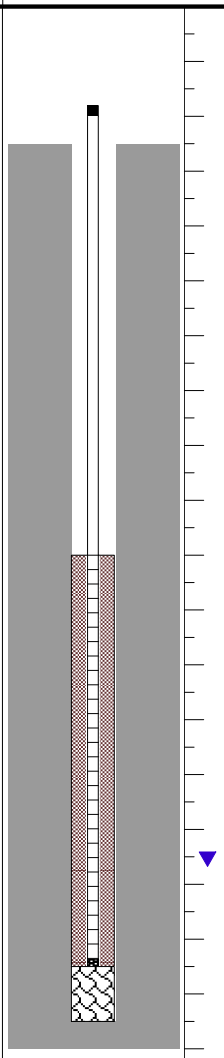
BOH @ 45'

Notes: FID - flame ionization detector **hco - hydrocarbon odor**
BOH - bottom of hole **shco - strong hydrocarbon odor**

ftn Associates Ltd. water resources / environmental consultants	PROJECT: **Norphlet Chemical CSA**	BORING ID: **NCI-6**	
	LOCATION: **Norphlet, AR**	WELL ID: **NCI-6**	
	DRILLING CONTRACTOR: **Tri-State Testing Services**	NORTHING: **1546798.012**	EASTING: **1111837.042**
	DRILLING EQUIPMENT: **GEOPROBE 5410**	GROUND SURFACE ELEV.: **159.97 ft**	TOC ELEVATION: **160.93 ft**
	DRILLING METHOD: **Direct Push Technology (DPT)**	TOTAL DEPTH: **32 ft**	DEPTH TO WATER: **26 ft**
LOGGED BY: **EJH**	SAMPLING METHOD: **2" dia., 4-ft. sampler with plastic sleeves**	DATE STARTED: **2/23/11**	DATE COMPLETED: **2/23/11**

Depth (feet)	USCS	Description	% REC	FID READING (ppm)
-5				
0	SM	SILTY SAND, tan, medium SAND with angular black GRAVEL, medium dense to dense, moist @ 0 to 0.75 ft orange with 20% yellow and 5% red mottling	80	
5	ML	SILT with medium SAND, gray with 50% red mottling, stiff, dry to moist @ 6.5 ft to 7 ft orange, coarse grained @ 7 ft SILT, gray with orange mottling, dry to moist	100	16
	SP SM/SC	SAND with angular black GRAVEL, tan, fine to medium grained, medium dense, moist, occasional black staining	100	4
10		SILTY CLAYEY SAND, orange, medium SAND, medium dense to dense, fat to lean CLAY, moist		5
	SW	SAND, orange, medium grained, loose to medium dense, dry to moist @ 10 ft tan @ 12 ft orange and tan laminae @ 15 ft SANDSTONE GRAVEL and COBBLES, black staining @ 17 ft buff below 18 ft slight black staining	100	8 13 16 18
15	ML	SILT, gray, stiff, dry to moist	100	14
20	SM	SILTY SAND, gray with alternating orange, tan, and gray laminae, fine to coarse SAND, dry to moist		11
	ML	SILT, gray with slight red, orange, and gray mottling, stiff to very stiff, dry to moist	100	18
	SW ML SP	SILTY SAND, tan with red and orange mottling, fine to medium SAND, medium dense, moist		8
25	SP	SILT, gray with slight red, orange, and gray mottling, stiff to very stiff, dry to moist	100	9
	ML	SAND, white to tan with some black grains, medium grained, loose, moist to wet @ 24.5 ft yellow with black staining	100 100	15 14
30		SAND with SILT, orange, medium SAND, loose, moist to wet @ 25.8 ft red with gray laminae	100	
	ML/Shale	SILT with coarse SAND, yellow to orange, stiff, moist to wet below 28 ft SILT with SAND and CLAY, black, stiff, dry @ 29 ft to 31 ft very fine grained	100	
35		SILT transitioning to SHALE @ 32 ft gray to black, hard, dry		
40				
45				

Temporary Well Construction Diagram



0.96 ft of stick up.

15.96 ft of 3/4 in dia., PVC.

15 ft of 3/4 in dia, 0.010 in slot, Sch 40 PVC pre-packed screen from 15 ft bgs to 30 ft bgs. Borehole filled with slough from 30 ft bgs to 32 ft bgs

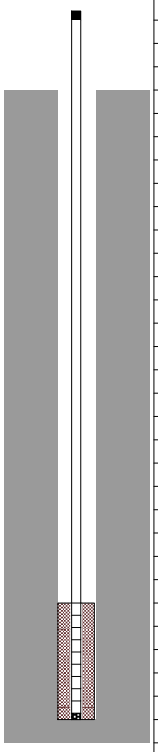
BOH @ 32'

Notes: FID - flame ionization detector
BOH - bottom of hole

ftn Associates Ltd. water resources / environmental consultants	PROJECT: **Norphlet Chemical CSA**	BORING ID: **NCI-7**	
	LOCATION: **Norphlet, AR**	WELL ID: **NCI-7**	
	DRILLING CONTRACTOR: **Tri-State Testing Services**	NORTHING: **1546590.268**	EASTING: **1111869.547**
	DRILLING EQUIPMENT: **GEOPROBE 5410**	GROUND SURFACE ELEV.: **152.94 ft**	TOC ELEVATION: **156.15 ft**
	DRILLING METHOD: **Direct Push Technology (DPT)**	TOTAL DEPTH: **27 ft**	DEPTH TO WATER: **23 ft**
LOGGED BY: **EJH**	SAMPLING METHOD: **2" dia., 4-ft. sampler with plastic sleeves**	DATE STARTED: **2/23/11**	DATE COMPLETED: **2/23/11**

Photographic Log	Depth (feet)	USCS	Graphic Log	Description	% REC	FID READING (ppm)
	-5					
	0	ML		SILT, brown, loose, moist, organic		
		SP		SAND, tan, fine to medium grained, medium dense, moist, occasional black staining	75	
		SM		SILTY SAND, tan with gray, yellow, and orange mottling, medium SAND, medium dense, moist		
	5			SILT with SAND, gray with tan, red, and yellow mottling, medium SAND, stiff, moist	95	18
		ML		@ 6 ft slight hco		18
				@ 8.5 ft gray with 12.5% red and 5% gray mottling, coarse grained, very stiff, moist	100	
	10				100	15
				SAND, tanish orange, medium grained, dense, moist	100	
				@ 12.25 ft grades to tan		19
	15				100	
				@ 17 ft transitions to white with some black grains		17
		SW		@ 19.5 ft to 22 ft interlayered with SILT, gray, medium stiff, moist to wet	100	
	20			@ 20.5 wet		15
				@ 23 ft saturated	100	
	25				100	
	30					
	35					
	40					
	45					

Temporary Well Construction Diagram



3.21 ft of stick up.

25.21 ft of 3/4 in dia., PVC.

5 ft of 3/4 in dia, 0.010 in slot, Sch 40 PVC pre-packed screen from 22 ft bgs to 27 ft bgs.

BOH @ 27'

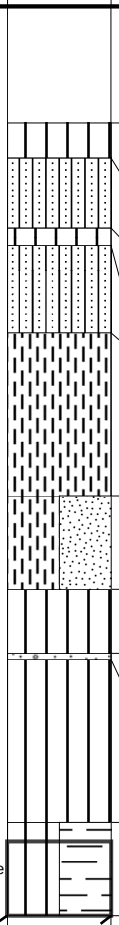
Notes: FID - flame ionization detector **hco - hydrocarbon odor**
BOH - bottom of hole

ftn Associates Ltd. water resources / environmental consultants	PROJECT: **Norphlet Chemical CSA**	BORING ID: **NCI-8**	
	LOCATION: **Norphlet, AR**	WELL ID: **NCI-8**	
	DRILLING CONTRACTOR: **Tri-State Testing Services**	NORTHING: **1546370.825**	EASTING: **1112341.81**
	DRILLING EQUIPMENT: **GEOPROBE 5410**	GROUND SURFACE ELEV.: **150.68 ft**	TOC ELEVATION: **n/a**
	DRILLING METHOD: **Direct Push Technology (DPT)**	TOTAL DEPTH: **34 ft**	DEPTH TO WATER: **n/a**
LOGGED BY: **EJH**	SAMPLING METHOD: **2" dia., 4-ft. sampler with plastic sleeves**	DATE STARTED: **2/24/11**	DATE COMPLETED: **2/24/11**

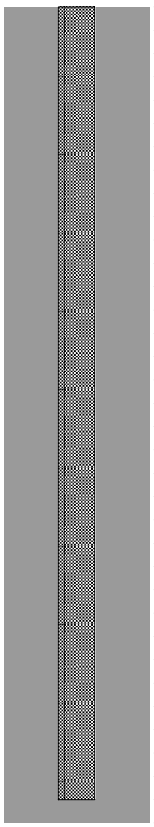
Photographic Log

Depth (feet)	USCS	Description	% REC	FID READING (ppm)
-5				
0	ML	SILT, brown, loose, dry, organics @ 0.75 ft SILT with SAND and CLAY, gray with orange and yellow mottling, coarse grained, medium stiff to stiff, moist	90	
	SM	SILTY SAND, gray with orange mottling, medium to coarse SAND, medium dense, moist, black staining		5
5	ML	@ 2.5 ft black wood	100	
	SM	SANDY SILT with CLAY, gray with 10% black and 25% red mottling, coarse SAND, medium stiff, FAT CLAY, moist @ 6 ft black wood	100	18
		SILTY SAND, gray green, fine to coarse SAND, loose to medium dense, moist, hco and black staining		390
10	OL	ORGANIC SILT, gray with orange and brown mottling, stiff, dry to moist @ 11 ft black wood	100	1 38 3.5
		@ 14.5 ft to 14.75 ft orange, very stiff	100	7
15	OL/SP	ORGANIC SILT with SAND, gray with orange and brown mottling, stiff, dry to moist	100	0
		@ 19 ft orange and gray layers, moist		0
20	ML	SILT with CLAY and coarse SAND, gray to brown, stiff, moist	100	0
	SW	SAND, gray, medium grained, medium dense, moist, black staining	100	1 50
25	ML	SILT with fine SAND seems, gray with orange to light gray laminae, stiff, dry to moist @ 23.5 ft to 23.75 ft wet	100	0
		@ 27.5 ft to 28 ft moist	100	0
30	ML/Shale	SILT transitioning to SHALE, gray to black, hard to very hard, dry	100	0
35				
40				
45				

Graphic Log



Temporary Well Construction Diagram



Borehole backfilled with bentonite pellets.

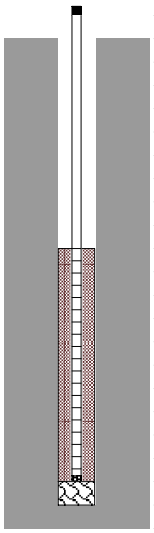
BOH @ 34'

Notes: FID - flame ionization detector **hco - hydrocarbon odor**
BOH - bottom of hole

ftn Associates Ltd. water resources / environmental consultants	PROJECT: **Norphlet Chemical CSA**	BORING ID: **NCI-9**	
	LOCATION: **Norphlet, AR**	WELL ID: **NCI-9**	
	DRILLING CONTRACTOR: **Tri-State Testing Services**	NORTHING: **1546514.514**	EASTING: **1111650.965**
	DRILLING EQUIPMENT: **GEOPROBE 5410**	GROUND SURFACE ELEV.: **148.14 ft**	TOC ELEVATION: **149.27 ft**
	DRILLING METHOD: **Direct Push Technology (DPT)**	TOTAL DEPTH: **20 ft**	DEPTH TO WATER: **16 ft**
LOGGED BY: **EJH**	SAMPLING METHOD: **2" dia., 4-ft. sampler with plastic sleeves**	DATE STARTED: **2/23/11**	DATE COMPLETED: **2/23/11**

Photographic Log	Depth (feet)	USCS	Graphic Log	Description	% REC	FID READING (ppm)
	-5					
	0	ML		SILT, brown, soose, dry, minor organic content @ 0.75 ft black, stiff @ 1 ft CLAYEY SILT, black, medium stiff, moist, hco	100	
	5	SM		SILTY SAND, black, coarse SAND, medium stiff, moist @ 4.5 GRAVEL, black, angular, shco		380
				SAND, black transitioning to gray green, medium grained, medium dense, moist to wet @ 7 ft wet to saturated @ 8 ft gray @ 9 ft orange @ 11 ft to 11.75 ft gray @ 12 ft to 16 ft occassional black grains, shco	100	22
	10	SW			100	54 35
						130
	15				100	
					100	385
	20					
	25					
	30					
	35					
	40					
	45					

Temporary Well Construction Diagram



1.13 ft of stick up.

10.13 ft of 3/4 in dia., PVC.

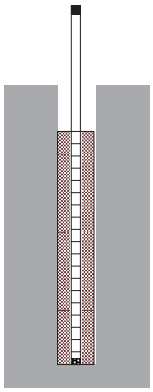
10 ft of 3/4 in dia, 0.010 in slot, Sch 40 PVC pre-packed screen from 9 ft bgs to 19 ft bgs.

Borehole filled with slough from 19 ft bgs to 20 ft bgs

BOH @ 20'

Notes: FID - flame ionization detector **hco - hydrocarbon odor**
BOH - bottom of hole **shco - strong hydrocarbon odor**

ftn Associates Ltd. water resources / environmental consultants	PROJECT: **Norphlet Chemical CSA**	BORING ID: **NCI-10**	
	LOCATION: **Norphlet, AR**	WELL ID: **NCI-10**	
	DRILLING CONTRACTOR: **Tri-State Testing Services**	NORTHING: **1545698.841**	EASTING: **1111740.881**
	DRILLING EQUIPMENT: **GEOPROBE 5410**	GROUND SURFACE ELEV.: **131.38 ft**	TOC ELEVATION: **134.61 ft**
	DRILLING METHOD: **Direct Push Technology (DPT)**	TOTAL DEPTH: **12 ft**	DEPTH TO WATER: **8 ft**
LOGGED BY: **EJH**	SAMPLING METHOD: **2" dia., 4-ft. sampler with plastic sleeves**	DATE STARTED: **2/23/11**	DATE COMPLETED: **2/23/11**

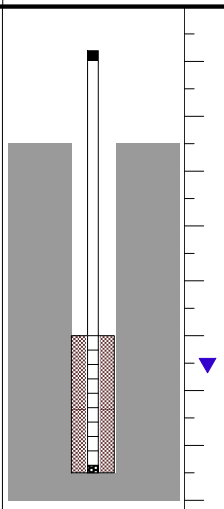
Photographic Log	Depth (feet)	USCS	Graphic Log	Description	% REC	FID READING (ppm)	Temporary Well Construction Diagram
	-5						 3.23 ft of stick up.
	0	SP		SAND, tan and red, coarse grained, loose, dry @ 0.25 ft to 0.5 ft dark black, dense, hco and staining @ 0.5 ft tan, moist @ 1.75 ft black GRAVEL, hco @ 3.5 ft wet @ 3.75 ft gray @ 4 ft sheen	70		5.23 ft of 3/4 in dia., PVC.
	5	SM		SILTY SAND, black, dense, dry to moist, organics, shco and staining with petroleum free product	100	164	10 ft of 3/4 in dia, 0.010 in slot, Sch 40 PVC pre-packed screen from 2 ft bgs to 12 ft bgs.
	10	SW		SAND, gray, medium grained, loose, saturated, sheen seeping from pore spaces @ 10 ft tan @ 11 ft light gray	100		BOH @ 12'
	15						
	20			Zoomed photo of core at 7 ft. bgs.			
	25						
	30						
	35						
	40						
	45						

Notes: FID - flame ionization detector **hco - hydrocarbon odor**
BOH - bottom of hole **shco - strong hydrocarbon odor**

ftn Associates Ltd. water resources / environmental consultants	PROJECT: **Norphlet Chemical CSA**	BORING ID: **NCl-11**	
	LOCATION: **Norphlet, AR**	WELL ID: **NCl-11**	
	DRILLING CONTRACTOR: **Tri-State Testing Services**	NORTHING: **1545666.651**	EASTING: **1111955.091**
	DRILLING EQUIPMENT: **GEOPROBE 5410**	GROUND SURFACE ELEV.: **131.90 ft**	TOC ELEVATION: **134.97 ft**
	DRILLING METHOD: **Direct Push Technology (DPT)**	TOTAL DEPTH: **12 ft**	DEPTH TO WATER: **8 ft**
LOGGED BY: **EJH**	SAMPLING METHOD: **2" dia., 4-ft. sampler with plastic sleeves**	DATE STARTED: **2/23/11**	DATE COMPLETED: **2/23/11**

Depth (feet)	USCS	Graphic Log	Description	% REC	FID READING (ppm)
-5					
0	SP		SAND, black, coarse grained, dense, moist, glass and other debris, stained		
	SM		SILTY SAND, transitions from gray, brown, to black, loose to dense, moist to wet, staining @ 4 ft wet to saturated	100	5
5	SW		SAND, gray with 10% orange, medium grained, dense, wet to saturated	100	9
			@ 8 ft saturated		12
10				100	10
15					
20					
25					
30					
35					
40					
45					

Temporary Well Construction Diagram



3.07 ft of stick up.

10.07 ft of 3/4 in dia., PVC.

5 ft of 3/4 in dia, 0.010 in slot, Sch 40 PVC pre-packed screen from 7 ft bgs to 12 ft bgs.

BOH @ 12'

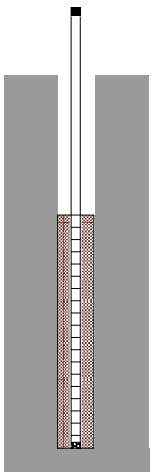
Notes: FID - flame ionization detector
BOH - bottom of hole

ftn Associates Ltd. water resources / environmental consultants	PROJECT: **Norphlet Chemical CSA**	BORING ID: **NCI-12**	
	LOCATION: **Norphlet, AR**	WELL ID: **NCI-12**	
	DRILLING CONTRACTOR: **Tri-State Testing Services**	NORTHING: **1547448.636**	EASTING: **1112748.005**
	DRILLING EQUIPMENT: **GEOPROBE 5410**	GROUND SURFACE ELEV.: **125.39 ft**	TOC ELEVATION: **128.18 ft**
	DRILLING METHOD: **Direct Push Technology (DPT)**	TOTAL DEPTH: **16 ft**	DEPTH TO WATER: **14 ft**
LOGGED BY: **EJH**	SAMPLING METHOD: **2" dia., 4-ft. sampler with plastic sleeves**	DATE STARTED: **2/24/11**	DATE COMPLETED: **2/24/11**

Photographic Log

Depth (feet)	USCS	Graphic Log	Description	% REC	FID READING (ppm)
-5					
0			SILT, brown, loose, dry @ 0.5 ft to 4 ft SANDY CLAYEY SILT, black, medium stiff, moist to wet, shco and staining @ 4 ft to 5 ft SILT, brown, loose, dry @ 5 ft to 8 ft SANDY CLAYEY SILT, black, loose to medium stiff, moist to wet to saturated, extremely shco with staining and sheen @ 8 ft saturated @ 9 ft SILT, gray, stiff, saturated @ 9.5 ft to 10.5 ft dark green and brown precipitant, black staining	90 75 80	24 570 970 230
5	ML				
10			SAND, gray transitioning to lighter gray @ 12.75 ft medium dense, saturated, extremely shco and sheen seeping from pore spaces	85	11
15	SP				
20					
25					
30					
35					
40					
45					

Temporary Well Construction Diagram



2.79 ft of stick up.

8.79 ft of 3/4 in dia., PVC.

10 ft of 3/4 in dia, 0.010 in slot, Sch 40 PVC pre-packed screen from 6 ft bgs to 16 ft bgs.

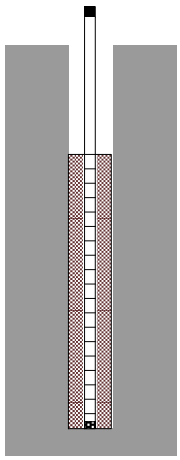
BOH @ 16'

Notes: FID - flame ionization detector shco - strong hydrocarbon odor
BOH - bottom of hole

ftn Associates Ltd. water resources / environmental consultants	PROJECT: **Norphlet Chemical CSA**	BORING ID: **NCI-13**	
	LOCATION: **Norphlet, AR**	WELL ID: **NCI-13**	
	DRILLING CONTRACTOR: **Tri-State Testing Services**	NORTHING: **1547128.828**	EASTING: **1112823.808**
	DRILLING EQUIPMENT: **GEOPROBE 5410**	GROUND SURFACE ELEV.: **125.80 ft**	TOC ELEVATION: **126.90 ft**
	DRILLING METHOD: **Direct Push Technology (DPT)**	TOTAL DEPTH: **14 ft**	DEPTH TO WATER: **11 ft**
LOGGED BY: **EJH**	SAMPLING METHOD: **2" dia., 4-ft. sampler with plastic sleeves**	DATE STARTED: **2/28/11**	DATE COMPLETED: **2/28/11**

Depth (feet)	USCS	Graphic Log	Description	% REC	FID READING (ppm)
-5					
0	ML		SILT, tan, soft, wet to saturated, sheen		
	SM		SILTY SAND, gray with some orange mottling, medium sand, medium dense, moist to wet	15	
5	SP		SAND with SILT, gray, medium SAND, medium dense, moist to wet @ 4.5 ft sheen	40	50
					140
10	SW		SAND, medium grained, medium dense @ 11 ft wet to saturated @ 12 ft light gray @ 10 ft to 12 ft light brown to gray @ 12 ft light gray with 8% orange mottling	100	3
				100	1
15					
20					
25					
30					
35					
40					
45					

Temporary Well Construction Diagram



1.1 ft of stick up.

5.1 ft of 3/4 in dia., PVC.

10 ft of 3/4 in dia, 0.010 in slot, Sch 40 PVC pre-packed screen from 4 ft bgs to 14 ft bgs.

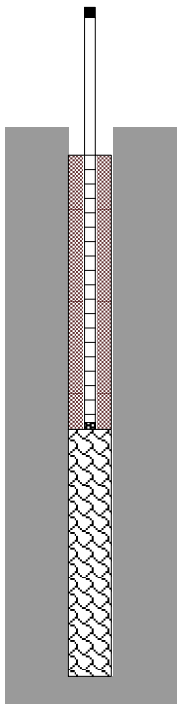
BOH @ 14'

Notes: FID - flame ionization detector
BOH - bottom of hole

ftn Associates Ltd. water resources / environmental consultants	PROJECT: **Norphlet Chemical CSA**	BORING ID: **NCl-14**	
	LOCATION: **Norphlet, AR**	WELL ID: **NCl-14**	
	DRILLING CONTRACTOR: **Tri-State Testing Services**	NORTHING: **1546882.566**	EASTING: **1112529.66**
	DRILLING EQUIPMENT: **GEOPROBE 5410**	GROUND SURFACE ELEV.: **142.81 ft**	TOC ELEVATION: **146.79 ft**
	DRILLING METHOD: **Direct Push Technology (DPT)**	TOTAL DEPTH: **20 ft**	DEPTH TO WATER: **4 ft**
LOGGED BY: **EJH**	SAMPLING METHOD: **2" dia., 4-ft. sampler with plastic sleeves**	DATE STARTED: **2/28/11**	DATE COMPLETED: **2/28/11**

Depth (feet)	USCS	Graphic Log	Description	% REC	FID READING (ppm)
-5					
0	SP		SAND, tan, fine to coarse grained, wet, shco @ 2 ft to 4 ft wet to saturated, black sheen and staining	45	
5			@ 4 ft to 7.5 ft rounded GRAVEL, saturated, black sheen and staining	45	90
	ML		SILT with some GRAVEL, gray, stiff, moist, hco and some black staining @ 8 ft SILT with CLAY, gray with orange mottling, stiff to very stiff, moist		270
10	ML/SP		SANDY SILT, gray with some orange mottling, fine SAND, very stiff, moist	100	
	ML		SILT with CLAY, gray with some orange mottling, very stiff, moist	100	
15				100	
20					
25					
30					
35					
40					
45					

Temporary Well Construction Diagram



3.98 ft of stick up.

4.98 ft of 3/4 in dia., PVC.

10 ft of 3/4 in dia, 0.010 in slot, Sch 40 PVC pre-packed screen from 1 ft bgs to 11 ft bgs.

Borehole filled with slough from 11 ft bgs to 20 ft bgs

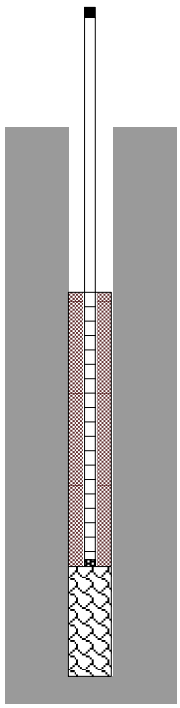
BOH @ 20'

Notes: FID - flame ionization detector **hco - hydrocarbon odor**
BOH - bottom of hole **shco - strong hydrocarbon odor**

ftn Associates Ltd. water resources / environmental consultants	PROJECT: **Norphlet Chemical CSA**	BORING ID: **NCl-15**	
	LOCATION: **Norphlet, AR**	WELL ID: **NCl-15**	
	DRILLING CONTRACTOR: **Tri-State Testing Services**	NORTHING: **1546326.877**	EASTING: **1112835.085**
	DRILLING EQUIPMENT: **GEOPROBE 5410**	GROUND SURFACE ELEV.: **132.47 ft**	TOC ELEVATION: **136.41 ft**
	DRILLING METHOD: **Direct Push Technology (DPT)**	TOTAL DEPTH: **20 ft**	DEPTH TO WATER: **10.5 ft**
LOGGED BY: **EJH**	SAMPLING METHOD: **2" dia., 4-ft. sampler with plastic sleeves**	DATE STARTED: **2/28/11**	DATE COMPLETED: **2/28/11**

Depth (feet)	USCS	Graphic Log	Description	% REC	FID READING (ppm)
-5					
0	ML		SILT, black, stiff, dry to moist, shco and staining		
	SP		SAND, gray, medium grained, medium dense, shco @ 3.75 ft wet to saturated @ 4 ft saturated	95	10
5	ML		SILT, gray with 10% orange mottling, stiff, moist	75	17
10	ML/SM		SILT with SAND, gray with 20% orange and 5% brown mottling, stiff, moist	100	12
	SM		SILTY SAND, gray, medium grained, medium dense, wet to saturated		
	ML		SILT, gray with 10% orange mottling, stiff, moist		
	SW		SAND, light gray to white, very fine grained, medium dense, wet	100	
15	ML		SILT, gray with 10% orange mottling, very stiff, moist		
	SW		SAND, light gray to white with some orange mottling, very fine grained, medium dense, saturated, hco		18
20	ML		SILT, gray with 10% orange mottling, stiff, moist	100	
25					
30					
35					
40					
45					

Temporary Well Construction Diagram



3.94 ft of stick up.

9.94 ft of 3/4 in dia., PVC.

10 ft of 3/4 in dia, 0.010 in slot, Sch 40 PVC pre-packed screen from 6 ft bgs to 16 ft bgs.

Borehole filled with slough from 16 ft bgs to 20 ft bgs

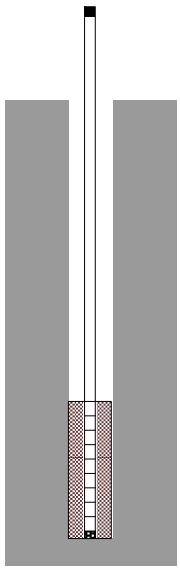
BOH @ 20'

Notes: FID - flame ionization detector **hco - hydrocarbon odor**
BOH - bottom of hole **shco - strong hydrocarbon odor**

ftn Associates Ltd. water resources / environmental consultants	PROJECT: **Norphlet Chemical CSA**	BORING ID: **NCI-16**	
	LOCATION: **Norphlet, AR**	WELL ID: **NCI-16**	
	DRILLING CONTRACTOR: **Tri-State Testing Services**	NORTHING: **1545688.123**	EASTING: **1112541.147**
	DRILLING EQUIPMENT: **GEOPROBE 5410**	GROUND SURFACE ELEV.: **130.33 ft**	TOC ELEVATION: **133.24 ft**
	DRILLING METHOD: **Direct Push Technology (DPT)**	TOTAL DEPTH: **16 ft**	DEPTH TO WATER: **10.5 ft**
LOGGED BY: **EJH**	SAMPLING METHOD: **2" dia., 4-ft. sampler with plastic sleeves**	DATE STARTED: **2/24/11**	DATE COMPLETED: **2/24/11**

Depth (feet)	USCS	Graphic Log	Description	% REC	FID READING (ppm)
-5					
0	ML		SILT, brown, loose, dry		
	ML/SP		SANDY CLAYEY SILT, brown, medium dense, moist, hco		
	SM		SILTY SAND, black, medium SAND, wet to saturated, petroleum product seeping from pore spaces		
5			SAND, gray to black, medium grained, saturated		600
	SW		@ 7 ft shco		
			@ 8 ft hco and black staining		20
10	ML		SILT, gray with orange, stiff, wet		15
	SW		SAND, gray, with black grains, medium grained, saturated, shco		
	n/a		NO RECOVERY		
15					
20					
25					
30					
35					
40					
45					

Temporary Well Construction Diagram



2.91 ft of stick up.

13.91 ft of 3/4 in dia., PVC.

5 ft of 3/4 in dia, 0.010 in slot, Sch 40 PVC pre-packed screen from 11 ft bgs to 16 ft bgs.

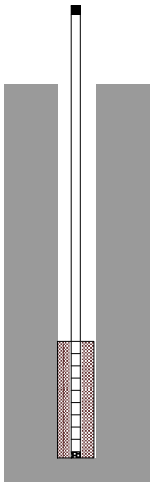
BOH @ 16'

Notes: FID - flame ionization detector **hco - hydrocarbon odor**
BOH - bottom of hole **shco - strong hydrocarbon odor**

ftn Associates Ltd. water resources / environmental consultants	PROJECT: **Norphlet Chemical CSA**	BORING ID: **NCl-17**	
	LOCATION: **Norphlet, AR**	WELL ID: **NCl-17**	
	DRILLING CONTRACTOR: **Tri-State Testing Services**	NORTHING: **1546184.67**	EASTING: **1111624.949**
	DRILLING EQUIPMENT: **GEOPROBE 5410**	GROUND SURFACE ELEV.: **140.49 ft**	TOC ELEVATION: **143.51 ft**
	DRILLING METHOD: **Direct Push Technology (DPT)**	TOTAL DEPTH: **16 ft**	DEPTH TO WATER: **11 ft**
LOGGED BY: **EJH**	SAMPLING METHOD: **2" dia., 4-ft. sampler with plastic sleeves**	DATE STARTED: **2/25/11**	DATE COMPLETED: **2/25/11**

Depth (feet)	USCS	Description	% REC	FID READING (ppm)
-5				
0	SM	SILTY SAND, black to gray, medium dense, moist, shco and staining		
	GM	SILTY GRAVEL, black to gray, medium dense, moist, shco and staining	90	290
5	SM	SILTY SAND, black to gray, medium dense, moist, shco and staining @ 5 ft with GRAVEL @ 7 ft oil seeping from pore spaces @ 8 ft wood	85	980 570 590
10	SW	SAND, tan transitioning to light gray, medium grained, medium dense, moist to wet to saturated @ 9.5 ft orange mottling @ 11 ft saturated, oil sheen @ 13.5 ft rounded GRAVEL, orange mottling with pink and white GRAVEL	85 90	350 2600 170
15				
20				
25				
30				
35				
40				
45				

Temporary Well Construction Diagram



3.02 ft of stick up.

14.02 ft of 3/4 in dia., PVC.

5 ft of 3/4 in dia, 0.010 in slot, Sch 40 PVC pre-packed screen from 11 ft bgs to 16 ft bgs.

BOH @ 16'

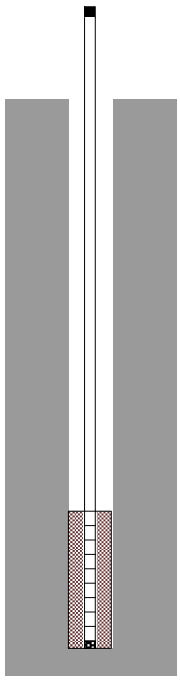
Notes: FID - flame ionization detector shco - strong hydrocarbon odor
BOH - bottom of hole

PROJECT: **Norphlet Chemical CSA**		BORING ID: **NCI-18**	
LOCATION: **Norphlet, AR**		WELL ID: **NCI-18**	
DRILLING CONTRACTOR: **Tri-State Testing Services**		NORTHING: **1546130.034**	EASTING: **1112185.01**
DRILLING EQUIPMENT: **GEOPROBE 5410**		GROUND SURFACE ELEV.: **143.41 ft**	TOC ELEVATION: **146.35 ft**
DRILLING METHOD: **Direct Push Technology (DPT)**		TOTAL DEPTH: **20 ft**	DEPTH TO WATER: **14 ft**
LOGGED BY: **EJH**	SAMPLING METHOD: **2" dia., 4-ft. sampler with plastic sleeves**	DATE STARTED: **2/25/11**	DATE COMPLETED: **2/25/11**

ftn Associates Ltd.
water resources / environmental consultants

Depth (feet)	USCS	Graphic Log	Description	% REC	FID READING (ppm)
-5					
0	SM		SILTY SAND, tan, transitioning to gray with 20% orange and 5% yellow mottling, medium dense, moist	95	0 0
5	ML		SILT with SAND, red with 10% gray and 20% orange mottling, stiff to hard, moist @ 4 ft to 7.5 ft gray with 5% red and 15% orange mottling	90	
	SM		SILTY SAND, gray with red mottling, medium SAND, dense, moist		
	n/a		NO RECOVERY	0	
10	SM		SILTY SAND, gray with red and orange mottling, medium dense, moist	100	
	ML		SILT, gray with 16% pink and red mottling, very hard, dry to moist	100	
	SM		SILTY SAND, gray with orange and pink mottling, fine to medium SAND, medium stiff, moist to wet to saturated	100	0
15	SW		SAND, gray with orange mottling and some black grains, medium grained, medium dense, saturated @ 16 ft tan	100 100	
20					
25					
30					
35					
40					
45					

Temporary Well Construction Diagram



2.94 ft of stick up.

17.94 ft of 3/4 in dia., PVC.

5 ft of 3/4 in dia, 0.010 in slot, Sch 40 PVC pre-packed screen from 15 ft bgs to 20 ft bgs.

BOH @ 20'

Notes: FID - flame ionization detector
BOH - bottom of hole

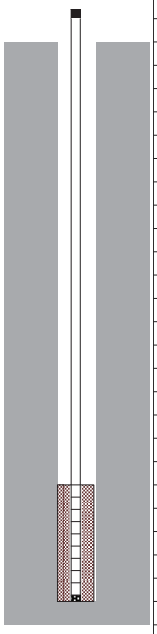
PROJECT: **Norphlet Chemical CSA**	BORING ID: **NCl-19**	
LOCATION: **Norphlet, AR**	WELL ID: **NCl-19**	
DRILLING CONTRACTOR: **Tri-State Testing Services**	NORTHING: **1546800.58**	EASTING: **1111572.046**
DRILLING EQUIPMENT: **GEOPROBE 5410**	GROUND SURFACE ELEV.: **153.81 ft**	TOC ELEVATION: **154.79 ft**
DRILLING METHOD: **Direct Push Technology (DPT)**	TOTAL DEPTH: **24 ft**	DEPTH TO WATER: **21 ft**
LOGGED BY: **EJH** / SAMPLING METHOD: **2" dia., 4-ft. sampler with plastic sleeves**	DATE STARTED: **2/22/11**	DATE COMPLETED: **2/22/11**

ftn Associates Ltd.
water resources / environmental consultants

Depth (feet)	USCS	Description	% REC	FID READING (ppm)
0	ML	SILT, tan, loose, dry, organics		
	SM	SILTY SAND, black, fine to corase SAND, medium dense, moist, shco and staining @ 3.5 ft to 4 ft with GRAVEL	95	2
5				17
	ML	SILT with SAND, red with 50% orange and 20% gray mottling, coarse grained, medium stiff, moist, shco and staining	100	18
				16
10	SM	SILTY SAND, black with red, yellow, and orange mottling, coarse SAND, medium dense, moist, sheen seeping from pore spaces	100	40
				22
15	SW	SAND, tan, medium grained, medium dense, moist, shco	100	8
		below 16.5 ft wet to saturated, shco		5
			90	12
20	SM	SILTY SAND, orange transitions to light gray, medium to coarse SAND, medium stiff, moist to wet @ 20.5 ft black mottling @ 21 ft saturated	90	8
				4
			50	4
25				
30				
35				
40				
45				

Bisected core at 11 ft bgs.

Temporary Well Construction Diagram



0.98 ft of stick up.

19.98 ft of 3/4 in dia., PVC.

5 ft of 3/4 in dia, 0.010 in slot, Sch 40 PVC pre-packed screen from 19 ft bgs to 24 ft bgs.

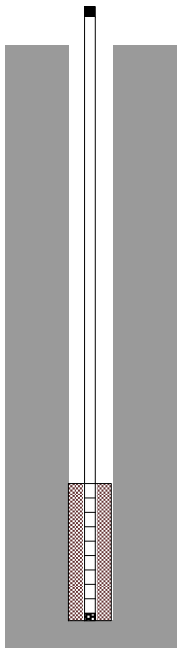
BOH @ 24'

Notes: FID - flame ionization detector shco - strong hydrocarbon odor
BOH - bottom of hole

ftn Associates Ltd. water resources / environmental consultants	PROJECT: **Norphlet Chemical CSA**	BORING ID: **NCI-20**	
	LOCATION: **Norphlet, AR**	WELL ID: **NCI-20**	
	DRILLING CONTRACTOR: **Tri-State Testing Services**	NORTHING: **1546686.915**	EASTING: **1111670.564**
	DRILLING EQUIPMENT: **GEOPROBE 5410**	GROUND SURFACE ELEV.: **151.13 ft**	TOC ELEVATION: **152.34 ft**
	DRILLING METHOD: **Direct Push Technology (DPT)**	TOTAL DEPTH: **19 ft**	DEPTH TO WATER: **20 ft**
LOGGED BY: **EJH**	SAMPLING METHOD: **2" dia., 4-ft. sampler with plastic sleeves**	DATE STARTED: **2/22/11**	DATE COMPLETED: **2/22/11**

Depth (feet)	USCS	Graphic Log	Description	% REC	FID READING (ppm)
-5					
0	ML		SILT, brown, loose, dry		
	SM		SILTY SAND, black, fine SAND, dense, moist, shco and staining	100	0.5
5	ML		SILT with SAND, red with orange mottling, coarse SAND, medium stiff, moist, shco and staining	100	1.5
					0
10	SW		SAND, tan with occasional orange and yellow mottling, coarse grained, dense, dry to moist	100	2
					0
			@ 12.5 ft to 12.75 ft orange @ 14.5 ft to 14.75 ft yellow	100	3
15			@ 15.5 ft tan to white, wet to saturated	100	6
20	SM		SILTY SAND, orange with occasional white laminae @ 18.75 ft medium to coarse SAND, medium stiff, wet to saturated	100 100	0 5
25					
30					
35					
40					
45					

Temporary Well Construction Diagram



1.21 ft of stick up.

17.21 ft of 3/4 in dia., PVC.

5 ft of 3/4 in dia, 0.010 in slot, Sch 40 PVC pre-packed screen from 16 ft bgs to 21 ft bgs.

BOH @ 21'

Notes: FID - flame ionization detector shco - strong hydrocarbon odor
BOH - bottom of hole

CHECKLIST FOR ECOLOGICAL ASSESSMENT/SAMPLING

Introduction

The checklist that follows provides guidance in making observations for an ecological assessment. It is not intended for limited or emergency response actions (e.g., removal of a few drums) or for purely industrial settings with no discharges. The checklist is a screening tool for preliminary site evaluation and may also be useful in planning more extensive site investigations. It must be completed as thoroughly as time allows. The results of the checklist will serve as a staring point for the collection of appropriate biological data to be used in developing a response action. It is recognized that certain questions in this checklist are not universally applicable and that site-specific conditions will influence interpretation. Therefore, a site synopsis is requested to facilitate final review of the checklist by a trained ecologist.

Checklist

The checklist has been divided into sections that correspond to data collection methods and ecosystem types. These sections are:

I Site Description

- IA. Summary of Observations and Site Setting

II Terrestrial Habitat Checklist

- IIA. Wooded
- IIB. Shrub/Scrub
- IIC. Open Field
- IID. Miscellaneous

III Aquatic Habitat Checklist – Non-Flowing Systems

IV Aquatic Habitat Checklist – Flowing Systems

V Wetlands Habitat Checklist

Checklist for Ecological Assessment/Sampling

I. **SITE DESCRIPTION**

1. Site Name: Norphet Chemical

   Location: 600 Macmillan Road (State Hwy 335)

   County: Union City: Norphlet State: AK

2. Latitude: 33° 18' 37" Longitude: 92° 39' 28"

3. What is the approximate area of the site: 100 acres

4. Is this the first site visit? • (Yes) • No. If no, attach trip report of previous site visit(s), if available.

   Date(s) of previous site visit(s): _____

5. Please attach to the checklist USGS topographic map(s) of the site, if available.

6. Are aerial or other site photographs available? • (Yes) • No. If yes, please attach any available photo(s) to the site map at the conclusion of this section.

7. The land use of the site is:

_____ % Urban

_____ % Rural

_____ % Residential

100 % Industrial (___ light ___ heavy)

_____ % Agricultural

(Crops: _____)

_____ % Recreational

(Describe: note if it is a park etc.)

_____

_____

_____ % Undisturbed

_____ % Other

The area surrounding the site is:
2 mile radius

_____ % Urban

90 % Rural

10 % Residential

_____ % Industrial (___light ____heavy)

_____ % Agricultural

(Crops: _____)

_____ % Recreational

(Describe: note if it is a park, etc.)

Residence immediatly adjacent

Public School next to residence

_____ % Undisturbed

_____ % Other

8. Has any movement of soil taken place at the site? • • ___ Yes • • ___ No. If yes, please identify the most likely cause of this disturbance:

• •Agricultural Use • •Heavy Equipment • •Mining

• •Natural Events • •Erosion • •Other

Please describe:

9. Do any potential sensitive environmental areas exist adjacent to or in proximity to the site, e.g., Federal and State parks, National and State monuments, wetlands, prairie potholes? *Remember, flood plains and wetlands are not always obvious; do not answer "no" without confirming information.*

No

Please provide the source(s) of the information used to identify these sensitive areas, and indicate their general location on the site map.

United States Fish and Wildlife Wetland Mapper
FEMA Intranetix Viewer - Flood Plain Map

10. What type of facility is located at the site?

• •Chemical • •Manufacturing • •Mixing • •Waste disposal

• •Other (specify)_____

11. What are the suspected contaminants of concern at the site? If know, what are the maximum concentration levels?

fluorides, TPH, and TCE

12. Check any potential routes of off-site migration of contaminants observed at the site:

• •Swales • •Depressions • •Drainage ditches

• •Runoff • •Windblown particulates • •Vehicular traffic

• •Other (specify)_____

13. If known, what is the approximate depth to the water table? 16 ft bgs

14. Is the direction of surface runoff apparent from site observations? • •yes • •no. If yes, to which of the following does the surface runoff discharge? Indicate all that apply.

• •Surface water • •Groundwater • •Sewer • •Collection impoundment

15. Is there a navigable waterbody or tributary to a navigable waterbody? • •yes • •no

16. Is there a waterbody anywhere on or in the vicinity of the site? If yes, also complete Section III: Aquatic Habitat Checklist – Non-Flowing Systems and/or Section IV: Aquatic Habitat Checklist – Flowing Systems.

• •yes (approx. distance > 1 mile) • •no

17. Is there evidence of flooding? • •yes • •no *Wetlands and flood plains are not always obvious; do not answer "no" without confirming information.* If yes, complete Section V: Wetland Habitat Checklist.

18. If a field guide was used to aid any of the identifications, please provide a reference. Also, estimate the time spent identifying fauna. [Use a blank sheet if additional space is needed for text.]

19. Are any threatened and/or endangered species (plant or animal) known to inhabit the area of the site? • •yes • •no *If yes, you are required to verify this information with the U.S. Fish and Wildlife Service.* If species' identities are known, please list them next.

The Arkansas Natural Heritage Commission was contacted by CTEH. A review of their files indicates that there are no elements (plant or animal) of special concern within or near the Norphlet Chemical site.

20. Record weather conditions at the time this checklist was prepared:

Date: 11/30/10

41° F Temperature (• C/• F)

8 mph (West) Wind (direction/speed)

Cloudy Cloud cover

_____ Normal daily high temperature

0.0 Precipitation (rain,snow)

IA. SUMMARY OF OBSERVATIONS AND SITE SETTING

The property at 600 Macmillan Road in Norphlet, Arkansas is an abandoned chemical plant. As such several large tanks as well as equipment used in production remain at the property. The site is also comprised of large open areas where harden tar-like substance was observed. The property is surrounded by a fence however breaches in the fence was observed at several different locations. Pine trees were the dominant plant species observed. Only animal species observed were red breasted robins and hawks.

Completed by Tamara House-Knight Affiliation CTEH

Additional Preparers

Site Manager

Date 11/30/10

II TERRESTRIAL HABITAT CHECKLIST

IIA. WOODED

1. Are there any wooded areas at the site? • yes • no If no, go to Section IIB: Shrub/Scrub.

2. What percentage or area of the site is wooded? (50 % 100 acres). Indicate the wooded area on the site map which is attached to a copy of this checklist. Please identify what information was used to determine the wooded area of the site.

3. What is the dominant type of vegetation in the wooded area? (Circle one: Evergreen/Deciduous/Mixed) Provide a photograph, if available.

   Dominant plant, if known: Pine trees

4. What is the predominant size of the trees at the site? Use diameter at breast height.

   • 0 - 6 in. • 6 - 12 in. • >12 in.

5. Specify type of understory present, if known. Provide a photograph, if available.

   wild grasses

IIB. SCHRUB/SCRUB

1. Is shrub/scrub vegetation present at the site? • yes • no If no, go to Section IIC: Open Field.

2. What percentage of the site is covered by scrub/shrub vegetation? (1 % 100 acres). Indicate the areas of shrub/scrub on the site map. Please identify what information was used to determine this area.

3. What is the dominant type of scrub/shrub vegetation, if known? Provide a photograph, if available.

4. What is the approximate average height of the scrub/shrub vegetation?

   • 0 - 2 ft. • 2 - 5 ft. • > 5 ft.

5. Based on site observations, how dense is the scrub/shrub vegetation?

• •Dense • •Patchy • •Sparse

IIC. OPEN FIELD

1. Are there open (bare, barren) field areas present at the site? • •yes • •no If yes, please indicate the type below:

• •Prairie/plains • •Savannah • •Old field • •Other (specify) _____

2. What percentage of the site is open field? (5 % 100 acres). Indicate the open fields on the site map.

3. What is/are the dominant plant(s)? Provide a photograph, if available.

wild grasses

4. What is the approximate average height of the dominant plant? 2 ft

5. Describe the vegetation cover: • •Dense • •Sparse • •Patchy

IID. MISCELLANEOUS

1. Are other types of terrestrial habitats present at the site, other than woods, scrub/shrub, and open field? • •yes • •no If yes, identify and describe them below.

2. Describe the terrestrial miscellaneous habitat(s) and identify these area(s) on the site map.

3. What observations, if any, were made at the site regarding the presence and/or absence of insects, fish, birds, mammals, etc.?

During the site visit red breasted robins and hawks were observed. No insects or aquatic life was observed.

4. Review the questions in Section I to determine if any additional habitat checklists should be completed for this site.

III AQUATIC HABITAT CHECKLIST

Note: Aquatic systems are often associated with wetland habitats. Please refer to Section V, Wetland Habitat Checklist.

1. What type of open-water, non-flowing system is present at the site?

   - •Natural (pond, lake)
   - •Artificially created (lagoon, reservoir, canal, impoundment) pond

2. If known, what is the name(s) of the waterbody(ies) on or adjacent to the site?

   Fire water pond

3. If a waterbody is present, what are its known uses (e.g., recreation, navigation, etc.)?

   Industrial purposes

4. What is the approximate size of the waterbody(ies)? 0.5 acre(s).

5. Is any aquatic vegetation present? • •yes • •no If yes, please identify the type of vegetation present if known.

   - •Emergent
   - •Submergent
   - •Floating

6. If known, what is the depth of the water? _____

7. What is the general composition of the substrate? Check all that apply.

•Bedrock	•Sand (coarse)	•Muck (find/black)
•Boulder (>10 in.)	•Silt (fine)	•Debris
•Cobble (2.5 - 10 in.)	•Marl (shells)	•Detritus
•Gravel (0.1 - 2.5 in.)	•Clay (slick)	•Concrete

   - •Other (specify) _____

8. What is the source of water in the waterbody?

•River/Stream/Creek	•Groundwater	•Industrial discharge
•Surface runoff	•Other (specify) _____	

9. Is there a discharge from the site to the waterbody? • •yes • •no If yes, please describe this discharge and its path.

10. Is there a discharge from the waterbody? • •yes • •no If yes, and the information is available, identify from the list below the environment into which the waterbody discharges.

• •River/Stream/Creek	• •onsite	• •offsite	Distance _____
• •Groundwater	• •onsite	• •offsite	
• •Wetland	• •onsite	• •offsite	Distance _____
• •Impoundment	• •onsite	• •offsite	

11. Identify any field measurements and observations of water quality that were made. For those parameters for which data were collected provide the measurement and the units of measure below:

_____ Area

_____ Depth (average)

_____ Temperature (depth of the water at which the reading was taken) _____

_____ pH

_____ Dissolved oxygen

_____ Salinity

_____ Turbidity (clear, slightly turbid, turbid, opaque) (Seecchi disk depth _____)

_____ Other (specify)

12. Describe observed color and area of coloration.

The water appeared brown but not murky.

13. Mark the open-water, non-flowing system on the site map attached to this checklist.

14. What observations, if any, were made at the waterbody regarding the presence and/or absence of benthic macroinvertebrates, fish, birds, mammals, etc.?

No wildlife was observed at the pond.

IV AQUATIC HABITAT CHECKLIST – FLOWING SYSTEMS

Note: Aquatic systems are often associated with wetland habitats. Please refer to Section V, Wetland Habitat Checklist.

1. What type(s) of flowing water system(s) is (are) present at the site?

   • •River • •Stream • •Creek
   • •Dry wash • •Arroyo • •Brook
   • •Artificially created (ditch, etc.) • •Intermittent Stream • •Channeling
   • •Other (specify) _____

2. If known, what is the name of the waterbody? _____

3. For natural systems, are there any indicators of physical alteration (e.g. channeling, debris, etc.)? • •yes • •no If yes, please describe indicators that were observed.

4. What is the general composition of the substrate? Check all that apply.

   • •Bedrock • •Sand (coarse) • •Muck (find/black)
   • •Boulder (>10 in.) • •Silt (fine) • •Debris
   • •Cobble (2.5 - 10 in.) • •Marl (shells) • •Detritus
   • •Gravel (0.1 - 2.5 in.) • •Clay (slick) • •Concrete
   • •Other (specify) _____

5. What is the condition of the bank (e.g., height, slope, extent of vegetative cover)?

6. Is the system influenced by tides? • •yes • •no What information was used to make this determination?

7. Is the flow intermittent? • •yes • •no If yes, please note the information that was used in making this determination.

8. Is there a discharge from the site to the waterbody? • •yes • •no If yes, please describe the discharge and its path.

9. Is there a discharge from the waterbody? • •yes • •no If yes, and the information is available, please identify what the waterbody discharges to and whether the discharge is on site or off site.

10. Identify any field measurements and observations of water quality that were made. For those parameters for which data were collected, provide the measurement and the units of measure in the appropriate space below:

_____ Area

_____ Depth (average)

_____ Temperature (depth of the water at which the reading was taken) _____

_____ pH

_____ Dissolved oxygen

_____ Salinity

_____ Turbidity (clear, slightly turbid, turbid, opaque) (Seecchi disk depth _____)

_____ Other (specify)

11. Describe observed color and area of coloration.

12. Is any aquatic vegetation present? • •yes • •no If yes, please identify the type of vegetation present, if know.

• •Emergent • •Submergent • •Floating

13. Mark the flowing water system on the attached site map.

14. What observations were made at the waterbody regarding the presence and/or absence of benthic macroinvertebrates, fish, birds, mammals, etc.?

V. WETLAND HABITAT CHECKLIST

1. Based on observation and/or available information, are designated or known wetland definitely present at the site? • •yes • •no

   Please note the sources of observations and information used (e.g., USGS Topographic Maps, National Wetland Inventory, Federal or State Agency, etc.) To make this determination.

2. Based on the location of the site (e.g., along a waterbody, in a floodplain) and site conditions (e.g. standing water, dark, wet soils; mud cracks; debris line; water marks), are wetland habitats suspected? • •yes • •no If yes, proceed with the remainder of the wetland habitat identification checklist.

3. What type(s) of vegetation are present in the wetland?

   • •Submergent • •Emergent • •Scrub/Shrub • •Wooded
   • •Other (specify) _____

4. Provide a general description of the vegetation present in and around the wetland (height, color, etc.). Provide a photograph of the known or suspected wetlands, if available.

5. Is standing water present? • •yes • •no If yes, is water: • •Fresh • •Brackish
   What is the approximate area of the water (sq. ft.) _____
   Please complete questions 4, 11, 12 in Checklist III - Aquatic Habitat – Non-Flowing Systems.

6. Is there evidence of flooding at the site? What observations were noted?

   • •Buttressing • •Water marks • •Mud cracks

   • •Debris line • •Other (describe below)

7. If known, what is the source of the water in the wetland?

- •Stream/River/Creek/Lake/Pond
- •Groundwater
- •Flooding
- •Surface Runoff

8. Is there a discharge from the site to a known or suspected wetland? • •yes • •no If yes, please describe.

9. Is there a discharge from the wetland? • •yes • •no If yes, to what waterbody is discharge released?

- •Surface Stream/River
- •Groundwater
- •Lake/Pond
- •Marine

10. If a soil sample was collected, describe the appearance of the soil in the wetland area. Circle or write in the best response.

Color (blue/grey, brown, black, mottled) _____

Water content (dry, wet, saturated/unsaturated) _____

11. Mark the observed area(s) on the attached site map.

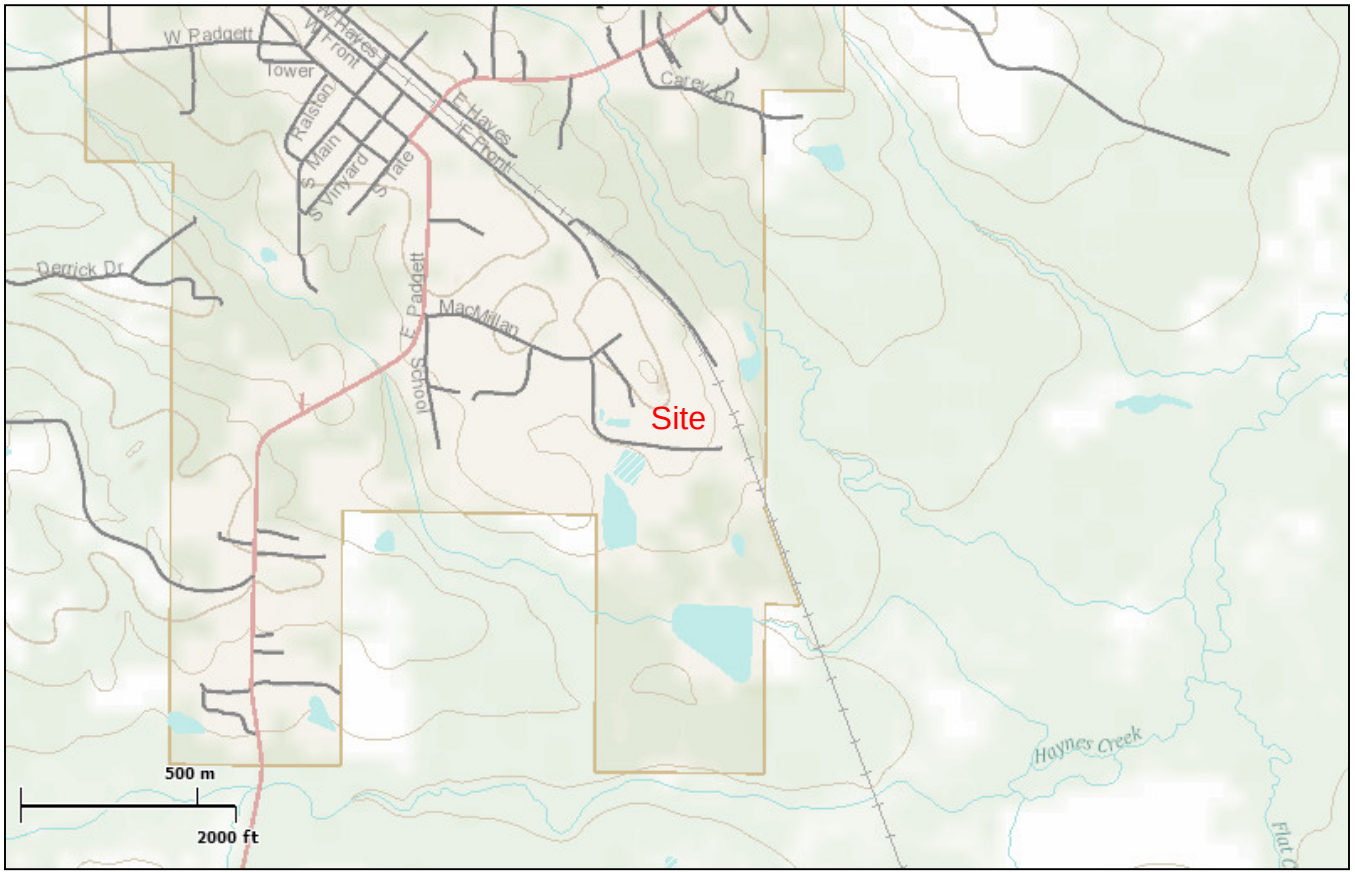
Aerial - Norphlet Chemical (December 1, 2010)

U.S. Fish and Wildlife Service

National Wetlands Inventory

Norphlet Chemical

Dec 1, 2010



Wetlands

- Freshwater Emergent
- Freshwater Forested/Shrub
- Estuarine and Marine Deepwater
- Estuarine and Marine
- Freshwater Pond
- Lake
- Riverine
- Other

Riparian

- Herbaceous
- Forested/Shrub

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

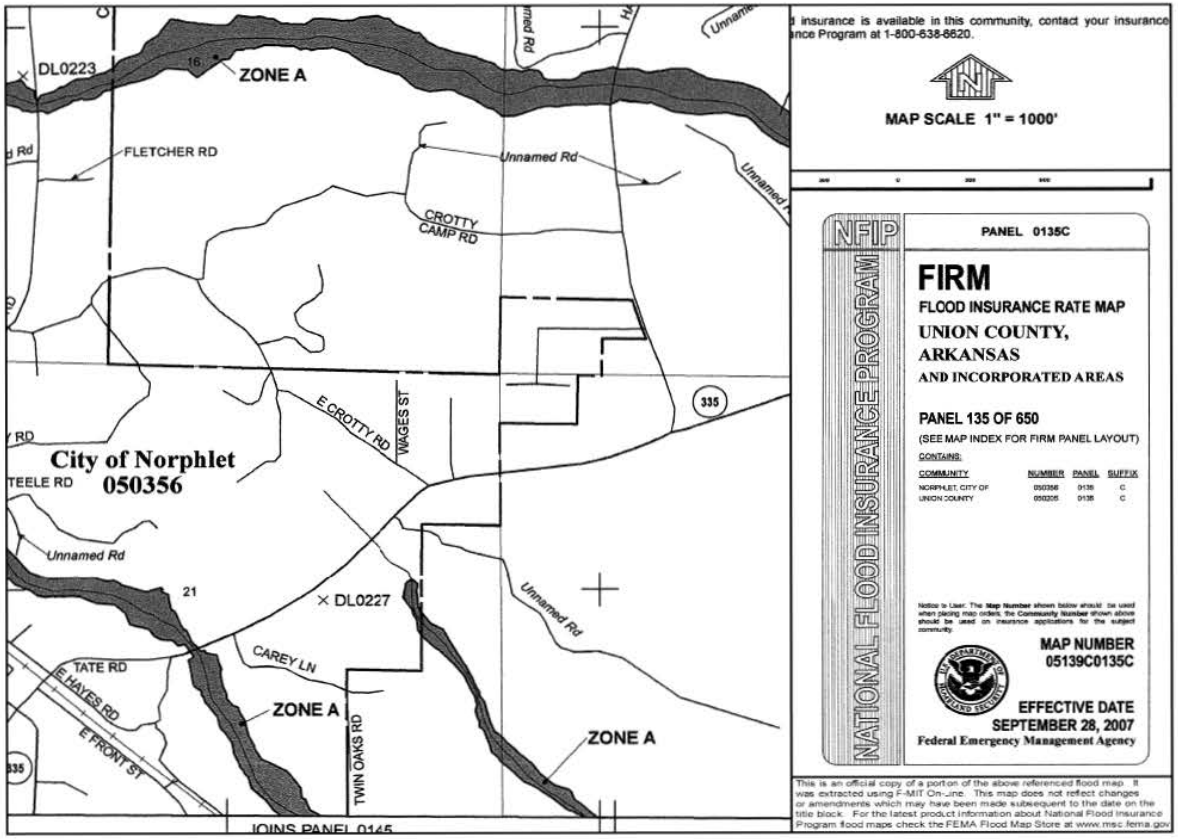
User Remarks:

Tamara House-Knight **CTEH L.L.C.**

FEMA

Save your FIRMette

Back



insurance is available in this community, contact your insurance
nce Program at 1-800-638-6620.

MAP SCALE 1" = 1000'

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0135C

FIRM

FLOOD INSURANCE RATE MAP

UNION COUNTY, ARKANSAS

AND INCORPORATED AREAS

PANEL 135 OF 650

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
NORPHLET, CITY OF	050356	0135	C
UNION COUNTY	050205	0135	C

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
05139C0135C

EFFECTIVE DATE
SEPTEMBER 28, 2007

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

Photograph 1 Norphlet Chemical Site – Shrubbery on north end of site. December 2010.

Photograph 2 Norphlet Chemical Site – Standing water near large tanks. December 2010.

Photograph 3 Norphlet Chemical Site – Forested area and grasses on north end of site. December 2010.

Photograph 4 Norphlet Chemical Site – Open area on north end of site. December 2010.

Photograph 5 Norphlet Chemical Site – On-site fresh water pond. December 2010.

APPENDIX D

FIELD DOCUMENTATION

Groundwater Sampling Record

Facility: NCI	Site ID: NCI-1	Sampler: JWB
Project Number: 3013-132	Date: 2/22/11	Sampler Organization: FTN

Site Description

Weather: SUNNY	Air Temp (°F): 45°	Wind: S-2

Site type:	Well casing material:	Well diameter	inches	1	Well locked?
☒ Monitoring Well ☐ Extraction Well	☒ PVC				☐ Yes
☐ Production Well ☐ Borehole	☐ Steel	Total depth from TOC	feet		☒ No
☐ Irrigation Well ☐ Spring	☐ Iron	TOC below/above ground	feet		
☐ Other:	☐ Other:				

Damages/repairs needed: NONE

Water Level Data

Measuring point description: ☐ Mark/notch on TOC ☒ North rim of TOC ☐ Other:

Water level meter: ☐ Heron Dipper-T ☐ Slope Water Level Indicator ☒ Other: Solinst Interface

		Pre-purge initial	Pre-purge confirmation	During purging	Purge end	After sampling	Remarks
Time	24-hour		0805			0853	
Depth to Water	feet		19.93	~~19.~~		19.91	
Product	LNAPL/DNAPL		2/22/11				
Prod. thickness	feet						

Field Data

Field data meters:	Pump description:	Bailer description:
☐ Hydrolab MiniSonde ☐ LaMotte 2020 Turbidimeter	☐ Peristaltic	☐ Disposable polyethylene
☐ Hydrolab DataSonde ☐ Hach 2100P Turbidimeter	☐ Bladder (dedicated / portable)	☐ Disposable Teflon
☐ Other: ☐ Other:	☐ Submersible	☐ Disposable PVC

Purge depth	feet		Well goes dry during purging: ☐ Yes ☐ No
Casing vol.	gallons		= [total depth (feet) – depth to water (feet)] • [well ID (inches)^2] • 0.0408

Time	24-hour	0830										Remarks
Purge vol.	gallons	—										VOCs collected
Purge rate	mL/min	230										at 100 ml/min
pH	su	6.19										
Temp.	°C	16.32										
Spec. cond.	µS/cm	347										
D.O.	mg/L	—										
ORP	mV	—										
Turbidity	ntu	735										
Color/tint												
Odor												

Sample Data

Sample ID	Date	Time	# Containers	# Filtered	Remarks
NCI-1	2/22/11	0800	10	1	

Sampler's Name (print): Jacob Brickman	Sampler Signature: [signature]

Groundwater Sampling Record

Facility: NCI	Site ID: NCI-2	Sampler: JWB
Project Number: 2013-132	Date: 2/22/11	Sampler Organization: ETN

Site Description

Weather: sunny	Air Temp (°F): 50	Wind: 5-10

Site type:	Well casing material:	Well diameter	inches	1	Well locked?
☒ Monitoring Well ☐ Extraction Well	☒ PVC	Total depth from TOC	feet	25	☐ Yes
☐ Production Well ☐ Borehole	☐ Steel				☒ No
☐ Irrigation Well ☐ Spring	☐ Iron	TOC below/above ground	feet		
☐ Other:	☐ Other:				

Damages/repairs needed: NONE

Water Level Data

Measuring point description: ☐ Mark/notch on TOC ☐ North rim of TOC ☐ Other:

Water level meter: ☐ Heron Dipper-T ☐ Slope Water Level Indicator ☐ Other: solonist interface probe

		Pre-purge initial	Pre-purge confirmation	During purging	Purge end	After sampling	Remarks
Time	24-hour		0900			0912	
Depth to Water	feet		~~18.20~~			18.5	
Product	LNAPL/DNAPL		17.95			~~18~~	
Prod. thickness	feet						

Field Data

Field data meters:	Pump description:	Bailer description:
☒ Hydrolab MiniSonde ☐ LaMotte 2020 Turbidimeter	☒ Peristaltic	☐ Disposable polyethylene
☐ Hydrolab DataSonde ☐ Hach 2100P Turbidimeter	☐ Bladder (dedicated / portable)	☐ Disposable Teflon
☐ Other: ☒ Other: HE SCIENTIFIC	☐ Submersible	☐ Disposable PVC

Purge depth	feet	23	Well goes dry during purging: ☐ Yes ☐ No
Casing vol.	gallons		= [total depth (feet) – depth to water (feet)] • [well ID (inches)^2] • 0.0408

Time	24-hour	0900										Remarks
Purge vol.	gallons	—										
Purge rate	mL/min	100										
pH	su	5.94										
Temp.	°C	15.59										
Spec. cond.	µS/cm	471										
D.O.	mg/L	—										
ORP	mV	—										
Turbidity	ntu	649										
Color/tint		brown										
Odor		NONE										

Sample Data

Sample ID	Date	Time	# Containers	# Filtered	Remarks
NCI-2	2/22/11	0905	10	1	

Sampler's Name (print): Jacob Brickman	Sampler Signature: [signature]

Groundwater Sampling Record

Facility: NCI	Site ID: NCI-3	Sampler: JAB
Project Number: 3013-132	Date: 2/22/11	Sampler Organization: FTN

Site Description

Weather: sunny	Air Temp (°F): 50	Wind: 5-10

Site type:	Well casing material:	Well diameter	inches	1	Well locked?
☒ Monitoring Well ☐ Extraction Well ☐ Production Well ☐ Borehole ☐ Irrigation Well ☐ Spring ☐ Other:	☒ PVC ☐ Steel ☐ Iron ☐ Other:	Total depth from TOC	feet	22.36	☐ Yes ☐ No
		TOC below/above ground	feet		

Damages/repairs needed: NONE

Water Level Data

Measuring point description: ☐ Mark/notch on TOC ☐ North rim of TOC ☐ Other:

Water level meter: ☐ Heron Dipper-T ☐ Slope Water Level Indicator ☒ Other: solinist interface

		Pre-purge initial	Pre-purge confirmation	During purging	Purge end	After sampling	Remarks
Time	24-hour		0951			1104	
Depth to Water	feet		18.95			DRY	
Product	LNAPL/DNAPL		~~0.95~~				
Prod. thickness	feet						

Field Data

Field data meters:		Pump description:	Bailer description:
☒ Hydrolab MiniSonde	☐ LaMotte 2020 Turbidimeter	☒ Peristaltic	☐ Disposable polyethylene
☐ Hydrolab DataSonde	☐ Hach 2100P Turbidimeter	☐ Bladder (dedicated / portable)	☐ Disposable Teflon
☐ Other:	☒ Other: HF SCIENTIFIC	☐ Submersible	☐ Disposable PVC

Purge depth	feet	22	Well goes dry during purging: ~~☒ Yes~~ ~~☒ No~~
Casing vol.	gallons		= [total depth (feet) – depth to water (feet)] ▪ [well ID (inches)^2] ▪ 0.0408

Time	24-hour	1014										Remarks
Purge vol.	gallons											
Purge rate	mL/min											
pH	su	4.83										
Temp.	°C	15.85										
Spec. cond.	µS/cm	553										
D.O.	mg/L	—										
ORP	mV	—										
Turbidity	ntu	344.4										
Color/tint		—										
Odor		—										

Sample Data

Sample ID	Date	Time	# Containers	# Filtered	Remarks
NCI-3	2/22/11	1000	~~10~~ 8	1	

Sampler's Name (print): Jacob Brickman	Sampler Signature: [signature]

Groundwater Sampling Record

Facility: NCI	Site ID: NCI-4	Sampler: JWB
Project Number: 3013-132	Date: 8/22/11	Sampler Organization: ETN

Site Description

Weather: Sunny	Air Temp (°F): 55	Wind: 5-10

Site type:	Well casing material:				
☒ Monitoring Well ☐ Extraction Well ☐ Production Well ☐ Borehole ☐ Irrigation Well ☐ Spring ☐ Other:	☒ PVC ☐ Steel ☐ Iron ☐ Other:	Well diameter	inches	1	Well locked? ☐ Yes ☒ No
		Total depth from TOC	feet	29.75	
		TOC below/above ground	feet		

Damages/repairs needed: Screened from

Water Level Data

Measuring point description: ☐ Mark/notch on TOC ☐ North rim of TOC ☐ Other:

Water level meter: ☐ Heron Dipper-T ☐ Slope Water Level Indicator ☐ Other:

		Pre-purge initial	Pre-purge confirmation	During purging	Purge end	After sampling	Remarks
Time	24-hour		1027			1130	
Depth to Water	feet		17.20			17.15	
Product	LNAPL/DNAPL						
Prod. thickness	feet						

Field Data

Field data meters:	Pump description:	Bailer description:
☒ Hydrolab MiniSonde ☐ LaMotte 2020 Turbidimeter	☒ Peristaltic	☐ Disposable polyethylene
☐ Hydrolab DataSonde ☐ Hach 2100P Turbidimeter	☐ Bladder (dedicated / portable)	☐ Disposable Teflon
☐ Other: ☒ Other: HF SCIENTIFIC	☐ Submersible	☐ Disposable PVC

Purge depth	feet	23.75	Well goes dry during purging: ☐ Yes ☐ No
Casing vol.	gallons		= [total depth (feet) – depth to water (feet)] ▪ [well ID (inches)^2] ▪ 0.0408

Time	24-hour	1045										Remarks
Purge vol.	gallons	—										
Purge rate	mL/min	—										
pH	su	5.05										
Temp.	°C	20.33										
Spec. cond.	µS/cm	30.31										
D.O.	mg/L	—										
ORP	mV	—										
Turbidity	ntu	172.3										
Color/tint		GRAY										
Odor		slight	Hydrocarbon smell				Fizzes					

Sample Data

Sample ID	Date	Time	# Containers	# Filtered	Remarks
NCI-4	8/22/11	1045	10	1	

Sampler's Name (print): Jacob Brickman	Sampler Signature: [signature]

Groundwater Sampling Record

Facility: NCI	Site ID: MW-5	Sampler: JNB
Project Number: 3013-132	Date: 2/22/11	Sampler Organization: FTN

Site Description

Weather: Sunny	Air Temp (°F): 55°	Wind: 5-2

Site type:	Well casing material:				
☒ Monitoring Well ☐ Extraction Well ☐ Production Well ☐ Borehole ☐ Irrigation Well ☐ Spring ☐ Other:	☒ PVC ☐ Steel ☐ Iron ☐ Other:	Well diameter	inches	6	Well locked? ☒ Yes ☐ No
		Total depth from TOC	feet	26	
		TOC below/above ground	feet		

Damages/repairs needed: NEEDS NW lock

Water Level Data

Measuring point description: ☐ Mark/notch on TOC ☒ North rim of TOC ☐ Other:

Water level meter: ☐ Heron Dipper-T ☐ Slope Water Level Indicator ☒ Other: solinist interface

		Pre-purge initial	Pre-purge confirmation	During purging	Purge end	After sampling	Remarks
Time	24-hour		1412	1450	1500		
Depth to Water	feet		16.96	17.16	17.35	17.54	
Product	LNAPL/DNAPL		—				
Prod. thickness	feet						

Field Data

Field data meters:	Pump description:	Bailer description:
☒ Hydrolab MiniSonde ☐ LaMotte 2020 Turbidimeter	☒ Peristaltic	☐ Disposable polyethylene
☐ Hydrolab DataSonde ☐ Hach 2100P Turbidimeter	☐ Bladder (dedicated / portable)	☐ Disposable Teflon
☐ Other: ☒ Other: HF SCIENTIFIC	☐ Submersible	☐ Disposable PVC

Purge depth	feet	25	Well goes dry during purging: ☐ Yes ☒ No									
Casiug vol.	gallons		= [total depth (feet) – depth to water (feet)] ▪ [well ID (inches)^2] ▪ 0.0408									
Time	24-hour	1440	1445	1449	1454	1458						Remarks
Purge vol.	gallons	0.1	0.2	0.3	0.4	0.5						
Purge rate	mL/min	100	100	100	100	100						
pH	su	5.32	5.31	5.30	5.29	5.29						
Temp.	°C	21.10	21.05	20.91	20.93	20.86						
Spec. cond.	µS/cm	514	493	411	484	484						
D.O.	mg/L	—	—	—	—	—						
ORP	mV	—	—	—	—	—						
Turbidity	ntu	154.4	64.45	45.12	46.14	49.68						
Color/tint		brown/rust-color										
Odor		NONE										

Sample Data

Sample ID	Date	Time	# Containers	# Filtered	Remarks
MW-5	2/22/11	1500	10	1	

Sampler's Name (print): Jacob Bockman	Sampler Signature: [signature]

Groundwater Sampling Record

Facility: NCT	Site ID: MW-1	Sampler: JZB
Project Number: 3013-132	Date: 2/22/11	Sampler Organization: FTN

Site Description

Weather: sunny	Air Temp (°F): 60°	Wind: 5-2

Site type:	Well casing material:				
☒ Monitoring Well ☐ Extraction Well ☐ Production Well ☐ Borehole ☐ Irrigation Well ☐ Spring ☐ Other:	☒ PVC ☐ Steel ☐ Iron ☐ Other:	Well diameter	inches	6	Well locked? ☒ Yes ☐ No
		Total depth from TOC	feet	22	
		TOC below/above ground	feet		

Damages/repairs needed: NONE

Water Level Data

Measuring point description: ☐ Mark/notch on TOC ☐ North rim of TOC ☐ Other:

Water level meter: ☐ Heron Dipper-T ☐ Slope Water Level Indicator ☐ Other:

		Pre-purge initial	Pre-purge confirmation	During purging	Purge end	After sampling	Remarks
Time	24-hour		1615	1640	~~1655~~ 1700		
Depth to Water	feet		17.35	17.35	17.15		
Product	LNAPL/DNAPL		16.15	—	—		
Prod. thickness	feet		.7				

Field Data

Field data meters:	Pump description:	Bailer description:
☒ Hydrolab MiniSonde ☐ LaMotte 2020 Turbidimeter	☒ Peristaltic	☐ Disposable polyethylene
☐ Hydrolab DataSonde ☐ Hach 2100P Turbidimeter	☐ Bladder (dedicated / portable)	☐ Disposable Teflon
☐ Other: ☒ Other: HE SCIENTIFIC	☐ Submersible	☐ Disposable PVC

Purge depth	feet	☒	Well goes dry during purging: ☐ Yes ☒ No								
Casing vol.	gallons		= [total depth (feet) – depth to water (feet)] • [well ID (inches)^2] • 0.0408								
Time	24-hour	1635	1640	1645	1650	1655	1700				Remarks
Purge vol.	gallons	0.2	0.3	0.5	0.6	0.7	0.8				Arriving at MW-1
Purge rate	mL/min	100	200	100	100	100	100				I pulled a bailer from
pH	su	5.79	5.75	5.72	5.75	5.77	5.71				the well with about
Temp.	°C	19.74	19.11	19.15	19.21	19.64	19.21				100 millilitters of
Spec. cond.	µS/cm	437	435	434	427	482	425				product in it.
D.O.	mg/L	—	—	—	—	—	—				
ORP	mV	—	—	—	—	—	—				
Turbidity	ntu	78.15	33.11	18.13	14.59	11.11	52.69				
Color/tint		Black									
Odor		Hydrocarbon									

Sample Data

Sample ID	Date	Time	# Containers	# Filtered	Remarks
MW-1	2/22/11	1655	11	1	
EB-3	2/22/11	0730	11	1	Equipment Blank

Sampler's Name (print): Jacob Brichman	Sampler Signature: [signature]

Groundwater Sampling Record

Facility: NCI	Site ID: NCI-5	Sampler: JWB
Project Number: 3013-132	Date: 2/23/11	Sampler Organization: FTN

Site Description

Weather: Cloudy	Air Temp (°F): 50	Wind: —

Site type:	Well casing material:				
☒ Monitoring Well ☐ Extraction Well	☒ PVC	Well diameter	inches	1	Well locked? ☐ Yes ☒ No
☐ Production Well ☐ Borehole	☐ Steel	Total depth from TOC	feet	47.45	
☐ Irrigation Well ☐ Spring	☐ Iron	TOC below/above ground	feet		
☐ Other:	☐ Other:				

Damages/repairs needed: — Screened from 40 to 45 ft bgs

Water Level Data

Measuring point description: ☐ Mark/notch on TOC ☒ North rim of TOC ☐ Other:

Water level meter: ☐ Heron Dipper-T ☐ Slope Water Level Indicator ☒ Other: solo nist

		Pre-purge initial	Pre-purge confirmation	During purging	Purge end	After sampling	Remarks
Time	24-hour		0917			1050	
Depth to Water	feet		43.30			44.25	
Product	LNAPL/DNAPL						
Prod. thickness	feet						

Field Data

Field data meters: ☒ Hydrolab MiniSonde ☐ Hydrolab DataSonde ☐ Other: ☐ LaMotte 2020 Turbidimeter ☐ Hach 2100P Turbidimeter ☒ Other: HF SCIENTIFIC

Pump description: ☒ Peristaltic ☐ Bladder (dedicated / portable) ☐ Submersible

Bailer description: ☐ Disposable polyethylene ☐ Disposable Teflon ☐ Disposable PVC

Purge depth	feet	
Casing vol.	gallons	

Well goes dry during purging: ☐ Yes ☐ No

= [total depth (feet) – depth to water (feet)] ▪ [well ID (inches)^2] ▪ 0.0408

Time	24-hour	1115										Remarks
Purge vol.	gallons											
Purge rate	mL/min											
pH	su	5.74										
Temp.	°C	19.33										
Spec. cond.	µS/cm	166										
D.O.	mg/L	—										
ORP	mV	—										
Turbidity	ntu	459										
Color/tint		Brown										
Odor		None										

Sample Data

Sample ID	Date	Time	# Containers	# Filtered	Remarks
NCI-5	2/23/11	~~0900~~	~~11~~ 9	1	0900 = TIME

Sampler's Name (print): Jacob Brickman	Sampler Signature: [signature]

Groundwater Sampling Record

Facility: NCI	Site ID: NCI-20	Sampler: JWB
Project Number: 3013-132	Date: 2/23/11	Sampler Organization: FTN

Site Description

Weather:	Air Temp (°F):	Wind:

Site type:	Well casing material:				
☒ Monitoring Well ☐ Extraction Well ☐ Production Well ☐ Borehole ☐ Irrigation Well ☐ Spring ☐ Other:	☒ PVC ☐ Steel ☐ Iron ☐ Other:	Well diameter	inches	1	Well locked? ☐ Yes ☒ No
		Total depth from TOC	feet	19.95	
		TOC below/above ground	feet		

Damages/repairs needed: NONE Screened from 16 to 21 ft bgs

Water Level Data

Measuring point description: ☐ Mark/notch on TOC ☒ North rim of TOC ☐ Other:

Water level meter: ☐ Heron Dipper-T ☐ Slope Water Level Indicator ☒ Other: solinist interface

		Pre-purge initial	Pre-purge confirmation	During purging	Purge end	After sampling	Remarks
Time	24-hour		1300			1640	
Depth to Water	feet		17.09			18.70	
Product	LNAPL/DNAPL						
Prod. thickness	feet						

Field Data

Field data meters:		Pump description:	Bailer description:
☒ Hydrolab MiniSonde	☐ LaMotte 2020 Turbidimeter	☒ Peristaltic	☐ Disposable polyethylene
☐ Hydrolab DataSonde	☐ Hach 2100P Turbidimeter	☐ Bladder (dedicated / portable)	☐ Disposable Teflon
☐ Other:	☒ Other: HF SCIENTIFIC	☐ Submersible	☐ Disposable PVC

Purge depth	feet		Well goes dry during purging: ☐ Yes ☐ No
Casing vol.	gallons		= [total depth (feet) – depth to water (feet)] ▪ [well ID (inches)^2] ▪ 0.0408

Time	24-hour	1324										Remarks
Purge vol.	gallons	—										
Purge rate	mL/min	—										
pH	su	5.68										
Temp.	°C	21.43										
Spec. cond.	µS/cm	241										
D.O.	mg/L	—										
ORP	mV	—										
Turbidity	ntu	956										
Color/tint		brown										
Odor		chemical odor										

Sample Data

Sample ID	Date	Time	# Containers	# Filtered	Remarks
NCI-20	2/23/11	1300	10	1	

Sampler's Name (print): Jacob Brickman	Sampler Signature: [signature]

Groundwater Sampling Record

Facility: NCI	Site ID: NCI-19	Sampler: JWB
Project Number: 3013-132	Date: 2/23/11	Sampler Organization: J FTN

Site Description

Weather:	Air Temp (°F):	Wind:

Site type:	Well casing material:				
☒ Monitoring Well ☐ Extraction Well ☐ Production Well ☐ Borehole ☐ Irrigation Well ☐ Spring ☐ Other:	☒ PVC ☐ Steel ☐ Iron ☐ Other:	Well diameter	inches	1	Well locked? ☐ Yes ☒ No
		Total depth from TOC	feet	24.9	
		TOC below/above ground	feet		

Damages/repairs needed: NONE Screened from 19 to 24 ft bgs

Water Level Data

Measuring point description: ☐ Mark/notch on TOC ☒ North rim of TOC ☐ Other:

Water level meter: ☐ Heron Dipper-T ☐ Slope Water Level Indicator ☒ Other: solonist Interface

		Pre-purge initial	Pre-purge confirmation	During purging	Purge end	After sampling	Remarks
Time	24-hour		1154				
Depth to Water	feet		17.74			17.81	
Product	LNAPL/DNAPL						
Prod. thickness	feet						

Field Data

Field data meters:		Pump description:	Bailer description:
☒ Hydrolab MiniSonde	☐ LaMotte 2020 Turbidimeter	☒ Peristaltic	☐ Disposable polyethylene
☐ Hydrolab DataSonde	☐ Hach 2100P Turbidimeter	☐ Bladder (dedicated / portable)	☐ Disposable Teflon
☐ Other:	☒ Other: HF SCIENTIFIC	☐ Submersible	☐ Disposable PVC

Purge depth	feet	
Casing vol.	gallons	

Well goes dry during purging: ☐ Yes ☐ No

= [total depth (feet) – depth to water (feet)] ▪ [well ID (inches)^2] ▪ 0.0408

												Remarks
Time	24-hour	1220										
Purge vol.	gallons	—										
Purge rate	mL/min	—										
pH	su	5.46										
Temp.	°C	20.12										
Spec. cond.	µS/cm	115										
D.O.	mg/L	—										
ORP	mV	—										
Turbidity	ntu	42.92										
Color/tint		cloudy										
Odor		NONE										

Sample Data

Sample ID	Date	Time	# Containers	# Filtered	Remarks
NCI-19	2/23/11	1200	10	1	

Sampler's Name (print): Jacob Brickman	Sampler Signature: Jacob Brickman

Groundwater Sampling Record

Facility: NC1	Site ID: NC1-6	Sampler: JWB
Project Number: 3013-132	Date: 2/23/11	Sampler Organization: FTN

Site Description

Weather: Cloudy	Air Temp (°F): 50°	Wind: 5-10

Site type:	Well casing material:				
☒ Monitoring Well ☐ Extraction Well ☐ Production Well ☐ Borehole ☐ Irrigation Well ☐ Spring ☐ Other:	☒ PVC ☐ Steel ☐ Iron ☐ Other:	Well diameter	inches	1	Well locked? ☐ Yes ☒ No
		Total depth from TOC	feet	35.1	
		TOC below/above ground	feet	~1	

Damages/repairs needed: NONE Screened from 15 to 30 ft bgs

Water Level Data

Measuring point description: ☐ Mark/notch on TOC ☒ North rim of TOC ☐ Other:

Water level meter: ☐ Heron Dipper-T ☐ Slope Water Level Indicator ☒ Other: solonist interface

		Pre-purge initial	Pre-purge confirmation	During purging	Purge end	After sampling	Remarks
Time	24-hour						
Depth to Water	feet		26.15				
Product	LNAPL/DNAPL						
Prod. thickness	feet						

Field Data

Field data meters:		Pump description:	Bailer description:
☒ Hydrolab MiniSonde	☐ LaMotte 2020 Turbidimeter	☒ Peristaltic	☐ Disposable polyethylene
☐ Hydrolab DataSonde	☐ Hach 2100P Turbidimeter	☐ Bladder (dedicated / portable)	☐ Disposable Teflon
☐ Other:	☒ Other: HF SCIENTIFIC	☐ Submersible	☐ Disposable PVC

Purge depth	feet	34	Well goes dry during purging: ☐ Yes ☐ No
Casing vol.	gallons		= [total depth (feet) – depth to water (feet)] ▪ [well ID (inches)^2] ▪ 0.0408

Time	24-hour	1441										Remarks
Purge vol.	gallons	—										
Purge rate	mL/min	100										
pH	su	5.55										
Temp.	°C	19.84										
Spec. cond.	µS/cm	471										
D.O.	mg/L	—										
ORP	mV	—										
Turbidity	ntu	663										
Color/tint		brown										
Odor		Slight chemical										

Sample Data

Sample ID	Date	Time	# Containers	# Filtered	Remarks
NC1-6	2/23/11	1430	11	1	

Sampler's Name (print): Jacob Brickman	Sampler Signature: [signature]

Groundwater Sampling Record

Facility: NC1	Site ID: NC1-7	Sampler: JCB
Project Number: 3013-132	Date: 2/23/11	Sampler Organization: FTN

Site Description

Weather: cloudy	Air Temp (°F): 60	Wind:

Site type:	Well casing material:				
☒ Monitoring Well ☐ Extraction Well	☒ PVC	Well diameter	inches	1	Well locked?
☐ Production Well ☐ Borehole	☐ Steel	Total depth from TOC	feet	29.80	☐ Yes
☐ Irrigation Well ☐ Spring	☐ Iron	TOC below/above ground	feet		☒ No
☐ Other:	☐ Other:				

Damages/repairs needed: Screened from 23 to 27 ft bgs

Water Level Data

Measuring point description: ☐ Mark/notch on TOC ☒ North rim of TOC ☐ Other:

Water level meter: ☐ Heron Dipper-T ☐ Slope Water Level Indicator ☒ Other: solinist interface

		Pre-purge initial	Pre-purge confirmation	During purging	Purge end	After sampling	Remarks
Time	24-hour		1644			1854	
Depth to Water	feet		24.78			24.86	
Product	LNAPL/DNAPL						
Prod. thickness	feet						

Field Data

Field data meters:		Pump description:	Bailer description:
☒ Hydrolab MiniSonde	☐ LaMotte 2020 Turbidimeter	☒ Peristaltic	☐ Disposable polyethylene
☐ Hydrolab DataSonde	☐ Hach 2100P Turbidimeter	☐ Bladder (dedicated / portable)	☐ Disposable Teflon
☐ Other:	☒ Other: HF SCIENTIFIC	☐ Submersible	☐ Disposable PVC

Purge depth	feet	27	Well goes dry during purging: ☐ Yes ☐ No									
Casing vol.	gallons		= [total depth (feet) – depth to water (feet)] ▪ [well ID (inches)^2] ▪ 0.0408									
Time	24-hour	1720										Remarks
Purge vol.	gallons	–										
Purge rate	mL/min	100										
pH	su	4.81										
Temp.	°C	19.47										
Spec. cond.	µS/cm	517										
D.O.	mg/L	–										
ORP	mV	–										
Turbidity	ntu	39.62										
Color/tint		clear										
Odor												

Sample Data

Sample ID	Date	Time	# Containers	# Filtered	Remarks
NC1-7	2/23/11	1650	11	1	
NC1-7-D	"	1700	11	1	

Sampler's Name (print): Jacob Brickman	Sampler Signature: [signature]

Groundwater Sampling Record

Facility: NC1	Site ID: NC1-9	Sampler: JTWB
Project Number: 3013-132	Date: 2/24/11	Sampler Organization: FTN

Site Description

Weather: Cloudy	Air Temp (°F):	Wind:

Site type:	Well casing material:				
☒ Monitoring Well ☐ Extraction Well ☐ Production Well ☐ Borehole ☐ Irrigation Well ☐ Spring ☐ Other:	☒ PVC ☐ Steel ☐ Iron ☐ Other:	Well diameter	inches	1	Well locked? ☐ Yes ☒ No
		Total depth from TOC	feet	20.10	
		TOC below/above ground	feet	~1.5	

Damages/repairs needed: NONE Screened from 9 to 19 ft bgs

Water Level Data

Measuring point description: ☐ Mark/notch on TOC ☒ North rim of TOC ☐ Other:		Water level meter: ☐ Heron Dipper-T ☐ Slope Water Level Indicator ☒ Other: solonist interface					
		Pre-purge initial	Pre-purge confirmation	During purging	Purge end	After sampling	Remarks
Time	24-hour		0717	~~0747~~			
Depth to Water	feet		10.74				
Product	LNAPL/DNAPL						
Prod. thickness	feet						

Field Data

Field data meters:		Pump description:	Bailer description:
☒ Hydrolab MiniSonde	☐ LaMotte 2020 Turbidimeter	☒ Peristaltic	☐ Disposable polyethylene
☐ Hydrolab DataSonde	☐ Hach 2100P Turbidimeter	☐ Bladder (dedicated / portable)	☐ Disposable Teflon
☐ Other:	☒ Other: HF SCIENTIFIC	☐ Submersible	☐ Disposable PVC

Purge depth	feet		Well goes dry during purging: ☐ Yes ☐ No
Casing vol.	gallons		= [total depth (feet) – depth to water (feet)] • [well ID (inches)^2] • 0.0408

Time	24-hour	0825										Remarks
Purge vol.	gallons	—										
Purge rate	mL/min	100										
pH	su	5.87										
Temp.	°C	19.87										
Spec. cond.	µS/cm	285										
D.O.	mg/L	—										
ORP	mV	—										
Turbidity	ntu	184										
Color/tint		gray/cloudy										
Odor		NONE										

Sample Data

Sample ID	Date	Time	# Containers	# Filtered	Remarks
NC1-9	2/24/11	0800	10	1	

Sampler's Name (print): Jacob Brickman	Sampler Signature: [signature]

Groundwater Sampling Record

Facility: NC1	Site ID: NC1-10	Sampler: JWR
Project Number: 3013 - 132	Date: 2/24/11	Sampler Organization: FTN

Site Description

Weather: Cloudy	Air Temp (°F): 65°	Wind: 10-15

Site type:	Well casing material:				
☒ Monitoring Well ☐ Extraction Well	☒ PVC	Well diameter	inches	1	Well locked?
☐ Production Well ☐ Borehole	☐ Steel	Total depth from TOC	feet	12ft	☐ Yes
☐ Irrigation Well ☐ Spring	☐ Iron	TOC below/above ground	feet	~4	☒ No
☐ Other:	☐ Other:				

Damages/repairs needed: NONE

Screened from 2 to 12 ft bgs

Water Level Data

Measuring point description:		Water level meter: ☐ Heron Dipper-T ☐ Slope Water Level Indicator ☒ Other: solonist interface					
☐ Mark/notch on TOC ☒ North rim of TOC ☐ Other:		Pre-purge initial	Pre-purge confirmation	During purging	Purge end	After sampling	Remarks
Time	24-hour		0928				
Depth to Water	feet		6.02				
Product	LNAPL/DNAPL						
Prod. thickness	feet						

Field Data

Field data meters:		Pump description:	Bailer description:
☒ Hydrolab MiniSonde	☐ LaMotte 2020 Turbidimeter	☒ Peristaltic	☐ Disposable polyethylene
☐ Hydrolab DataSonde	☐ Hach 2100P Turbidimeter	☐ Bladder (dedicated / portable)	☐ Disposable Teflon
☐ Other:	☒ Other: HF SCIENTIFIC	☐ Submersible	☐ Disposable PVC

Purge depth	feet	11	Well goes dry during purging: ☐ Yes ☐ No
Casing vol.	gallons		= [total depth (feet) – depth to water (feet)] • [well ID (inches)^2] • 0.0408

Time	24-hour	0945										Remarks
Purge vol.	gallons	—										
Purge rate	mL/min	100										
pH	su	6.21										
Temp.	°C	17.89										
Spec. cond.	µS/cm	141										
D.O.	mg/L	—										
ORP	mV	—										
Turbidity	ntu	00L										
Color/tint		GRAY										
Odor		NONE										

Sample Data

Sample ID	Date	Time	# Containers	# Filtered	Remarks
NC1-10	2/24/11	0930	10	1	

Sampler's Name (print): Jacob Brickman	Sampler Signature: Jacob Brickman

Groundwater Sampling Record

Facility: NC1	Site ID: NC1-11	Sampler: JWB
Project Number: 3013-132	Date: 2/24/11	Sampler Organization: FTN

Site Description

Weather: Cloudy	Air Temp (°F): 65°	Wind: 5-10

Site type:	Well casing material:				
☒ Monitoring Well ☐ Extraction Well	☒ PVC	Well diameter	inches	1	Well locked?
☐ Production Well ☐ Borehole	☐ Steel	Total depth from TOC	feet	14.6	☐ Yes
☐ Irrigation Well ☐ Spring	☐ Iron	TOC below/above ground	feet	~3.5	☒ No
☐ Other:	☐ Other:				

Damages/repairs needed: NONE

Screened from 7 to 12 ft bgs

Water Level Data

Measuring point description:	Water level meter: ☐ Heron Dipper-T ☐ Slope Water Level Indicator ☒ Other: solonist Interface						
☐ Mark/notch on TOC ☒ North rim of TOC ☐ Other:		Pre-purge initial	Pre-purge confirmation	During purging	Purge end	After sampling	Remarks
Time	24-hour		0950			1049	
Depth to Water	feet		8.51			DRY	
Product	LNAPL/DNAPL						
Prod. thickness	feet						

Field Data

Field data meters:		Pump description:	Bailer description:
☒ Hydrolab MiniSonde	☐ LaMotte 2020 Turbidimeter	☒ Peristaltic	☐ Disposable polyethylene
☒ Hydrolab DataSonde	☐ Hach 2100P Turbidimeter	☐ Bladder (dedicated / portable)	☐ Disposable Teflon
☐ Other:	☒ Other: HF SCIENTIFIC	☐ Submersible	☐ Disposable PVC

Purge depth	feet		Well goes dry during purging: ☐ Yes ☐ No
Casing vol.	gallons		= [total depth (feet) – depth to water (feet)] • [well ID (inches)^2] • 0.0408

Time	24-hour	1015										Remarks
Purge vol.	gallons	—										
Purge rate	mL/min	100										
pH	su	5.65										
Temp.	°C	19.68										
Spec. cond.	µS/cm	298										
D.O.	mg/L	—										
ORP	mV	—										
Turbidity	ntu	355										
Color/tint		cloudy + Fizzes										
Odor		slight chemical smell										

Sample Data

Sample ID	Date	Time	# Containers	# Filtered	Remarks
NC1-11	2/24/11	1100	10	1	

Sampler's Name (print): Jacob Brickman	Sampler Signature: Jacob Brickman

Groundwater Sampling Record

Facility: NCI	Site ID: NCI-12	Sampler: JWB
Project Number: 3013-132	Date: 2/25/11	Sampler Organization: FTN

Site Description

Weather: Cloudy	Air Temp (°F): 50°	Wind: 5-10

Site type:	Well casing material:				
☒ Monitoring Well ☐ Extraction Well	☒ PVC	Well diameter	inches	1	Well locked?
☐ Production Well ☐ Borehole	☐ Steel	Total depth from TOC	feet	18.05	☐ Yes
☐ Irrigation Well ☐ Spring	☐ Iron	TOC below/above ground	feet	~3	☒ No
☐ Other:	☐ Other:				

Damages/repairs needed: NONE Screened from 6 to 16 ft

Water Level Data

Measuring point description: ☐ Mark/notch on TOC ☒ North rim of TOC ☐ Other:

Water level meter: ☐ Heron Dipper-T ☐ Slope Water Level Indicator ☒ Other: solinist interface

		Pre-purge initial	Pre-purge confirmation	During purging	Purge end	After sampling	Remarks
Time	24-hour		0751				
Depth to Water	feet		3.38				
Product	LNAPL/DNAPL						
Prod. thickness	feet						

Field Data

Field data meters:		Pump description:	Bailer description:
☒ Hydrolab MiniSonde	☐ LaMotte 2020 Turbidimeter	☒ Peristaltic	☐ Disposable polyethylene
☐ Hydrolab DataSonde	☐ Hach 2100P Turbidimeter	☐ Bladder (dedicated / portable)	☐ Disposable Teflon
☐ Other:	☒ Other: HF Scientific	☐ Submersible	☐ Disposable PVC

Purge depth	feet	Well goes dry during purging: ☐ Yes ☒ No
Casing vol.	gallons	= [total depth (feet) – depth to water (feet)] ▪ [well ID (inches)^2] ▪ 0.0408

Time	24-hour	0800										Remarks
Purge vol.	gallons	—										
Purge rate	mL/min	100										
pH	su	6.19										
Temp.	°C	13.83										
Spec. cond.	µS/cm	694										
D.O.	mg/L	—										
ORP	mV	—										
Turbidity	ntu	NR										
Color/tint		brown / oily sheen										
Odor		Hydrocarbon smell										

Sample Data

Sample ID	Date	Time	# Containers	# Filtered	Remarks
NCI-12	2/25/11	0800	10	1	

Sampler's Name (print): Jacob Bottom	Sampler Signature: [signature]

Groundwater Sampling Record

Facility: NC1	Site ID: NC1-16	Sampler: JLB
Project Number: 3013-132	Date: 2/25/11	Sampler Organization: FTN

Site Description

Weather:	Air Temp (°F):	Wind:

Site type: ☒ Monitoring Well ☐ Production Well ☐ Irrigation Well ☐ Other: ☐ Extraction Well ☐ Borehole ☐ Spring	Well casing material: ☒ PVC ☐ Steel ☐ Iron ☐ Other:	Well diameter	inches	1	Well locked? ☐ Yes ☒ No
		Total depth from TOC	feet	18.8	
		TOC below/above ground	feet		

Damages/repairs needed: NONE

Water Level Data

Measuring point description: ☐ Mark/notch on TOC ☒ North rim of TOC ☐ Other:

Water level meter: ☐ Heron Dipper-T ☐ Slope Water Level Indicator ☒ Other: Solonist interface

		Pre-purge initial	Pre-purge confirmation	During purging	Purge end	After sampling	Remarks
Time	24-hour		0838				
Depth to Water	feet		~~12.60~~				
Product	LNAPL/DNAPL		9.05			~~DRY~~	
Prod. thickness	feet						

Field Data

Field data meters: ☒ Hydrolab MiniSonde ☐ Hydrolab DataSonde ☐ Other: ☐ LaMotte 2020 Turbidimeter ☐ Hach 2100P Turbidimeter ☒ Other: HF Scientific	Pump description: ☒ Peristaltic ☐ Bladder (dedicated / portable) ☐ Submersible	Bailer description: ☐ Disposable polyethylene ☐ Disposable Teflon ☐ Disposable PVC

Purge depth	feet	15	Well goes dry during purging: ~~☐~~ Yes ☒ No
Casing vol.	gallons		= [total depth (feet) – depth to water (feet)] • [well ID (inches)^2] • 0.0408

Time	24-hour	1412										Remarks
Purge vol.	gallons	–										
Purge rate	mL/min	75										
pH	su	5.57										
Temp.	°C	16.68										
Spec. cond.	µS/cm	363										
D.O.	mg/L	–										
ORP	mV	–										
Turbidity	ntu	542										
Color/tint		cloudy / gray										
Odor		slight chemical odor										

Sample Data

Sample ID	Date	Time	# Containers	# Filtered	Remarks
NC1-16	2/25/11		0845	1	

Sampler's Name (print): Jacob Ruckman	Sampler Signature: [signature]

Groundwater Sampling Record

Facility: NCI	Site ID: NCI-0	Sampler: JLB
Project Number: 3613 - 182	Date: 2/25/11	Sampler Organization: FTN

Site Description

Weather: Cloudy	Air Temp (°F): 50°	Wind: 5-10

Site type:	Well casing material:	Well diameter	inches	1	Well locked?
☒ Monitoring Well ☐ Extraction Well ☐ Production Well ☐ Borehole ☐ Irrigation Well ☐ Spring ☐ Other:	☒ PVC ☐ Steel ☐ Iron ☐ Other:	Total depth from TOC	feet	29.90	☐ Yes ☒ No
		TOC below/above ground	feet		

Damages/repairs needed: NONE

Screened from 22 to 27 ft bgs

Water Level Data

solonist

Measuring point description: ☐ Mark/notch on TOC ☒ North rim of TOC ☐ Other:		Water level meter: ☐ Heron Dipper-T ☐ Slope Water Level Indicator ☒ Other:					
		Pre-purge initial	Pre-purge confirmation	During purging	Purge end	After sampling	Remarks
Time	24-hour		0906				
Depth to Water	feet		26.8				
Product	LNAPL/DNAPL						
Prod. thickness	feet						

Field Data

Field data meters:	Pump description:	Bailer description:
☒ Hydrolab MiniSonde ☐ LaMotte 2020 Turbidimeter ☐ Hydrolab DataSonde ☐ Hach 2100P Turbidimeter ☐ Other: ☒ Other: HF SCIENTIFIC	☒ Peristaltic ☐ Bladder (dedicated / portable) ☐ Submersible	☐ Disposable polyethylene ☐ Disposable Teflon ☐ Disposable PVC

Purge depth	feet		Well goes dry during purging: ☐ Yes ☐ No
Casing vol.	gallons		= [total depth (feet) – depth to water (feet)] • [well ID (inches)^2] • 0.0408

Time	24-hour	0930										Remarks
Purge vol.	gallons	—										
Purge rate	mL/min	70										
pH	su	6.23										
Temp.	°C	14.58										
Spec. cond.	µS/cm	162										
D.O.	mg/L	—										
ORP	mV	—										
Turbidity	ntu	1050										
Color/tint		brown										
Odor		NONE										

Sample Data

Sample ID	Date	Time	# Containers	# Filtered	Remarks
NCI-0	2/25/11	0915	10	1	

Sampler's Name (print): Jacob Blackman	Sampler Signature: [signature]

Groundwater Sampling Record

Facility: NCI	Site ID: NCI-17	Sampler: JJB
Project Number: 3013-132	Date: 2/25/11	Sampler Organization: FTN

Site Description

Weather: Cloudy	Air Temp (°F): 50°	Wind: 5-10

Site type:	Well casing material:				
☒ Monitoring Well ☐ Extraction Well	☒ PVC	Well diameter	inches	1	Well locked?
☐ Production Well ☐ Borehole	☐ Steel	Total depth from TOC	feet	18.42	☐ Yes
☐ Irrigation Well ☐ Spring	☐ Iron	TOC below/above ground	feet		☒ No
☐ Other:	☐ Other:				

Damages/repairs needed: NONE

NOTES: Screened from 11 to 16 ft bgs.

Water Level Data

solonist

Measuring point description: ☐ Mark/notch on TOC ☒ North rim of TOC ☐ Other:		Water level meter: ☐ Heron Dipper-T ☐ Slope Water Level Indicator ☒ Other:					
		Pre-purge initial	Pre-purge confirmation	During purging	Purge end	After sampling	Remarks
Time	24-hour		1028				
Depth to Water	feet		12.97				
Product	LNAPL/DNAPL						
Prod. thickness	feet						

Field Data

Field data meters:		Pump description:	Bailer description:
☒ Hydrolab MiniSonde	☐ LaMotte 2020 Turbidimeter	☒ Peristaltic	☐ Disposable polyethylene
☐ Hydrolab DataSonde	☐ Hach 2100P Turbidimeter	☐ Bladder (dedicated / portable)	☐ Disposable Teflon
☐ Other:	☒ Other: HF SCIENTIFIC	☐ Submersible	☐ Disposable PVC

Purge depth	feet		Well goes dry during purging: ☐ Yes ☒ No
Casing vol.	gallons		= [total depth (feet) – depth to water (feet)] • [well ID (inches)^2] • 0.0408

Time	24-hour	1042										Remarks
Purge vol.	gallons	—										
Purge rate	mL/min	100										
pH	su	6.58										
Temp.	°C	15.47										
Spec. cond.	µS/cm	900										
D.O.	mg/L	—										
ORP	mV	—										
Turbidity	ntu	600										
Color/tint		brown										
Odor		NONE										

Sample Data

Sample ID	Date	Time	# Containers	# Filtered	Remarks
NCI-17	2/25/11	1100	10	1	

Sampler's Name (print): Jacob Brickman	Sampler Signature: JJB

Groundwater Sampling Record

Facility: NCI	Site ID: NCI-18	Sampler: JWB
Project Number: 3013-132	Date: 2/25/11	Sampler Organization: FTN

Site Description

Weather: Sunny	Air Temp (°F): 50	Wind: 5-10

Site type:	Well casing material:				
☒ Monitoring Well ☐ Extraction Well	☒ PVC	Well diameter	inches	1	Well locked?
☐ Production Well ☐ Borehole	☐ Steel	Total depth from TOC	feet	23.4	☐ Yes
☐ Irrigation Well ☐ Spring	☐ Iron	TOC below/above ground	feet		☒ No
☐ Other:	☐ Other:				

Damages/repairs needed: NONE NOTES: Screened from 15 to 20 ft bgs

Water Level Data

Measuring point description:	Water level meter: ☐ Heron Dipper-T ☐ Slope Water Level Indicator ☒ Other: solonist						
☐ Mark/notch on TOC ☒ North rim of TOC ☐ Other:		Pre-purge initial	Pre-purge confirmation	During purging	Purge end	After sampling	Remarks
Time	24-hour					2/25/11	
Depth to Water	feet		17.80			7.82	
Product	LNAPL/DNAPL						
Prod. thickness	feet						

Field Data

Field data meters:	Pump description:	Bailer description:
☒ Hydrolab MiniSonde ☐ LaMotte 2020 Turbidimeter	☒ Peristaltic	☐ Disposable polyethylene
☐ Hydrolab DataSonde ☐ Hach 2100P Turbidimeter	☐ Bladder (dedicated / portable)	☐ Disposable Teflon
☐ Other: ☐ Other:	☐ Submersible	☐ Disposable PVC

Purge depth	feet		Well goes dry during purging: ☐ Yes ☒ No
Casing vol.	gallons		= [total depth (feet) – depth to water (feet)] ▪ [well ID (inches)^2] ▪ 0.0408

Time	24-hour											Remarks
Purge vol.	gallons											
Purge rate	mL/min											
pH	su	4.95										
Temp.	°C	17.99										
Spec. cond.	µS/cm	479.6										
D.O.	mg/L											
ORP	mV											
Turbidity	ntu											
Color/tint		Clear with a slight yellow tint										
Odor		None										

Sample Data

Sample ID	Date	Time	# Containers	# Filtered	Remarks
NCI-18	2/25/11	1300	10	1	
NCI-18-D	"	1305	10	1	Dup

Sampler's Name (print): Jacob Brickman	Sampler Signature: [signature]

Groundwater Sampling Record

Facility: NCI		Site ID: NCI-15		Sampler: EJH	
Project Number: 3013-132		Date: 3/1/2011		Sampler Organization: ETN	

Site Description

Weather: Sunny	Air Temp (°F): 45°	Wind: calm

Site type:	Well casing material:				
☒ Monitoring Well ☐ Extraction Well	☒ PVC	Well diameter	inches	1	Well locked?
☐ Production Well ☐ Borehole	☐ Steel	Total depth from TOC	feet	19.94	☐ Yes
☐ Irrigation Well ☐ Spring	☐ Iron	TOC below/above ground	feet	4.02	☒ No
☐ Other:	☐ Other:				

~~Damages/repairs needed:~~ Notes Screened from 6 to 16 ft bgs.

Water Level Data

Measuring point description: ☒ Mark/notch on TOC ☐ North rim of TOC ☐ Other:

Water level meter: ☐ Heron Dipper-T ☐ Slope Water Level Indicator ☒ Other: Solinst

		Pre-purge initial	Pre-purge confirmation	During purging	Purge end	After sampling	Remarks
Time	24-hour	1000					
Depth to Water	feet	10.11				~~10.28~~	
Product	LNAPL/DNAPL	3/1/2011				DRY	
Prod. thickness	feet						

Field Data

Field data meters: ☒ Hydrolab MiniSonde ☐ Hydrolab DataSonde ☐ Other: ☐ LaMotte 2020 Turbidimeter ☐ Hach 2100P Turbidimeter ☒ Other: HF Scientific

Pump description: ☒ Peristaltic ☐ Bladder (dedicated / portable) ☐ Submersible

Bailer description: ☐ Disposable polyethylene ☐ Disposable Teflon ☐ Disposable PVC

Purge depth	feet	11	Well goes dry during purging: ☒ Yes ☐ No
Casing vol.	gallons		= [total depth (feet) – depth to water (feet)] • [well ID (inches)^2] • 0.0408

Time	24-hour	1005										Remarks
Purge vol.	gallons											
Purge rate	mL/min	100										
pH	su	4.94										
Temp.	°C	12.75										
Spec. cond.	µS/cm	403										
D.O.	mg/L											
ORP	mV											
Turbidity	ntu	211.4										
Color/tint		Creamy orange										
Odor		hydrocarbon										

Sample Data

Sample ID	Date	Time	# Containers	# Filtered	Remarks
NCI-15	3/1/2011	1000	10	1	Metals Dissolved

Sampler's Name (print): Emily Hollingsworth	Sampler Signature: Emily Hollingsworth

Groundwater Sampling Record

Facility:	NCI	Site ID:	NCI-13	Sampler:	EJH
Project Number:	3013-132	Date:	3/1/2011	Sampler Organization:	FTN

Site Description

Weather: Sunny	Air Temp (°F): 50°	Wind: Calm to breezy

Site type:		Well casing material:					
☒ Monitoring Well	☐ Extraction Well	☒ PVC	Well diameter	inches	1	Well locked?	
☐ Production Well	☐ Borehole	☐ Steel	Total depth from TOC	feet	12.91	☐ Yes	
☐ Irrigation Well	☐ Spring	☐ Iron	TOC below/above ground	feet	+0.98	☒ No	
☐ Other:		☐ Other:					

Damages/repairs needed: Screened from 4 to 14

Water Level Data

Measuring point description: ☐ Mark/notch on TOC ☐ North rim of TOC ☒ Other:

Water level meter: ☐ Heron Dipper-T ☐ Slope Water Level Indicator ☒ Other: Solinst

		Pre-purge initial	Pre-purge confirmation	During purging	Purge end	After sampling	Remarks
Time	24-hour	0800					
Depth to Water	feet	3.37					
Product	LNAPL/DNAPL	3/1/2011					
Prod. thickness	feet						

Field Data

Field data meters:		Pump description:	Bailer description:
☒ Hydrolab MiniSonde	☐ LaMotte 2020 Turbidimeter	☒ Peristaltic	☐ Disposable polyethylene
☐ Hydrolab DataSonde	☐ Hach 2100P Turbidimeter	☐ Bladder (dedicated / portable)	☐ Disposable Teflon
☐ Other:	☒ Other: HP Scientific	☐ Submersible	☐ Disposable PVC

Purge depth	feet		Well goes dry during purging: ☐ Yes ☐ No									
Casing vol.	gallons		= [total depth (feet) – depth to water (feet)] • [well ID (inches)^2] • 0.0408									
Time	24-hour											Remarks
Purge vol.	gallons											
Purge rate	mL/min	100										
pH	su	6.04										
Temp.	°C	20.62										
Spec. cond.	µS/cm	435										
D.O.	mg/L											
ORP	mV											
Turbidity	ntu	Milky orange to gray										
Color/tint												
Odor		Hydrocarbon										

Sample Data

Sample ID	Date	Time	# Containers	# Filtered	Remarks
3/1/2011	NCI-13	0800	10	1	

Sampler's Name (print): Emily Hollingsworth	Sampler Signature: Emily Hollingsworth

Groundwater Sampling Record

Facility:	NCI	Site ID:	NCI-14	Sampler:	EJH
Project Number:	3013-132	Date:	3/1/2011	Sampler Organization:	FTN

Site Description

Weather: Sunny	Air Temp (°F): 55°	Wind: Calm to Breezy

Site type:		Well casing material:				
☑ Monitoring Well	☐ Extraction Well	☒ PVC	Well diameter	inches	1	Well locked?
☐ Production Well	☐ Borehole	☐ Steel	Total depth from TOC	feet	14.87	☐ Yes
☐ Irrigation Well	☐ Spring	☐ Iron	TOC below/above ground	feet		☒ No
☐ Other:		☐ Other:				

Damages/repairs needed: Screened from 1 to 11

Water Level Data

Measuring point description: ☐ Mark/notch on TOC ☐ North rim of TOC ☒ Other:

Water level meter: ☐ Heron Dipper-T ☐ Slope Water Level Indicator ☒ Other: Solinst

		Pre-purge initial	Pre-purge confirmation	During purging	Purge end	After sampling	Remarks
Time	24-hour	1155					
Depth to Water	feet	6.26					
Product	LNAPL/DNAPL	3/1/2011					
Prod. thickness	feet						

Field Data

Field data meters:		Pump description:	Bailer description:
☒ Hydrolab MiniSonde	☐ LaMotte 2020 Turbidimeter	☒ Peristaltic	☐ Disposable polyethylene
☐ Hydrolab DataSonde	☐ Hach 2100P Turbidimeter	☐ Bladder (dedicated / portable)	☐ Disposable Teflon
☐ Other:	☑ Other: HF Scientific	☐ Submersible	☐ Disposable PVC

Purge depth	feet		Well goes dry during purging: ☐ Yes ☐ No
Casing vol.	gallons		= [total depth (feet) – depth to water (feet)] • [well ID (inches)^2] • 0.0408

Time	24-hour	1230										Remarks
Purge vol.	gallons											
Purge rate	mL/min	100										
pH	su	5.64										
Temp.	°C	7.37										
Spec. cond.	µS/cm	339										
D.O.	mg/L											
ORP	mV											
Turbidity	ntu	1027										
Color/tint		Creamy gray-ish-orange										
Odor		Hydrocarbon										

Sample Data

Sample ID	Date	Time	# Containers	# Filtered	Remarks
NCI-14	3/1/2011	1200	10	1	

Sampler's Name (print): Emily Hollingsworth	Sampler Signature: Emily Hollingsworth

Groundwater Sampling Record

Facility:	NCI	Site ID:	MW-7	Sampler:	EJH
Project Number:	3013-137	Date:	3/1/11	Sampler Organization:	FTN

Site Description

Weather: Sunny	Air Temp (°F): 60°	Wind: calm

Site type:	Well casing material:				
☒ Monitoring Well ☐ Extraction Well	☒ PVC	Well diameter	inches	4	Well locked? ☒ Yes ☐ No
☐ Production Well ☐ Borehole	☐ Steel	Total depth from TOC	feet	27.40	
☐ Irrigation Well ☐ Spring	☐ Iron	TOC below/above ground	feet		
☐ Other:	☐ Other:				

Damages/repairs needed: Bailer is at the bottom of the well from previous investigations.

Water Level Data

Measuring point description: ☐ Mark/notch on TOC ☐ North rim of TOC ☒ Other:

Water level meter: ☐ Heron Dipper-T ☐ Slope Water Level Indicator ☒ Other: Solinst

		Pre-purge initial	Pre-purge confirmation	During purging	Purge end	After sampling	Remarks
Time	24-hour	1130		1155	1205	1300	
Depth to Water	feet	17.42		17.46	17.46	17.44	
Product	LNAPL/DNAPL	3/1/11		3/1/11			
Prod. thickness	feet						

Field Data

Field data meters:		Pump description:	Bailer description:
☒ Hydrolab MiniSonde	☐ LaMotte 2020 Turbidimeter	☒ Peristaltic	☐ Disposable polyethylene
☐ Hydrolab DataSonde	☐ Hach 2100P Turbidimeter	☐ Bladder (dedicated / portable)	☐ Disposable Teflon
☐ Other:	☒ Other: HF Scientific	☐ Submersible	☐ Disposable PVC

Purge depth	feet	20	Well goes dry during purging: ☐ Yes ☐ No									
Casing vol.	gallons		= [total depth (feet) – depth to water (feet)] • [well ID (inches)^2] • 0.0408									
Time	24-hour	1145	1150	1154	1158	1202	1205					Remarks
Purge vol.	gallons	0.04	0.1	0.13	0.18	0.2	0.25					
Purge rate	mL/min	100	75	75	75	75	75					
pH	su	5.45	5.26	5.32	5.28	5.29	5.26					
Temp.	°C	21.92	21.58	21.64	21.74	22.09	21.65					
Spec. cond.	µS/cm	67	46	45	45	44	44					
D.O.	mg/L											
ORP	mV											
Turbidity	ntu	414	158	70.6	39	27	25					
Color/tint		Cloudy white with oil sheen to clear										
Odor		Slight hydrocarbon to hydrocarbon odor										

Sample Data

Sample ID	Date	Time	# Containers	# Filtered	Remarks
MW-7	3/1/2011	1130	11	1	TPH Low (2), Volatiles (2)
MW-7-D	3/1/2011	1141	11	1	Fluoride by IC (1), PPM (1), PPMD (1)
					PAHs (2), Diesel & Oil Range (2)

Sampler's Name (print): Emily Hollingsworth	Sampler Signature: Emily Hollingsworth

FIELD DATA SHEET

SITE ID: SW-6 / SD-6	PROJECT NAME: NCI
UTM: Map Datum: NAD 83 Zone:	PROJECT NUMBER: 3013-132
Easting: 92.65627 Northing: 33.30874	AGENCY: ADEQ
SAMPLING CREW: JWB	REASON FOR PROJECT: CSA
FORM COMPLETED BY JWB	DATE: 2/23/11 TIME: 1745 AM PM

WEATHER CONDITIONS

Now		24-Hrs
☐	storm (heavy rain)	☐
☐	rain (steady rain)	☐
☒	80 %cloud cover	☐
☐	clear/sunny	☐

Has there been a heavy rain in the last 7 days? ☐ Yes ☐ No

Air Temperature 60 °F or °C

Wind Speed 5 mph

Wind Direction (To the): South

IN SITU WATER QUALITY

Total depth of water at measurement location: 0.5 ft WQ Instrument: Hydrolab # 6

Measurement Depth (ft)	0.5ft		
Tempature (°F or °C)	16.54		
Conductivity (umhos/cm)	671		
DO (mg/L)	—		
pH (su)	6.64		

Sample Collected? ☒ Yes ☐ No Date: 2/23/11 Time 1805 At Depth: 0.5

Sample Type: ☐ Groundwater ☒ Surface Water ☐ Leachate

OBSERVE

Water Odors:
☐ Normal/None ☐ Sewage
☐ Petroleum ☐ Chemical
☒ Fishy ☐ Other

Water Surface Oils:
☐ Slick ☐ Sheen
☒ None ☐ Flecks
☐ Globs ☐ Other

Turbidity (if not measured):
☐ Clear ☒ Slightly turbid ☐ Turbid
☐ Opaque ☐ Stained ☐ Other

WATER/BODY CHARACTER

Cross section measured? ☐ Yes ☒ No NO FLOW
Flow measured? ☐ Yes ☒ No
Relative Flow Conditions: Low Medium High Flow Direction: _____.

SOIL/SED/ SLUDGE CHARACTER

Soil Collected and Type? ☒ Yes ☐ No Date: 2/23/11 Time: 1800
☐ Soil ☐ Industrial Sludge ☐ Municipal Sludge ☒ Sediment

PHOTOS

Photos? ☒ Yes ☐ No
Order of Photos:

NOTES

FIELD DATA SHEET

SITE ID: SW-5 / SD-5	PROJECT NAME: NCI
UTM: Map Datum: NAD 83 Zone:	PROJECT NUMBER: 3013-132
Easting: 92.65581 Northing: 33.30477	AGENCY: ADEQ
SAMPLING CREW: JWB	REASON FOR PROJECT: CSA
FORM COMPLETED BY JWB	DATE: 2/24/11 TIME: 1130 (AM) PM

WEATHER CONDITIONS

Now		24-Hrs
☐	storm (heavy rain)	☐
☐	rain (steady rain)	☐
☐	___%cloud cover	☐
☐	clear/sunny	☐

Has there been a heavy rain in the last 7 days? ☐ Yes ☒ No

Air Temperature 65 (°F) ~~°C~~

Wind Speed 15-20 mph

Wind Direction (To the): North

IN SITU WATER QUALITY

Total depth of water at measurement location: 0.5 ft WQ Instrument: Hydrolab # 6

Measurement Depth (ft)	0.5		
Tempature (°F or °C)	15.33		
Conductivity (umhos/cm)	660		
DO (mg/L)	—		
pH (su)	6.16		

Sample Collected? ☒ Yes ☐ No Date: 2/24/11 Time 1200 At Depth: 0.5

Sample Type: ☐ Groundwater ☒ Surface Water ☐ Leachate

OBSERVE

Water Odors:
☒ Normal/None ☐ Sewage
☐ Petroleum ☐ Chemical
☐ Fishy ☐ Other

Water Surface Oils:
☐ Slick ☐ Sheen
☒ None ☐ Flecks
☐ Globs ☐ Other

Turbidity (if not measured):
☒ Clear ☐ Slightly turbid ☐ Turbid
☐ Opaque ☐ Stained ☐ Other

WATER/BODY CHARACTER

Cross section measured? ☐ Yes ☒ No
Flow measured? ☐ Yes ☒ No
Relative Flow Conditions: (Low) Medium High Flow Direction: SE

SOIL/SED/ SLUDGE CHARACTER

Soil Collected and Type? ☒ Yes ☐ No Date: 2/24/11 Time: 1205
☐ Soil ☐ Industrial Sludge ☐ Municipal Sludge ☒ Sediment

PHOTOS

Photos? ☐ Yes ☒ No
Order of Photos:

NOTES

FIELD DATA SHEET

SITE ID: SW-4/SD-4	PROJECT NAME: NCI
UTM: Map Datum: NAD 83 Zone:	PROJECT NUMBER: 3013-132
Easting: 92,657.09 Northing: 33,305.60	AGENCY: ADEQ
SAMPLING CREW: JWB	REASON FOR PROJECT: CSA
FORM COMPLETED BY JWB	DATE: 2/24/11 TIME: 1257 AM PM

WEATHER CONDITIONS

Now		24-Hrs
☐	storm (heavy rain)	☐
☐	rain (steady rain)	☐
☒	90 %cloud cover	☒
☐	clear/sunny	☐

Has there been a heavy rain in the last 7 days? ☐ Yes ☒ No

Air Temperature 70 °F or °C

Wind Speed 15-20 mph

Wind Direction (To the): N.

IN SITU WATER QUALITY

Total depth of water at measurement location: ft WQ Instrument: Hydrolab #

Measurement Depth (ft)	0.4		
Tempature (°F or °C)	17.81		
Conductivity (umhos/cm)	643		
DO (mg/L)	—		
pH (su)	6.39		

Sample Collected? ☒ Yes ☐ No Date: 2/24/11 Time 1245 At Depth: 0.4

Sample Type: ☐ Groundwater ☒ Surface Water ☐ Leachate

OBSERVE

Water Odors:
☒ Normal/None ☐ Sewage
☐ Petroleum ☐ Chemical
☐ Fishy ☐ Other

Water Surface Oils:
☐ Slick ☐ Sheen
☒ None ☐ Flecks
☐ Globs ☐ Other

Turbidity (if not measured):
☒ Clear ☐ Slightly turbid ☐ Turbid
☐ Opaque ☐ Stained ☐ Other

WATER/BODY CHARACTER

Cross section measured? ☐ Yes ☒ No
Flow measured? ☐ Yes ☒ No
Relative Flow Conditions: (Low) Medium High Flow Direction: SE

SOIL/SED/ SLUDGE CHARACTER

Soil Collected and Type? ☒ Yes ☐ No Date: 2/24/11 Time: 1300
☐ Soil ☐ Industrial Sludge ☐ Municipal Sludge ☒ Sediment

PHOTOS

Photos? ☐ Yes ☒ No
Order of Photos:

NOTES

FIELD DATA SHEET

SITE ID: SW-7	PROJECT NAME: NCI
UTM: Map Datum: NAD 83 Zone:	PROJECT NUMBER: 3013-132
Easting: 92,654.33 Northing: 33,310.18	AGENCY: ADEQ
SAMPLING CREW: JWB	REASON FOR PROJECT: CSA
FORM COMPLETED BY JWB	DATE: 2/25/11 TIME: 1105 AM PM

WEATHER CONDITIONS

Now		24-Hrs
☒	storm (heavy rain)	☒
☐	rain (steady rain)	☐
☐	___%cloud cover	☐
☐	clear/sunny	☐

Has there been a heavy rain in the last 7 days? ☒ Yes ☐ No

Air Temperature 60 °F or °C

Wind Speed 5-10 mph

Wind Direction (To the): S

IN SITU WATER QUALITY

Total depth of water at measurement location: 0.2 ft WQ Instrument: Hydrolab #

Measurement Depth (ft)	0.2		
Tempature (°F or °C)	18.40		
Conductivity (umhos/cm)	183		
DO (mg/L)	—		
pH (su)	7.12		

Sample Collected? ☒ Yes ☐ No Date: 2/25/11 Time 1105 At Depth: 0.2

Sample Type: ☐ Groundwater ☒ Surface Water ☐ Leachate

OBSERVE

Water Odors:
- ☐ Normal/None
- ☒ Petroleum
- ☐ Fishy
- ☐ Sewage
- ☐ Chemical
- ☐ Other

Water Surface Oils:
- ☐ Slick
- ☐ None
- ☐ Globs
- ☒ Sheen
- ☐ Flecks
- ☐ Other

Turbidity (if not measured):
- ☒ Clear
- ☐ Opaque
- ☐ Slightly turbid
- ☐ Stained
- ☐ Turbid
- ☐ Other

WATER/BODY CHARACTER

Cross section measured? ☐ Yes ☒ No

Flow measured? ☐ Yes ☒ No

Relative Flow Conditions: Low Medium High Flow Direction:_____.

SOIL/SED/ SLUDGE CHARACTER

Soil Collected and Type? ☐ Yes ☐ No Date: Time:

☐ Soil ☐ Industrial Sludge ☐ Municipal Sludge ☐ Sediment

PHOTOS

Photos? ☐ Yes ☐ No

Order of Photos:

NOTES

Duplicate collected = ~~MW-7-D~~ 1115

SW-7-D

FIELD DATA SHEET

SITE ID: SW-3/SD-3	PROJECT NAME: NCI
UTM: Map Datum: NAD 83 Zone:	PROJECT NUMBER: 3013-132
Easting: Northing:	AGENCY: ADEQ
SAMPLING CREW: JWB	REASON FOR PROJECT: CSA
FORM COMPLETED BY JWB	DATE: 2/25/11 TIME: 1227 (AM) PM

WEATHER CONDITIONS

Now		24-Hrs
☒	storm (heavy rain)	☒
☐	rain (steady rain)	☐
☐	___%cloud cover	☐
☐	clear/sunny	☐

Has there been a heavy rain in the last 7 days? ☒ Yes ☐ No

Air Temperature 60 (°F) or °C

Wind Speed 5-10 mph

Wind Direction (To the): S

IN SITU WATER QUALITY

Total depth of water at measurement location: 0.5 ft WQ Instrument: Hydrolab #

Measurement Depth (ft)	0.7		
Tempature (°F or °C)	17.33		
Conductivity (umhos/cm)	563		
DO (mg/L)	—		
pH (su)	6.66		

Sample Collected? ☒ Yes ☐ No Date: 2/25/11 Time 1230 At Depth: 0.5

Sample Type: ☐ Groundwater ☒ Surface Water ☐ Leachate

OBSERVE

Water Odors:
☒ Normal/None ☐ Sewage
☐ Petroleum ☐ Chemical
☐ Fishy ☐ Other

Water Surface Oils:
☐ Slick ☐ Sheen
☒ None ☐ Flecks
☐ Globs ☐ Other

Turbidity (if not measured):
☐ Clear ☐ Slightly turbid ☐ Turbid
☒ Opaque ☐ Stained ☐ Other

WATER/BODY CHARACTER

Cross section measured? ☐ Yes ☒ No
Flow measured? ☐ Yes ☒ No
Relative Flow Conditions: Low (Medium) High Flow Direction: _____.

SOIL/SED/ SLUDGE CHARACTER

Soil Collected and Type? (Yes) ☐ No Date: 2/25/11 Time: 1235
☐ Soil ☐ Industrial Sludge ☐ Municipal Sludge ☒ Sediment

PHOTOS

Photos? ☐ Yes ☒ No
Order of Photos:

NOTES

FIELD DATA SHEET

SITE ID: SW-1/SD-1	PROJECT NAME: NCI
UTM: Map Datum: NAD 83 Zone:	PROJECT NUMBER: 3013-132
Easting: Northing:	AGENCY: ADEQ
SAMPLING CREW: EJH	REASON FOR PROJECT: CSA
FORM COMPLETED BY EJH	DATE: 2/28/11 TIME: 1245 AM (PM)

WEATHER CONDITIONS

Now	24-Hrs
☐ storm (heavy rain)	X
☐ rain (steady rain)	☐
☐ ___%cloud cover	☐
X clear/sunny	☐

Has there been a heavy rain in the last 7 days? X Yes ☐ No

Air Temperature 62 (°F) or °C

Wind Speed SE @ 10-15 mph

Wind Direction (To the): SE

IN SITU WATER QUALITY

Total depth of water at measurement location: 1 ft WQ Instrument: Hydrolab # #7

Measurement Depth (ft)	0.5		
Tempature (°F or °C)	17.04		
Conductivity (umhos/cm)	108		
pH ~~DO (mg/L)~~	5.53		
pH (su)			

Sample Collected? X Yes ☐ No Date: 2/28/11 Time 1245 At Depth: 0.5

Sample Type: ☐ Groundwater X Surface Water ☐ Leachate

OBSERVE

Water Odors:
☐ Normal/None X Sewage
☐ Petroleum ☐ Chemical
X Fishy ☐ Other

Water Surface Oils:
☐ Slick X Sheen
☐ None ☐ Flecks
☐ Globs ☐ Other

Turbidity (if not measured):
☐ Clear ☐ Slightly turbid X Turbid
☐ Opaque ☐ Stained ☐ Other Yellow Brown

WATER/BODY CHARACTER

Cross section measured? ☐ Yes X No
Flow measured? ☐ Yes X No
Relative Flow Conditions: (Low) Medium High Flow Direction: ___

SOIL/SED/ SLUDGE CHARACTER

Soil Collected and Type? X Yes ☐ No Date: 2/28/11 Time: 1255
☐ Soil ☐ Industrial Sludge ☐ Municipal Sludge X Sediment

PHOTOS

Photos? X Yes ☐ No
Order of Photos:

NOTES

TPH Low Fraction - 2 40mL Amb HCL
PAHs by HPLC - 2 1L Amb No Pres
Chromium, Lead - 500mL HDPE - HNO3
SD-1-D 1310

Diesel & Oil Ranges, PAHs Chrom. Lead TPH Low Fraction GRO Volatiles

FIELD DATA SHEET

SITE ID: SW-2	PROJECT NAME: Norphlet CSA
UTM: Map Datum: NAD 83 Zone:	PROJECT NUMBER: 3013-132
Easting: Northing:	AGENCY:
SAMPLING CREW: EJH	REASON FOR PROJECT: CSA
FORM COMPLETED BY EJH	DATE: 2/24/11 TIME: 1330 AM PM

WEATHER CONDITIONS

Now		24-Hrs
☐	storm (heavy rain)	☐
☐	rain (steady rain)	☐
☒	70 %cloud cover	☒ 100%
☐	clear/sunny	☐

Has there been a heavy rain in the last 7 days? ☐ Yes ☒ No

Air Temperature 70 °F or °C

Wind Speed 15 to 20 mph mph

Wind Direction (To the): SSE

IN SITU WATER QUALITY

Total depth of water at measurement location: 2.1 ft WQ Instrument: Hydrolab # 7

Measurement Depth (ft)	1.5 ft		
Tempature (°F or °C)	16.86		
Conductivity (umhos/cm)	917.2		
DO (mg/L)			
pH (su)	7.56		

Sample Collected? ☒ Yes ☐ No Date: 2/24/11 Time 1330 At Depth: 1ft

Sample Type: ☐ Groundwater ☒ Surface Water ☐ Leachate

OBSERVE

Water Odors:
- ☐ Normal/None
- ☐ Petroleum
- ☐ Fishy
- ☐ Sewage
- ☐ Chemical
- ☐ Other

Water Surface Oils:
- ☒ Slick
- ☒ Sheen
- ☐ None
- ☐ Flecks
- ☐ Globs
- ☐ Other

Turbidity (if not measured):
- ☐ Clear
- ☐ Slightly turbid
- ☐ Turbid
- ☐ Opaque
- ☐ Stained
- ☐ Other

WATER/BODY CHARACTER

Cross section measured? ☐ Yes ☒ No

Flow measured? ☐ Yes ☒ No

Relative Flow Conditions: (Low) Medium High Flow Direction: South

SOIL/SED/ SLUDGE CHARACTER

Soil Collected and Type? ☒ Yes ☐ No Date: 2/24/11 Time: 1400

- ☐ Soil
- ☐ Industrial Sludge
- ☐ Municipal Sludge
- ☒ Sediment

PHOTOS

Photos? ☒ Yes ☐ No

Order of Photos:

NOTES

[illegible]

Daily Log

Site Location: Norphet Chemical Inc.	Date: 3/2/11
Project Number: 3013-132	Page of

	Depth to gw from TOC	Ground Surface		Depth to Hic	Total Depth
MW-1	14.98-15.85 oil	15.85 Hic	EMP-5	16.12	25.55
MW-2	14.90		EMP-10	Locked	
MW-3	18.03		EMP-12	Locked	
MW-4	19.53	*.1 oil	EMP-11	Locked	
MW-5	16.89		EMP-?	Locked near NW boundary	
MW-6	14.43				
MW-7	17.42				
NCI-0	26.63	3.16			
NCI-1	19.92	1.43			
NCI-2	17.49	0.78			
NCI-3	18.86	3.02			
NCI-4	17.06	3.04			
NCI-5	43.36	3.09			
NCI-6	26.12	0.92			
NCI-7	24.78	3.20			
NCI-8	NA	—			
NCI-9	16.68	1.18			
NCI-10	5.03	3.20			
NCI-11	8.43	2.78			
NCI-12	3.38	-3			
NCI-13	3.87	0.98			
NCI-14	6.19	4.02			
NCI-15	10.26	4.02			
NCI-16	8.99	2.94			
NCI-17	12.96	2.95			
NCI-18	16.76	2.95			
NCI-19	17.80	1.01			
NCI-20	17.13	1.28			
P-1			could not locate P-1, P-3, P-4, P-6, P-9, P-10, or P-11		
P-2	16.75				
P-3					
P-4					
P-5	16.49				
P-6					
P-7	17.91	Bailer@Bottom			
P-8	18.24				
P-9					
P-10					
P-11					
P-12	Bailer stuck inside of casing. No W.L.				

FTN Associates Calibration Form

Date/Time: 2/22/11
Prepared By: JWS [illegible] H
Location: NLI
Project #: 3113-132

Instrument Type	Instrument ID	Parameter	Standard (su)	Units	Temp. of Standard (degrees C)	Reading Prior to Calibration	Calibrated	Post Calibration Reading	Comments
Hydrolab	6	pH	7	su	12.41	7.08	(Y) N	7.00	
mini SonDE		pH	4	su	12.26	4.02	(Y) N	4.00	
		~~pH~~	~~10~~	~~su~~			~~Y N~~		
		Cond	0	uS/cm	9.43	2.0	(Y) N	0.0	
		Cond	447	uS/cm	11.36	530	(Y) N	447	
		DO		mm/Hg		mg/l	Y N	mg/l	
		Temp		Degrees C	11.36	10.0	Y N	N/A	
							Y N		
H.F. Scientific	#2	Turbidity	1000	NTU	—	1160	(Y) N	1001	
			10		—	12.92	(Y) N	10.31	
			0.02		—	0.00	Y N	0.0	
							Y N		
							Y N		
							Y N		
							Y N		

Notes:
pH Calibration (pH Method: EPA 150.1)
Specific Conductivity Calibration: Calibrate first to zero using air, then to standard using standard solution.
DO Calibration: Use 100% air saturation method. Use pressure in mm/Hg as standard to calibrate in DO% saturation. Record readings in mg/l.
Temperature Calibration: No calibration is necessary. Simply record temperature of standard using thermometer while in calibration cup.
Then record hydrolab temperature reading.

Precision and accuracy targets are commonly based on relative percent differences. Precision is either based on a relative percent difference between replicates (analytical precision) or duplicate samples (method precision) as follows:

Relative Percent Difference (RPD) = 100 * (rep1 - rep2)/(rep1 + rep2)/2

The standard deviation of the average of a group of replicate (or duplicate) pairs represents the precision for a measurement parameter. For accuracy, percent difference is determined relative to a known or target value and is as follows:

Percent Difference = 100 * (observed - target)/target

FTN Associates Calibration Form

Date/Time: 2/23/11 1115
Prepared By: JWB
Location: — NCI
Project #: 3013-132

Instrument Type	Instrument ID	Parameter	Standard (su)	Units	Temp. of Standard (degrees C)	Reading Prior to Calibration	Calibrated	Post Calibration Reading	Comments
Hydrolab	6	pH	7	su	14.59	6.73	Y N	7.00	
MiniSonde		pH	4	su	13.82	4.26	(Y) N	4.00	
		~~pH~~	~~10~~	~~su~~			~~Y N~~		
		Cond	0	uS/cm	—	0.0	(Y) N	0.0	
		Cond	447	uS/cm	14.97	462	Y N		
		DO		mm/Hg		mg/l	Y N	mg/l	
		Temp		Degrees C	14.59	14	Y (N)	N/A	
							Y N		
							Y N		
							Y N		
							Y N		
							Y N		
							Y N		
							Y N		
							Y N		

Notes:
pH Calibration (pH Method: EPA 150.1)
Specific Conductivity Calibration: Calibrate first to zero using air, then to standard using standard solution.
DO Calibration: Use 100% air saturation method. Use pressure in mm/Hg as standard to calibrate in DO% saturation. Record readings in mg/l.
Temperature Calibration: No calibration is necessary. Simply record temperature of standard using thermometer while in calibration cup.
Then record hydrolab temperature reading.

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Relative Percent Difference (RPD) = 100 * (rep1 - rep2)/(rep1 + rep2)/2

The standard deviation of the average of a group of replicate (or duplicate) pairs represents the precision for a measurement parameter. For accuracy, percent difference is determined relative to a known or target value and is as follows:

Percent Difference = 100 * (observed - target)/target

FTN Associates Calibration Form

Date/Time: 2/24/11
Prepared By: JWR
Location: NC1
Project #: 3013-132

Instrument Type	Instrument ID	Parameter	Standard (su)	Units	Temp. of Standard (degrees C)	Reading Prior to Calibration	Calibrated	Post Calibration Reading	Comments
Hydrolab	6	pH	7	su	16.75	7.21	(Y) N	7.00	
MS4a		pH	4	su	16.47	3.76	(Y) N	4.00	
		~~pH~~	~~10~~	~~su~~			Y N		
		Cond	0	uS/cm	—	0.0	(Y) N	0.0	
		Cond	447	uS/cm	16.17	437	(Y) N	447	
		DO		mm/Hg		mg/l	Y N	mg/l	
		Temp	16.36	Degrees C	16.5	—	~~Y N~~	~~N/A~~	
							Y N		
Hydrolab	7	pH	7	su	17.11	6.92	(Y) N	7.0	
MS4~~a~~5		pH	4	su	16.78	4.00	(Y) N	4.0	
		Cond.	447	uS/cm	16.59	528.4	(Y) N	446.9	
		Temp	17.30	C°	17.25	—	~~Y N~~		
							Y N		
							Y N		
							Y N		

Notes:
pH Calibration (pH Method: EPA 150.1)
Specific Conductivity Calibration: Calibrate first to zero using air, then to standard using standard solution.
DO Calibration: Use 100% air saturation method. Use pressure in mm/Hg as standard to calibrate in DO% saturation. Record readings in mg/l.
Temperature Calibration: No calibration is necessary. Simply record temperature of standard using thermometer while in calibration cup.
Then record hydrolab temperature reading.

Precision and accuracy targets are commonly based on relative percent differences. Precision is either based on a relative percent difference between replicates (analytical precision) or duplicate samples (method precision) as follows:

Relative Percent Difference (RPD) = 100 * (rep1 - rep2)/(rep1 + rep2)/2

The standard deviation of the average of a group of replicate (or duplicate) pairs represents the precision for a measurement parameter. For accuracy, percent difference is determined relative to a known or target value and is as follows:

Percent Difference = 100 * (observed - target)/target

FTN Associates Calibration Form

Date/Time: 3/1/2011 0710
Prepared By: EJH
Location: Norphet Chemical Inc.
Project #: 393-132

Instrument Type	Instrument ID	Parameter	Standard (su)	Units	Temp. of Standard (degrees C)	Reading Prior to Calibration	Calibrated	Post Calibration Reading	Comments
Hydrolab	FTN#6	pH	7	su	8.57	6.98	(Y) N	7.00	
MiniSonde		pH	~~4~~ 10	su	8.11	3.92	Y N	4.00	
4a		pH	~~10~~	su			Y N		
		Cond	0	uS/cm	8.03	1	(Y) N	0	
		Cond	447	uS/cm	6.01	491	(Y) N	447	
		DO	—	mm/Hg		mg/l	Y ~~N~~	mg/l	
		Temp	—	Degrees C	10.25	9.75	~~Y N~~	N/A	
							Y N		
HF Scientific	FTN#2	Turbidity	1000	NTU	—	997.0	(Y) N	1000	
			10	↓	—	10.32	(Y) N	9.72	
			0.02		—	0	(Y) N	0.00	
							Y N		
							Y N		
							Y N		
							Y N		

Notes:
pH Calibration (pH Method: EPA 150.1)
Specific Conductivity Calibration: Calibrate first to zero using air, then to standard using standard solution.
DO Calibration: Use 100% air saturation method. Use pressure in mm/Hg as standard to calibrate in DO% saturation. Record readings in mg/l.
Temperature Calibration: No calibration is necessary. Simply record temperature of standard using thermometer while in calibration cup.
Then record hydrolab temperature reading.

Precision and accuracy targets are commonly based on relative percent differences. Precision is either based on a relative percent difference between replicates (analytical precision) or duplicate samples (method precision) as follows:

Relative Percent Difference (RPD) = 100 * (rep1 - rep2)/(rep1 + rep2)/2

The standard deviation of the average of a group of replicate (or duplicate) pairs represents the precision for a measurement parameter. For accuracy, percent difference is determined relative to a known or target value and is as follows:

Percent Difference = 100 * (observed - target)/target

FTN Associates Calibration Form

Date/Time: 3/3/2011 0930
Prepared By: EJH
Location: FTN Fay. Office
Project #: 3013-132

Instrument Type	Instrument ID	Parameter	Standard (su)	Units	Temp. of Standard (degrees C)	Reading Prior to Calibration	Calibrated	Post Calibration Reading	Comments
Hydrolab	FTN#6	pH	7	su	0.35	6.97	(Y) N	7.00	
Mini Sonde		pH	4	su			Y N		
4a		pH	10	su	8.85	1.72	(Y) N	10.00	
		Cond	0	uS/cm	1.60	0	(Y) N	0	
		Cond	447	uS/cm	0.86	439	(Y) N	446	
		DO		mm/Hg		mg/l	Y N	mg/l	
		Temp	-	Degrees C	9.31	9.5	~~Y N~~	N/A	
							Y N		
							Y N		
							Y N		
							Y N		
							Y N		
							Y N		
							Y N		
							Y N		

Notes:
pH Calibration (pH Method: EPA 150.1)
Specific Conductivity Calibration: Calibrate first to zero using air, then to standard using standard solution.
DO Calibration: Use 100% air saturation method. Use pressure in mm/Hg as standard to calibrate in DO% saturation. Record readings in mg/l.
Temperature Calibration: No calibration is necessary. Simply record temperature of standard using thermometer while in calibration cup.
Then record hydrolab temperature reading.

Precision and accuracy targets are commonly based on relative percent differences. Precision is either based on a relative percent difference between replicates (analytical precision) or duplicate samples (method precision) as follows:

Relative Percent Difference (RPD) = 100 * (rep1 - rep2)/(rep1 + rep2)/2

The standard deviation of the average of a group of replicate (or duplicate) pairs represents the precision for a measurement parameter. For accuracy, percent difference is determined relative to a known or target value and is as follows:

Percent Difference = 100 * (observed - target)/target

Invoice: Date : 15Feb11 Shipping : 0.00
Customer : P347091 Weight : 10 LBS Special : 0.00
Phone : (615)758-5858 COD : 0.00 Handling : 0.00
Dept : DV : 0.00 Total : 0.00

Svcs: STANDARD OVERNIGHT
TRCK: 4355 9315 5624

Invoice: Date : 15Feb11 Shipping : 0.00
Customer : P346932 Weight : 10 LBS Special : 0.00
Phone : (615)758-5858 COD : 0.00 Handling : 0.00
Dept : DV : 0.00 Total : 0.00

Svcs: STANDARD OVERNIGHT
TRCK: 4355 9315 5289

Invoice: Date : 15Feb11 Shipping : 0.00
Customer : P346932 Weight : 10 LBS Special : 0.00
Phone : (615)758-5858 COD : 0.00 Handling : 0.00
Dept : DV : 0.00 Total : 0.00

Svcs: STANDARD OVERNIGHT
TRCK: 4355 9315 5278

Invoice:
Customer : 6932
Phone : (758-5858
Dept : DV :

Svcs: STANDARD OVERNIGHT
TRCK: 4355 9315 5245

Invoice: Date : 15Feb11 Shipping : 0.00
Customer : P346932 Weight : 10 LBS Special : 0.00
Phone : (615)758-5858 COD : 0.00 Handling :
Dept : DV : 0.00 Total :

Svcs: STANDARD OVERNIGHT
TRCK: 4355 9315 5256

Invoice: Date : 15Feb11 Shipping : 0.00
Customer : P346932 Weight : 10 LBS Special : 0.00
Phone : (615)758-5858 COD : 0.00 Handling : 0.00
Dept : DV : 0.00 Total : 0.00

Svcs: STANDARD OVERNIGHT
TRCK: 4355 9315 5267

Invoice: Date : 15Feb11 Shipping : 0.00
Customer : P346944 Weight : 10 LBS Special : 0.00
Phone : (615)758-5858 COD : 0.00 Handling : 0.00
Dept : DV : 0.00 Total : 0.00

Svcs: STANDARD OVERNIGHT
TRCK: 4355 9315 4981

Invoice: Date : 15Feb11 Shipping : 0.00
Customer : P346944 Weight : 10 LBS Special : 0.00
Phone : (615)758-5858 COD : 0.00 Handling : 0.00
Dept : DV : 0.00 Total : 0.00

Svcs: STANDARD OVERNIGHT
TRCK: 4355 9315 4992

6 32281 35321 8

NORPHLET CHEMICAL

CSA

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2/21/11 - 2/25/11

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ALL-WEATHER WRITING PAPER

Name Emily Hollingsworth
FTN Associates

Address 134 W. Sunbridge Dr.
Fayetteville AR 72703

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Project Norphet Chemical
CSA 3013-132

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Daily Log 2/21/2011

Cloudy, 60-70°F, wind SSW at 8 to 10 mph, 80 to 90% humidity, chance of showers.

0700 EJH & JWB arrive on site. Two large locks seal the main (NW) entry to the property. The norm entry is also locked.

0710 EJH & JWB go to city hall, police department, & fire department all are closed for presidents day.

0725 Head to the school because it is open & find a police officer, Shrander is his name, he opens the N ~~A~~ gate for us

0755 Mayor Jim Crotty, City of Norphlet (870) 546-2534 cell (870) 310-2274 gave us a key to the gate.

0800 Arkansas one call on site Ray (501) 472-7058 He begins marking locations. Mayor off site. EJH & JWB mark gw well locations

2/21/2011 Daily Log

0835 Mark Fach on site. All begin marking surface soil locations near the NCI plant, canning building, & the drum storage building.

1000 Mark transformer location T-1 & identify Transformer location T-2 where drums malfunction occured. Need to call JLS to OK extra sample.

1030 MSE off site. I call continue to mark locations

1100 JWB begins collecting surface soil samples & EJH marks well locations.

1330 EJH finishes locating borings.

1400 TST on site with geprobe Truck mounted DPT Plate# H208507 Tennis Driller- Brent Wooster Helper- Brandon Boggs

Daily Log 2/21/2011

1650 Call JLS. Discuss shallower groundwater conditions & decide to submit samples 0.5 ft, 2, 10 ft to TOWT & TOWT for gw borings when shallower than 20 ft. Also discuss addition of T-2 & SS-15 location outside of NCI plant area.

1820 Collect soil boring equipment blank by pouring ~~two~~ Distilled Water down a 4 ft plastic DPT sampler, since clasp & shoe into sample containers. EB-2. TST off site.

1840 EJH & JWB off site.

- Tri-State Testing Services, Memphis, TN Geoprobe Systems 5410 - Truck Mounted 901-385-1199
- Boreholes were continuously logged from ground surface to total depth
- 1 inch temporary casing installed in each borehole for WL measurements & gw. sampling.
- Pre-packed, 5 ft long well screens

1420 NC1-1

RUN	From	To	PID*	% Rec	USCS	Int.
1	0	4		90	SP	0-0.5
					Gravel	0.5-0.75
					SP	0.75-3.75
					CL	3.75-3.85
					SP	3.85-4
2	4	8		95	SP	4-6
		6	9*		CL	6-6.75
					SP	7.5-8
3	8	12		95	SP	8-9
					SP	9-11
			4*			
			1.9*		CL	11-12

2/21/2011

Description

Sand, black to tan, med dense ~~stiff~~ moist strong hydrocarbon odor, fine tan sand angular limestone gravel, to cobbles

Sand, tan with black staining, fine sand moist, med stiff @ 3.5 dark black strong odor

Clay, very dry, very hard, very lean brittle, bright red

Sand, black med grained moist loose dense hyd. odor & oil staining

SAA @ 4.5 w/ red clay, @ 4.5 to 6 strong hydrocarbon odor & dark black staining

Clay, dark black, lean, extremely stiff, wet to saturated, strong H.C.O. @6.25-6.35 sand, black, med grained dry, loose, staining throughout

Sand tanish gray, fine grained, dry loose, hydrocarbon odor

SAA @ 8.75-9 transition to dark black w/ organics

Sand, very fine, gray, strong hydrocarbon odor & staining, moist, med. stiff @ 9.75 with clay till 11.

Clay w/ 10% large grained sand, gray with 20% orange mottling, dry to moist stiff

Sample Record

NCI-1-0.5	2/21/11	1420	*	PID ppm
NCI-1-2		1430	*	—
6				9
10				4
NCI-1-15 *		1455	*	12 ppm odor/skin
NCI-1-20.25		1505	TOWT	
NCI-2-0.5	2/21/11	1540		
NCI-2-2				
5				
~~12~~				
NCI-2-14 *			Strong odor/skin	
NCI-2-17			Tout "	
NCI-3-0.5	2/21/11	~~1650~~ 1700		
NCI-3-2				
NCI-3-10 *				
12.5			Strong odor/skin	
NCI-3-16.5			TOWT	
NCI-4-0.5	2/22/11	0800		
NCI-4-2				
NCI-4-20	Duplicate			
6	odor & skin		hico	
NCI-4-14 *	"		"	
18				
NCI-4-0.5D	Duplicate			
NCI-4-23	TOWT			

2/21/11 NCI-5-0.5	1000	pH & FI	2/22/11
NCI-5-2			
NCI-5-6			
NCI-5-29			
NCI-5-41			
NCI-19-0.5	1445		
NCI-19-2			
NCI-19-10			
NCI-19-21		TOWT	
NCI-20-0.5	1600		
NCI-20-2			
NCI-20-14			
NCI-20-20		TOWTV	
NCI-6-0.5	0750		2/23/11
NCI-6-2			
NCI-6-0.5D			pH FI
NCI-6-2D			
NCI-6-15	(6 or 22 = FD)		
NCI-6-24		TOWT	
NCI-7-0.5	1230		
NCI-7-2			
NCI-7-14			
NCI-7-23	TOWT		

(continued on pg. 46)

NCI-1

4	12	16	100	CL	12-13
				CL	13-15.5
			0*	SP	15.5-16
5	16	20	100	SP	16-17.75
				SP	17.75-20
					20.-20.75
				SP	~~20-20.25~~
				CL	~~20.25-20.9~~
					20.25-20.75
6	20	24	100	SP	20.75-24

24

2" dia., 4ft sampler w/ plastic sleeves
• Continuous soil samples collected from ground surface to total depth, using a 4-ft barrel sampler with plastic sleeves. Where possible, grab soil samples were collected @ 2 to 4 ft intervals & screened using headspace method with FID* to measure total organic vapor

2/21/11

SAA @ 12 to 12.5 w/ 30% sand & yellow
@ 12.5-13 Bright orange with silt lean clay, gray to white with 10% black & 10% orange mottling, very stiff fat, dry
Sand, black, moist to wet, fine sand, loose, strong odor
SAA
Sand, tan transitioning to white with orange band @ 19, moist to wet, med dense, med. grained
SAA
Clay, dark brown to black, lean wet to ~~saturated~~, loose, TOWT
Sand, orange & white, saturated, strong odor, fine grained loose to med. loose.

BOBH

• Screened from 19 to 24.
• Well completed in the interbedded sand/clay of the Cockfield Fm (Tertiary)

NCI-2

RUN	From	To	%Rec	USCS	Int.
1	0	4	95	SP	0-3
			0*	SC	3-4
2	4	8	100	SC	4-4.5
				CI	4.5-8
3	8	17	100	CI	8-9
			0*	MH	9-11
4	11	13	100	CL	11-~~14~~ 13
5	13	~~18~~ 16	100	CL	13-14
			4*	SP	~~14-16~~ 14-16

2/21/11

Description

Sand, tan, fine to med. grained dry to moist. loose

~~Sand with clay~~ clayey sand, tan with 20% red mottling @ 3 to 3.5 with 1/2 in dia. concretions, med grained dense moist, slight hydrocarbon odor (HCO)

SAA tan to light brown

Clay, gray with tan (10%), orange (10%) & black (5%) mottling, medium stiff left, moist (hydrocarbon o) @ 6 ~~stiff~~ to hard

SAA

Silt with some very fine sand, gray with orange mottling (30%), extremely hard, moist

Clay, gray with orange mottling (15%) transitioning to light gray @ 13, moist, med. stiff, ~~left~~ to tan @ 13 very stiff. dry.

SAA Strong hydrocarbon odor, tan moist

Sand, 15-15.75 dark black transitioning to light gray @ 15.75, dry to moist medium grained dense. Strong hydrocarbon odor & staining

NCI-2

RUN	From	To	% rec	USCS	Int.
6	16	20	100	SP	~~16-20~~
7	20	24	100	SP	~~20~~ 24

2/21/11

~~Description~~
SAA @ 16.25 saturated dark black + dark gray @ 17 White with strong (HCO) orange mottling loose
SAA
BOBH

Screened interval ~~15-20~~ 19-24

Well completed in the Cockfield Fm.

NC1-3

RUN	From	TO	% Rec	USCS	Int.
1	0	4	100	SP	0-~~1.5~~
				GP Gravel	1-2
				SP	2-2.5
			2*	CL	2.5-4
2	4	8	100	CL	4-7.5
			6*		
				SP	7.5-8
			1.5*		
3	8	12	100	SP	8-10.5
			6*	ML ~~CL~~	10.5-11.5
			4*	SP	11.5-12
4	12	16	100	~~SP~~ SP	12-16.5
5	16	20	25%	SP	16-20
					20

2/21/11

Description

Sand, tan to blackish tan, very fine grained dry, med. dense hydrocarbon odor @ 0.5 black & hard, laminated gravel & cobbles rounded with a large grained orange ~~ta~~ sand matrix, dry, Sandstone gravel

Sand, tan, med dense, moist + dry, some brown lamina

Clay, tan w/ 5% orange mottling, moist very stiff, fat to lean

SAA red mottling (10%) orange mottling (20%) med. stiff

Sand, medium grained, gray with orange (20) & red (20) mottling med dense moist

SAA (HCO) moist

Silt, gray with 40% dark orange mottling, extremely hard, moist

Sand, tan fine grained, med dense moist

SAA obvious contamination

Sand, 12-12.5 tan with black staing @ 12.5 wet, white to gray fine grained ~~HA 15.5~~

SAA saturated, odor & stain

BOBH

Screened from 15 to 20

Cockfield Fm.

Surface Soil Sampling Location descriptions

SS-9 Upper level near diesel generator & SW run off.

SS-10 Obvious yellow staining near the east side of the steam boiler

SS-11 Located on the North side of cooling tower 3 pt composite in surface water collection area

SS-12 Obvious staining on the east side of chilling tower 3 pt. composite

SS-13 Below the valve of TT25 tank where staining & discoloration was observed on surface soil

SS-14 SE corner of plant area

SS-15 Surface water drainage from NCI plant. 3 pt. composite near railroad track termination

SS-17 Drainage ditch draining into (SS-2) concrete culvert & ultimately the fire water pond 3 pt. composite.

2/21/11

SS-16 Drainage on the south side of HF tanks composite.

SS-18 near possible fire water pipes located in a drainage near HF tanks

SS-19 sid Drainage from NCI Plant area & Large tank

T-1 Below 3 large transformers located North of Boiler building

T-2 Below 1 smaller transformer that has obvious signs of malfunction/fire.

2/22/2011 Daily Log

Sunny with clouds, 40 to 65° F, wind ENE 5 to 10 mph, 61% humidity

0645 EJH & JWB arrive on site. Prep for day. JWB to sample GW & SW. EJH drill

0730 Drillers on site. Begin drilling at NCI-4.

1000 Begin drilling NCI-5

1300 TST off site for lunch. EJH & JWB do pid. Water level @ NCI-5 43.7 Total Depth from TOC 47.8. We'll need to sample using 1 inch bailer.

1330 EJH & JWB head to residence where MW-7 & MW-6 are located. Leave card on front door bc. no one is home.

1400 Head to NCI-19 to fill out COCs in anticipation of drillers. JWB samples gw MW-1 & MW-5

1420 Drillers on site. Begin drilling NCI-19. Extreamly strong hydrocarbon odor throughout well installation leaves me

1540

with a headache, light headed, and burning eyes.

1545 Finish NCI-19 installation & EJH is still lightheaded & not feeling well

1600 Begin installing NCI-20. JWB brings over an Ozarka bottle 1/3 full with oil decanted from MW-1. Overwhelming hydrocarbon odor from NCI-20 makes sampling difficult for me due to headache, lightheaded & burning eyes.

1730 Finish NCI-20 well installation

1745 TST off site. EJH collects GPS recordings of some historical sites.

1830 EJH collects EB-4 soil boring equipment blank

1845 EJH off site & JWB

2/22/11 NC1-4

RUN	From	To	% Rec	USCS	Int.
1	0	4	75%	SP	0-3
			50*		
				SC ~~SP/CL~~	3-4
2	4	8	100	SC	4-7
			1000*	CL	7-8
3	8	10	10@ 100	CL	8-10
4	10	12	16K 100	CL	10-12
5	12	16	100	CL	12-12.75
			95*	SP	12.25-14.5
				SCL	14.5-15.25
				SP	15.25-16

* denotes FID readings

Description

Sand, tan, fine grained, moist, loose to med. dense @ 0.75 to 2 dark black dense strong hco moist to wet

~~Sand with clay~~ Clayey sand, brown with 20% orange mottling, moist to wet, fine to medium sand, dense. Strong hco

SAA

Clay with sand, gray with orange (10%) red (5%) & tan (5%) mottling, stiff flat to lean. @ 7.75-~~8~~ to 7.9 ~~ct~~ very fine sand seam, hco

SAA

SAA very stiff 10.75 to 11.75

SAA strong hco & black staing

Sand, black with oil staing, very fine grained, wet, loose,

~~Sand with clay~~ Clayey sand, gray with orange (20%) mottling, very fine sand, dense, moist, shco

Sand, * light gray with yellow mottling, dry to moist, dense, very fine sand. hco

NCI-4

RUN	From	To	% Rec	USCS	Int.
6	16	20	100 @18 70+	SP	16-20
8	20	22	100	SP	20-22
9	22	25	100	SP	22-25
10	25	27	100	SP	25-27 27

2/22/11

Description

@18-19 wet oil staining & strong (inco), loose
19-20, moist, dense
SAA Sand, light gray with yellow mottling, med to fine sand, dense 100 sec to moist to wet
SAA @22-22.75 (Oil dinc) @ 22.75 transition to light gray, wet to saturated, loose
@ 23 Saturated
SAA
BOBH

Screened from 22 to 27 ft
ckfield Frm.

NC1.5

RUN	FROM	TO	%Rec	USCS	Int
1	0	4	90	SP	0-2
				SC	2-3
2	4	8	41* 100	SP	3-6.5
	8 11 14 17		10*	CH/SC	6.5-9
3	8	11	143* 100	SP	8-8.25
				CL/SC	8.25-9.5
				ML	9.5-11
4	11	14	21* 100	SP	11-11.75
				ML	11.75-14
5	14	16	100	ML	14-16
6	16	18.5	17* 100	ML	16-18.5
7	18.5	20	75* 100	ML	18.5-18.75
				SP	18.75-19.0

2/22/11

Description

Sand, tanish red, large grained, medium dense, dry to moist, a.c.s. with gravel. @ 2-3 with clay, brown ~~@ 3 inch clay~~. @ 3.5 with black angular gravel and yellow (20%) mottling
SAA @ 6 ft. dark black staining & HCO
Clay, gray with dark red mottling (40%) with river gravel
Very stiff, dry to moist fat
Sand, tan, med. grained, dry to moist
Clay, gray w/ dark red mottling (40%) tan rounded
med stiff, dry fat w/ river gravel
silt, gray with red mottling (30%)
med stiff to stiff, dry
Sand, tan, med. grained, moist
Silt, gray with orange mottling (20%)
stiff, dry @ 12.5 to 12.75 orange
@ 13.5 gray very stiff
SAA @ 15 to 15.25 orange with black & purple mineralization
SAA
SAA
Sand, tan, medium to fine grained, dry to moist, 100%

NCI-5

RUN	From	To	% Rec	USCS	Int.
				CL	19-19.25
				ML	19.25-20
8	20	22	100	ML	20-22
9	22	24	100	ML	22-24
10	24	26.5	82* 100	ML	24-26.5
11	26.5	30	390* 100	ML	26.5-27
			90*	SW	27-~~28.25~~
				ML	29.5-30
12	30	34	100	ML	30-30.75
				SW	30.75-31
		(Silt #1)		ML	31-31.5
				SW	31.5-33
				ML	33-34
13	34	37.5	100	ML	34-36.5
			102*	SW	36.5-36.75
				ML	36.75-37.5

Description 2/22/11

Clay, gray with black (30), orange (60) mottling, med stiff, moist, fat to lean

Silt gray, very stiff, dry @ 19.75 19.85 w/sand

~~Silty sand~~ Sandy silt, gray, very stiff, dry

SAA @ 22.5 to 22.75 orange

@ 22.75 with 5% orange mottling

SAA @ 25 to 26.5 orange, with black & gray mottling, loose to med loose dry

SAA

Sand, light gray to white, well graded very fine sand, loose to med. dense, moist @ 27 to 27.2, 28.25 to 28.5 & 28.75 to 29.50 Staining & HCO. Staining darker @ 29.50

Silt with sand, gray with 5% brown mottlings, very stiff, dry to moist

SAA with orange & yellow mottling

Sand, white, well graded, very fine grained moist (SAND #1)

Silt with sand, gray w/ orange mottling, stiff, moist sand (Sand #1)

Silt #1 @ 33.5 & 33.75 sand seam .1 in

SAA

Sand #1

Silt #1

NC1-5

RUN	From	To	O/Rec	USS	Int.
14	37.5	40	100	ML	37.5-38.5
				SW	38.5-39.5
				ML	39.5-39.75
				SW	39.75-39.85
			>10000	ML	39.85-40
15	40	43	100	ML	40-40.5
				SW	40.5-43
16	43	45	100	SW	43-45

Description 2/22/11

Silt #1
Sand #1, moist (hCO)
Silt #1
Sand #1 moist strong (HVO
Silt #1
SAA strong hCO slight strong
Sand #1, wet to saturated
Saturated @ 41 ft strong hCO odor
SAA

- Screened from 40 to 45
- Well completed in the Tertiary Cockfield Fm.

NCI-19

RUN	From	To	%	USCS	Int.
1	0	4	95	ML	0-1
			2-2*	SM	1-4
			4-17*		
2	4	8	100	SM	4-6
			6-18*	ML	6-8
			8-14*		
3	8	12	100		8-~~12~~9
			10-40*	SM	9-12
			12-22*		
4	12	16	100	SM	12-13
	16 15 21		14-8*	SW	13-16
			16-5*		
5	16	19	90	SW	16-19
			17-12*		
6	19	21	90	SW	19-20
			19-8*	SM	20-21
			20-4*		
			21-4*		

2/22/11

Description

silt, tan, dry, loose with organics
silty sand, black, fine to large grained
med dense moist. Staining throughout
& extreamly SHCO @ 3.5 to 4 with gravel
SAA
Silt with sand, red with orange (50)
& gray (20) mottling, coars sand,
med. stiff, moist extreamly SHCO &
black staining
~~sand with~~ SAA
Silty sands ~~sand with silt~~, Black with red
orange & yellow mottling, med dense
large grained sand. moist
Free product ~~tr~~ seeping from coring
SAA
sand, tan, med grained well graded
moist, med. dense strong HCO.
SAA @ 16.5 wet to saturated SHCO
SAA
Silty Sand ~~sand with silt~~, orange transitions
to light gray @ 20.5 ft w/
black mottling med. stiff moist to wet
large grained to med. grained

RUN	From	To	NC 1-19	USCS	Int.
7	21	24	50	SP	21-24 24

Description 2/22/11

SAA Saturated
BOB 11

- Screened 19-24
- Tertiary Cockfield Formation

NC1-20

RUN	From	To	%Rec	USCS	Int.
1	0	4	100	ML	0-0.75
				SM	1-4
			4-0.5*		
2	4	8	100	SM	4-6
			6-1.5*	ML ~~[illegible]~~	6-8
			8-0*		
3	8	12	100	ML ~~[illegible]~~	8-9
	11.5		10-2*	SW	9-12
			12-0*		
4	12	15	100	SW	12-15
			14-3*		
5	15	19	100	SW	15-17.5
			17-0*		
				SM	17.5-19
6	19	20	19-0* 100	SM	19-20
7	20	21	20.5*	SM	20-21
					21

2/22/11

Description

Silt Brown, dry loose
Silty sand, black, fine grained, dense
Sand, moist strong HCO & staining
throughout
SAA
~~[illegible]~~ silt with sand
~~Silt with sand~~, red with organic
mottling (same silt as NC1-19)
SAA
sand, tan with some orange
& yellow mottling, dense
large grained, dry to moist
SAA med. grained, moist @
12.5-12.75 orange 14.5 to 14.75
yellow
SAA @ 15.5 wet to saturated (tan to
white
~~Sand with silt~~ silty sand, orange with some
white lamina @ 18.75, med. stiff
moist, med grained to lavage
SAA wet to saturated
SAA
BOBH

Screened 76 to 21

2/23/11 Daily Log

Overcast. 50-65°F. Light wind, high humidity, afternoon showers

0700 EJH & JWB on site. JWB continues gw sampling. EJH ~~try~~ tries to locate home owners of MW-7 & MW-6.

0730 TST on site. Setup at NCI-6

0930 Drill to 33 ft at NCI-6 with out hitting a saturated interval. At 28 ft have a black silt with some sand, which we have not seen anywere else yet.

0945 Drill rig has a hydralic leak. Leak is small & oil is being caught by paper towels. TST ordered another line. Rig can keep drilling.

0955 Progress on NCI-6 Drill to 30 & set a 15 ft screen. (15 to 30)

1115 TST off site for lunch.

1215 TST back on site. Setup at NCI-7

1255 AOEG on site. Discuss progress & increased time line, strong

2/23/11

hydrocarbon odor, staining & free product. Inform them about NCI-1, possible background well, ~~that~~ had staining, odor, & possible hydrocarbons. Discuss installing a well @ east gate or near old home.

1355 AOEG off site. EJH continues @ NCI-7.

1400 Pack up & begin drilling at NCI-9. 10 ft of screen 9 to 19.

1500 Begin drilling at NCI-11.

1505 Sample NCI-11.

1600 Begin drilling at NCI-16. Encounter free product 6-8 ft in soil & seeping from the rock spaces from 8 to 12 ft. Set a 10 ft screen (2-12)

1700 TST off site. EJH prep sample bottles

1830 Collect FB-6

1930 EJH & JWB off site

EJH 2/23/11

NC1-6

RUN	From	To	% Rec	USCS	Int.
1	0	4	80	SM	0-4
	4-7				
2	4	7	100	ML	4-4.25
	7-10.5			ML	4.25-7
	4-16*				
3	7	10.5	100	ML	7-7.5
	8-4*			SP	7.5-8.5
				SM/SC	8.5-9
				SW	9-10.5
4	10.5	14	100	SW	10.5-14
	10-5*				
	12-8*				
	14-13*				
5	14	18	100	SW	14-18
	15-16*				
	16-18*				
	18-14*				

Description 0750 2/23/11

Silty Sand, tan 0 to 0.75 orange with yellow (10%) & red (5%) mottling, with organics (0 to .75) & @ 0.75 angular black gravel, medium sand, moist med dense to dense

Silt with sand, gray with large (50%) red mottling, stiff, dry to moist, large grained sand

Silt, gray with orange mottling. Stiff, dry to moist @ 6.5 staining with large grained sand

SAA

Sand, tan, fine to med grained, moist, med dense @ 8 some black staining & angular black gravel

Silty clayey sand, orange, med grained moist. med ~~stiff~~ dense to ~~stiff~~ dense, lat to tan clay

Sand, orange transitioning to tan at 10, med grained, dry to moist, loose to med dense.

SAA @ 12 laminated orange & tan layers

SAA at 15 with rounded sandstone gravel to cobbles & black staining @ 17 buff

NC1-6 2/23/11

6	18	20	100	SW	18-18.75	
				ML	18.75-19	
		20-11*		SM	19-20	
7	20	24	100	SM	20-20.5	
		22-18*		ML	20.5-22.5	
				SM	22.5-23.5	
				ML	23.5-23.75	
				SP	23.75-24	
		24-8*				
8	24	26	100	SP	24-26	
				SP/ML		
		26-9*				
9	26	28	100	ML/SP	26-28	
		28-15*				
10	28	29	100	ML	28-29	
11	29	29-14* 31	100	ML	29-31	

SAA w/ slight black staing
Silt gray, stiff, dry to moist
~~Sand with silt~~ silty sand, gray with alternating orange & tan, & gray lamina, med. stiff fine to large grained sand, dry to moist
SAA
Silt, gray with few red(2) orange(2) gray(5) mottle, stiff to very stiff, dry to moist (Silt # 1)
~~Sand with silt~~ silty sand, tan with red & orange mottling, moist, med. dense, fine to medium grained sand.
Silt (Silt #1)
Sand, white to tan with some black grains, wet moist, loose, medium grained
SAA @ 24.5 yellow with black staing moist to wet
@ 25 bright orange with silt
@ 25.5 bright red with gray lamina
Silt with sand, moist to wet, stiff
yellow to orange, large grained sand
Silt with some organic sand, black, stiff, dry
SAA very fine grained sand 930 hydrovac

(continued on next pg)

NC1-6

12	38	32	100	ML	31-32 32

2/23/2011

SAA silt transitioning to shale
BCBH gray to black, hard dry

- Bore hole back filled to ~~28~~ 30 ft
  screened from ~~18~~ 15 to ~~28~~ 30

- Borehole filled with stuff from 30 to 32

NCI-7

RUN	From	To	%Rec	USCS	Int.
1	0	4	75	ML	0-0.75
				SP	0.75-4
2	4	8	75	SM	4-4.5
	6-18*			ML	4.5-8
	8-18*				
3	8	10	100	ML	8-8.5
	10-15*			ML	8.5-10
4	10	11	100	ML	10-11
5	11	14	100	ML	11-11.75
				SW	11.75-14
	14-19*				
6	14	18	100	SW	14-18
7	18	18-17* 22	100	SW	18-22
8	22	17-19* 24	100	SW	22-24
9	24	27	100	SW	24-27
					27

2/23/11

Description

Silt, brown, moist, loose w/ organics
sand, tan with some black stang,
moist med. dense med to fine grained
~~sand with silt~~ silty sand, tan with gray, yellow
* orange mottling, med. grained sand, med dense, moist
silt with sand, gray with tan, orange
& red mottling, stiff, med. grained
sand @ 6 slight HCO
SAA
silt, gray with red (12.5%) & gray (5%)
mottling, very stiff, moist, with some large gray sand
SAA
SAA
sand, tanish-orange gradiing to
tan @ 12.25, med. grained, dense
moist
SAA, @ 17 transition to white with some black grains
SAA, moist @ 19.5 to 22 with
interlayered w/ gray silt, med. stiff moist to wet SW 19.75 to 20 & 20.25 to
20.5 wet.
SAA Saturated @ 23
SAA
BOBH Screened 22-27
Cockfield

(continued from pg. 7)

Sample log

Sample ID	Depth	Date	Time	
NCI-9-0.5		2/23/11	1445	
NCI-9-2		↓	↓	
NCI-9-10				Chromium ~~pH~~
NCI-9-12				
NCI-11-0.5		2/23/11	1545	
NCI-11-2		↓		
NCI-11-4				
NCI-11-9				
NCI-10-0.5			1630	
NCI-10-2				
NCI-10-8				
NCI-10-9				
EB-6		2/23/11	1830	~~Fluoride pH~~ Cr(VI)
NCI-8-0.5		2/24/11	0830	
NCI-8-0.5D		↓	↓	
NCI-8-2				Chromium pH (VI)
NCI-8-2D				
NCI-8-10				
NCI-8-34				
NCI-12-0.5		2/24/11	1230	
NCI-12-2		↓	↓	
NCI-12-10				
NCI-12-14				

Sample ID	Date	Time
NCI-0-0.5	2/25/11	0800
NCI-0-2	↓	↓
NCI-0-10		
NCI-0-23		
NCI-0-23D		

NC1-9

RUN	From	To	% Rec	USCS	Int.
1	0	4	100	ML	0-1
				ML	1-4
			4-380*		
2	4	8		ML	4-6
			6-22*	SW	6-8
3	8	12	100	SW	8-12
			9-54* 10-35*		
4	12	16	12-130 100	SW	12-16
5	16	20	16-385 106	SW	16-20
					20

2/23/11

Description

Silt, brown w/ some organics, loose, dry @ 0.75 stiff and black

Clayey Silt, black, moist, med. stiff, hco

SAA with large grained sand, @ 4.5 angular black gravel Shco

Sand, black transitioning to gray green @ 7, moist to wet to saturated, med. grained, med. dense

SAA, black transitioning to saturated gray @ 9 & orange @ 11 to 11.75 @ 11.75 gray

SAA ~~&~~ Shco with some black gravel

SAA saturated

BRBH

- Screened 9 to 19
- Borehole backfilled with sluff from 19 to 20 ft bgs.

NC1-11

RUN	From	To	%	USCS	Int.
1	0	4	100	SP	0-2
	4-5*			SM	2-4
2	4	8	100	SM	4-6
	6-9*			SW	6-8
	5-12*				
3	8	12	100	SW	8-12
	10-10*				12

2/23/11

Description

Sand, black, large grained sand, moist dense, with glass & other (debris) stained ~~silty sand~~ ~~sand with silt~~, gray to brown to black, moist to wet, loose to dense, stained

SAA wet to saturated

Sand, gray w/ some gravel (10%) wet to saturated, dense, med-grained

SAA saturated @ 8

BORH

Screened from 7 to 12 ft

NC1-11

RUN	From	To	%	USCS	Int.
1	0	4	100	SP	0-2
		4-5*		SM	2-4
2	4	8	100	SM	4-6
		6-9*		SW	6-8
		5-12*			
3	8	12	100	SW	8-12
		10-10*			12

2/23/11

Description

Sand, black, large grained sand, moist dense with glass & other (debris) stained ~~silty sand~~ ~~silty with silt~~, gray to brown to black, moist to wet, loose to dense, stained

SAA Wet to saturated

Sand, gray w/ some gravel (10%) wet to saturated, dense, med-grained

SAA saturated @ 8

BORH

Screened from 7 to 12 ft

NC1-10

Run ~~From~~	From	To	%Rec	USCS	Int.
1	0	4	70	SP	SP 0-4
2	4	8	100	SP	4-6
		8-164*		SM	6-8
3	8	12	100	SP	8-12
					12

2/23/11

Description dry loose

Sand, large grained tan & red @ 0.25 to 0.5 dark black, dense stained hco. @0.5 tan moist @1.75 hco & black gravel @3.5 wet @ 3.75 gray SAA Screen

Free Product, silty sand, black dense, dry to moist w/ organics stained strong hco

Sand, med. grained gray transitioning to tan @ 6 & gray light @ 11, saturated loose Free product seeping from Pore spaces

BOB ft

10 ft screen 2 to 12

2/24/2011 Daily Log

overcast, 60-70°F, wind SSE at 8 mph, 100% humidity, thunderstorms likely.

0645 EJH & JWB on site.

0740 TST on site. Head to NCI-8 to

0745 install temporary gw well. TST truck stuck in the ditch leading to NCI-8. Pull truck out & investigate rout to NCI-8. Location of NCI-8 is re-located slightly west of original locate.

0830 Begin setting up to drill NCI-8 Drilling begins. Slow progress due to TST not being able to get the sampler out of the sampler. Drill to 34 ft. & the hole is dry Call JLS. Backfill w/ bentonite chips

1230 Ann White calls to confirm NCI-8 installation

1310 TST off site for lunch / get supplies to fix rig. EJH gets a flat tire. Collects SW & SD-2

1430 TST back on site cleanup supplies @ NCI-12

2/24/11

1500 Head to NCI-16 to instal temp. gw well.

1580 Finish installation TST Decons & picksup supplies. EJH & JWB prep for shipping samples.

1600 EJH & JWB & TST off site.

1730 EJH & JWB ship samples to ESC.

RUN	From	NCI-8		%Rec	USCS	Int.
1	0	4		90	ML	0-0.75
	@ 2.5 with Black wood				ML ~~TSP~~	0.75-1.5
			1.5*		SM	1.5-4
2	4	6		100	SM	4-4.5 ~~6-6.5~~
	@ 6 ft wood		6-18*		ML	4.5 ~~6.5~~-5.25
					SM	5.25-6
			8-3 90*			
3	6	8	9-1*	100	SM	6-8
8/12 4	8	12	10-3*	100	SM	8-9
	@ 11 ft wood		12-3.5*		OL	9-12
5	12	16	14-7*	100	OL	12-16
6	16	19	16-0* 18-0*	100	OL/SP	16-19
7	19	22	20-0	100	OL/SP	19-20
					ML	20-22
8	22	23	22-1	100	ML	22-22.75
			23-50		SW	22.75-23
9	23	27		100	ML TSR	23-27
			25-0			
10	27	30		100	ML	27-30
			28-0			
			30-0			

Descriptions 2/24/11

Silt, brown, loose, dry with organics

Silt with sand & clay, gray with orange & yellow mottling, med. stiff to stiff, moist, large grained sand

~~Sand with silt~~ silty sand, gray with orange mottling & black staing, med. dense med to larg. grained sand, moist

SAA

Sandy silt with clay, gray with black (10%) & red (2.5%) mottling, med. stiff, moist ~~fat~~ large g.s. clay

~~Sand with silt~~ silty sand, gray green with black staing heo moist, loose to med dense, fine to larg. g.s.

SAA heo stain

SAA

Silt gray with orange & brown mottling, stiff, dry to moist

SAA @ 14.5 14.75 orange very stiff

~~SM~~ SAA with sand

SAA laminated orange & gray layers moist

Silt with some clay & lrg. grained sand gray to brown, stiff, moist

SAA

sand, gray with black staing, med. grained moist, med. dense

Silt gray with laminated orange to light gray ~~sand~~ fine grained sand seems, dry to moist, stiff, @ 23.5 to 23.75 wet.

SAA gray to brown 27.5 to 28 moist

RUN	FROM	NCI-8		%Rec	USCS	Int.
10	30	34	100		ML/Shale	30-34
						34

Description 2/24/11

Silt transitioning into shale, gray to black, ~~stiff to~~ hard to very hard, dry BOBH

Well is dry. Call JLS & she instructs to collect 0.5, 2, 10 & BOBH. Bore hole back filled with bentonite chips b/c. there was no water.

NCI-12

RUN	From			USCS	Int.
1	0	4	90	ML	0-0.5
			2-24*	ML	0.5-4
			4-570*		
2	4	8	75	ML	4-5
			6-970*	ML	5-8
			8-230*		
3	8	12	80	ML	8-9
				ML	9-10.5
			14-11*		
4	12	16	85	SP	10.5-12
				SP	12-16
					16

4/24/11

Description

Silt, brown, loose dry
Sandy clay silt, black, strong HCO, moist to wet, med stiff
Silt, brown, loose dry
Sandy clay silt, black w/ oil sheen, moist to wet to saturated loose to med stiff, oil staing all images extremely strong hydrocarbon odor, gooey SAA saturated
silt, gray saturated, stiff
@ 9.5 & 10.5 dark green & brown staining/precipitate
sand, gray transitioning to lighter gray @ 12.75, med dense saturated extremely strong HCO product seeping from pore spaces
SAA
BCBH

10 ft of screen
6 to 16 ft

NCI-16 2/24/11

R.F.	I	USCS	Int.	Description
1-0	-4	ML	0-.75	Silt Brown, loose, dry
		ML/SP	0.75-1.5	Sandy clay Silt, brown med dry moist hco stain
		ML/SP	1.5-4	Silty sand, black, wet to saturated, hydrocarbon seeping from poor spaces, med sand
2-4-8		SP	4-8	sand med sand gray to black saturated @7 with silt strong hco
3-8-11		SP	8-10	SAA black stain & hco
		ML	10-10.5	silt gray with orange (P) stiff wet
		SW	10.5-11	sand gray saturated strong hco med grained well graded with black grains
4	-16		11-16	No recovery
			16	BOBH

Screened from ~~5 to 10~~ 11 to 16

Depth	PID
4	600
8	20
10	15

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2/25/2011

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2/21/11

SS-1 : 1100

~~N. 33.30976~~ N 33.30905
~~W. 92.65652~~ W 92.65620
~~N.W. Corner of SS location Area~~
Sample Below Dripping pipe
on West Side of sampling area

SS-2 : 1135
N. 33.30874
W. 92.65627

SAMPle at Drainage across from
fire Water Pond.

SS-3 1200
N. 33.30893
W. 92.65416
SAMPLE Between RR tracks
and metal bldg.

SS-4 1220
N 33.30877
W 92.65358

Between RR tracks and unloading ramp behind brick building

SS-5
~~SS-4~~ 1235
N 33.30935
W 92.65385
Between metal building and RR track and in drainage
Duplicate sample collected
SS-5-D 1240
Strong Hydrocarbon smell / Black staining

SS-6 1300
N 33.30998
W 92.65417
Between property boundry and RR track
Dark staining w/ Hydrocarbon smell

SS-7 1720
N. 33.31023
W. 92.65436
At drainage w/ black staining
strong hydrocarbon smell.

SS-8 1330
N. 33.31104
W. 92.65502
Between property line and tank cars on RR track
some slight staining

SS-9 1355
N. 33.30929
W. 92.65611
In washout near Diesel generator.

SS-10 1645
N. 33.30968
W. 92.65608
North side of sampling area

SS-11 1415
N. 33.30962
W. 92.65607
composite sample of area N of cooling Water
Yellow staining of soil.

SS-12 1445
N. 33.30959 1445
W. 92.65582
composite sample East of water Cooling
yellow staining

SS-13 1500
N. 33.30935
W 92.65573
Sample take at Valve on Tank (TT-25)
south of Water cooler
Yellow staining

SS-14 1520
N. 33.30900
W. 92.65536
Between Power Station + White
tanks. low point in SE corner
of sample area

SS-15 1700
N. 33.30892
W. 92.65481
Composite Sample from the RR track

SS-16 1540
N. 33.30873
W. 92.65561
Drainage on South end
of sample area. Composite sample
Duplicate SS-16-D 1545

SS-17 1600
N. 33.30856
W. 92.65587
Drainage on S.W. corner
of sample area before crossing
road.

SS-18 1615
N. 33.30909
W. 92.65591
At Discharge Valve on West side
of sample Area

SS-19 1630
N. 33.30976
W. 92.65659
Near old refinery tank

T-1 1735
N 33.31088
W 92.65646
under transformer block
No staining

T-2 1745
N. 33.31108
W. 92.65637
under burned transformer

EB-1 1800
Equipment Blank for
Surface Soil
PCBs, PAHs, TPH, Metals
Fluoride, pH
Used store-bought D.I. poured it over
sampling shovel into jars.

Well Inventory

P-

2/25/11 Daily Log

0640 EJH JWB on site. Organize for the day.

0700 TST on site. Set up at NCI-0, new background location, in the front yard of the old home near the west entrance to the property

0815 NCI-0 appears to be clean. No staining or H.C.O. was detected during the installation

0840 Set up on NCI-17. Unstable ground & surface water drainage make NCI-17 location move towards the east

0945 Complete NCI-17 & head to NCI-18

1015 Delay in drilling progress because it is extremely hard to remove the sample from the sampler.

1230 TST off site. EJH & JWB

Continue to gw sample.

1600 EJH & JWB off site for day. Robert picked up side-by-side to take it back to the Little Rock Office.

EJH holds on to the key to the lock for the site gates & storage buildings.

2/25/11 NCl-0

RUN	From	To	%	USCS Rec	Int.
1	0	4	95	~~ML/SP~~ SM	0-3
				ML	3-4
		4-0.5			
2	4	6	100	SP	4-6
		6-0			
3	6	8	100	SP	6-8
		8-0			
4	8	11	100	SP	8-11
		10-0			
5	11	15	100	SP	11-15
		12-0			
6	15	19	100	SP	15-18.5
		18-0		SPW	18.5-19
7	19	23	90	SW	19-23
		16-0			
8	23	27	100	SW	23-27
		20-0			
		24-0			

2/25/11

Description

silty sand, tan, med. grained sand, moist, med. dense with some gray & brown mottling

silt with sand, tan with some rust (10%) color mottling, med. stiff, moist med. grained sand

sand with some silt, gray with orange & yellow mottling, loose to med. dense, dry to moist @5 tan loose dry ~~at~~

SAA dry to moist tanish orange

SAA orange with yellow (10%) orange (15%) & gray (5) mottling dense @ 10-10.5 with silt

SAA with some silt & clay very dense

SAA med. dense

sand, tan to orange, med. dense to loose med. grained dry to moist

SAA moist @ 20 orange @ 22 w/ some black (5%) mottling

SAA Saturated @ 25 orange

Screened from 22 to 27

NC1-17

RUN	From	To	%Rec	USCS	Int.
1	0	4	90	~~SM SP/ML~~	0-2
			2-280*		
			4-980*	GM	2-3
				SM	3-4
2	4	8	85	~~SM SP/ML~~	4-8
			6-570*		
			8-590*		
3	8	11	85	SP/ML	8-8.5
			10-350*	SW	8.5-11
4	11	15	90	SW	11-15
			12-2600*		
			15-170*		16

2/25/11

Description

silty sand, black to gray, med dense moist Strong hyc.o. & staining
@ 2-3 w/ gravel ~~@ 4 with wood~~
silty sand SAA
SAA @ 5 w/ gravel & 7 oil seeping
@ 8 with wood

SAA w/ wood
Sand, tan transitioning to light gray at 9.5 with some orange mottling, (10%)
moist to wet to saturated, med dense
med. grained
SAA saturated with ~~oil~~ sheene
@ 13.5 with orange mottling & rounded gravel
pink & white river gravel
BOBH

Screened from 11 to 16.

NCI-18

RUN	From	To	% Rec	USCS	Int.
1	0	4	2-0 95	SP/ML	0-3
				ML	3-4
			4-0		
2	4	8	90	ML	4-7.5
			6-0	SM	7.5-8
3	8	10	Ø		
4	10	12	100	SM	10-10.5
			8-0	ML	10.5-12
			12-0		
5	12	14	100	ML	12-12.25
				~~ML/SP~~ SM	12.25-14
6	14	16	100	SW	14-16
			16-0		
7	16	18	18-8 100	SW	16-18
8	18	20	100	SW	18-20

2/25/2011

Description

silty sand, tan transitioning to gray with orange (20%) & yellow (5%) mottling, med. dense, moist.

Silt with sand, red with gray (10%) & orange (20%) mottling stiff to hard, moist

SAA gray with red (5%) & orange (15%) mottling

~~Sand with silt~~ silty sand, gray with red (5%) mottling, dense, moist med. grained sand

NO Recovery

~~Sand with silt~~ silty sand, gray with veg & orange mottling, med. dense, moist

Silt, gray with pink to red (10%) mottling, very hard, dry to moist

SAA

Sandy silt, gray with orange & pink mottling, fine to med. grained sand, med. stiff to hard, moist to wet to saturated

sand, gray with orange mottling, saturated, med dense med. grained with some black grains

SAA tan

SAA

Screened from 15 to 20

2/28/11 Daily Log

Sunny, 60°F, few clouds, 50% humidity

1200 EJH on site. GSS & RG also on site to conduct survey. EJH unloads gear & ~~re~~ heads to SW-1/SD-1 to collect a sample.

1245 Collect SW-1 & duplicate SD-1-D.

1255 Collect SD-1. Head back to main gate to filter & package samples.

1400 EJH collects T-1-2 & T-2-2 lacs

1405 TST on site. Off load ① 55-gal drum for IDW

1420 Head to NCI-13. Off load Track Rig

1430 EJH gives Health & Safty mtg to TST. William Shaner & Brandon Beggs

1435 Begin mobilizing to NCI-13

1500 Drill/Push NCI-13 with track rig. Total depth of 14 ft bgs.

165 Begin drilling NCI-15

1730 Mobilize to NCI-14 to install well.

1750 Begin NCI-14 well installation.

1820 Finish NCI-14 well installation to a total depth of 11 ft. bgs.

1830 GGS & RG off site for day. TST decons equipment & preps to leave the site.

1900 EJH locks main gate & all are off site.

Sample Log - Continued from Book 1

SW-1	2/28/11	1245	
SD-1	2/28/11	1255	
SD-1-D	2/28/11	1310	
T-1-2		1408	
T-2-2		1405	
NCI-13-0.5	2/28/11	1500	
NCI-13-2	↓	↓	
NCI-13-6	↓	↓	
NCI-13-12	↓	↓	
EB-7	2/28/11	1800	SW & ~~Sediment~~
GW			
NCI-13	3/1/2011	0800	
NCI-15	3/1/2011	1000	
NCI-14		1200	
EB-8	3/1/2011	1800	gw eq.b.
EB-9	3/1/2011	1810	SD eq.b.
IDW-1	3/1/2011	0700	soil
IDW-2 (G)	3/2/2011	1100	gw/decon

tph (2) PPM (1) DRO (2) PAH (2)

IDW Inventory

- 4 - 55 gal drums on site, near the old office building on the east side
- IDW & PPE - Full
- Soil (NCI-1 - NCI-20) - Full
- Grandwater/Decon - 1/3 Full
- IDW & PPE - Full to ½ Full

2/28/11 NCI-B

RUN	FROM	TO	% REC	USCS	Int.
1	0	4	15	ML	0-0.75
				SM	0.75-4
2	4	8	6-50% 40	SP	4-8
3	8	12	8-14 40% 10-34 100	SW	8-12
4	12	14	12-1 100	SW	12-14
					14

Description

Silt film wet to saturated oil sheen soft

silty sand, gray with some orange mottling, ~~Same as below~~

moist, to wet, med-dense, med grained sand

Sand with silt, gray, moist to wet med. dense, med. grained sand

@ 4.5 ~~oil~~ sheen

~~SAA~~ sand, med. dense, med. grained @ 8 wet to saturated @ 11 Saturated

@ 12 light gray @ 10-12 light brown to gray

SAA with some (8%) orange mottling

BOBH

Screened from 4 to 14

1615
2/28/11

NC1-15

RUN	FROM	TO	% REC	USCS	Int.
1	0	4	95	ML	0 - 1.5
			2-10		
				SW	1.5-4
2	4	8	75	SW	4-5
			6-17	ML	5-8
3	8	12	100	ML	8 -8.75
				ML SW	8.75-10.5
			10-12	SM ~~SP/ML~~	10.5-11.5
				ML	11.5-11.75
				SW	11.75-12
4	12	16	100	SW	12-12.25
				ML	12.25-14.5
				SW	14.5-16
			16-18		
5	16	20	100	ML	16-20
					20

Description

silt, black, stiff, dry to moist
strong h.c.o. & staining
sand, med-grained, gray, moist,
med. dense strong h.co
@ 3.75 wet to saturated
SAA saturated
silt, gray with some orange (10%)
mottling, stiff, moist
SAA (Silt #1)
silt with sand, gray w/ orange (20%)
& brown (5%) mottling, stiff, moist
~~sand w/ silt~~ silty sand, gray, wet to saturated
med-dense, med grained
(Silt #1)
sand, light gray to white, very fine grained
wet, med. dense (Sand #1)
SAA
Silt #1, very stiff
Sand #1 saturated with some orange
mottling hco
Silt #1
BOBTS collapsed to 16 fill w/ stuff
screened from 6 to 16

780
2/28/11 NC1-14

RUN	From	To	%Rec	USCS	Int.
1	0	4	45	SP	0-4
			4-90*		
2	4	8	45	SP	4-7.5
			8-270*	ML	7.5-8
3	8	12	100	ML	8-10
				ML/SP	10-12
4	12	16	100	ML	12-16
5	16	20	100	ML	16-20

Description.

sand, tand, fine to large grained, wet, Strong hco & @ 2-4 Black, Screen wet to saturated. 2-4 staing & ↗

SAA with rounded gravel 4-7.5 staing & screen

silt with some gravel, moist stiff, hco gray with some black sta on

Silt with clay, gray w/ orange mottling, stif to very stif, moist

sandy silt, gray with orange mottling fine grained sand, very stiff, moist

silt with clay, gray with some orange mottling, very stiff, moist

SAA Bore hole collapse

Screend Ø1 to 10 ft

Lab contact.

- Submitted EB-series soil & sed equipment banks to lab, but due to the sm. volume lab could only run

email comm. w/ Mark Beasley

EJH asked lab to deliver extra sample containers to El Dorado Hotel. Samples were shipped to FTN Fayetteville Office on 3/1/2011. Mark Beasley of ESC indicated they would run as many analysis as possible with the small sample volume.

- Lab indicated that DRO/ORO & PAH by 8310 water samples have a 7 day holding time

- Lab will hold on surface water & ground water dissolved metals analysis till we have results of Totals metals analysis. Those samples that exceed MCLs will have dissolved analysis performed.

Lab Contact Information

ESC Lab Sciences
12065 Lebanon Road
Mt. Juliet TN 37122

(800) 767-5859

contacts:
Mark Beasley
Rebecca Shaffer

3/1/2011 Daily Log

Sunny, calm skyp. Mod. humidity

0630 EJH on site. Calibrate & prep to sample gw.

0700 Collect IDW-1 from investigation derived waste from the temporary well installations.

0800 Head to NCI-13. GGS & RG on site conducting survey. Begin collecting gw sample from NCI-13.

0830 Head to NCI-15 to begin collecting gw sample.

1000 Head to NCI-14 to begin collecting gw sample. All three wells are very slow producers. I have to keep going back to each well to pump water.

1100 Decide to allow wells to equillibrate some. Head to MW-7 to collect a gw sample.

1130 Water is clear with a H2O @ MW-7. Decide to collect

3/1/11

1140 duplicate sample MW-7-D. All pizeometers & monitoring wells previously installed on the site have a bailer inside of them. In some cases, when the well was opened, the bailer was either stuck in side or fell to the bottom of the well.

1245 continue to collect gw samples from temporary wells.

1800 Collect gw equipment blank with Walgreens brand distilled water pumped from container with a glove & WL meter by peristaltic pump to sample contains by silicone & poly. tubing.

1810 Collect EB-9 a sediment equipment blank

1815 GGS & RS off site.

1855 EJH off site. Lock main gate.

3/2/2011 Daily Log
Sunny, warm, calm winds, low humidity

0630 EJH on site. Open gates & begin collecting water levels site wide. Begin on the north side of site working south.

1030 Collect water level at NC1-14 & decide to investigate the Canning Building & Drum Storage area while I'm near the location. Open the southern gate with the key given to me by Jim Crotty, Mayor for the City of North Little Rock AR 870-360-2274. Once inside notice a shop like area with 3 aisle. Shelfs were filled with what seems to be like common shop/factory supplies to keep a facility in operating condition. There are many drums. Some drums ~~are~~

appear to have lacking compliance, either being smashed or bulging. Some drums are labled and others are not. Some drums appear to be leaking. Large equipment has a yellow dust on it & on the floor. There are many many bags of chemicals & other supplies. Animals & have altered the competency of some of the bags. There are large tanks filled full to 1/3 full with a brown liquid. Please see photo documentation.

1110 EJH exits the canning building & locks the south gate.

1115 EJH calls MSK to inform him of the findings of the canning building & continues collecting water levels.

3/2/2011 Daily Log

EJH collects an IDW-2 sample of groundwater purge water from MW-7, MW-5 & MW-1 and decontamination water.

1200 EJH ~~[illegible]~~ finishes water levels. Return to main office area to organize investigation derived waste, collect FID readings, and organize equipment.

1245 EJH finished with WL & sampling. Leaves FID for GGS to return to LR. office. EJH calls the lawyer to return the key. GGS & RG continue to survey & will lock the gate behind them.

1300 EJH off site & begins driving home to Fay. AR.

Daily Log

Site Location: Norpoint Chemical Inc.	Date: 3/2/11
Project Number: 3013-132	Page of

	Depth to gw from TOC to	Ground Surface		Depth to H2O	Total Depth
MW-1	14.98-15.85 oil	15.85 H2O	EMP-5	16.12	25.55
MW-2	16.90		EMP-10	Locked	
MW-3	18.03		EMP-12	Locked	
MW-4	19.53	*.1 of oil	EMP-11	Locked	
MW-5	16.89		EMP-?	Locked near NW boundary	
MW-6	14.43				
MW-7	17.42				
NCI-0	26.63	3.16			
NCI-1	19.92	1.43			
NCI-2	17.49	0.78			
NCI-3	18.86	3.02			
NCI-4	17.06	3.04			
NCI-5	43.36	3.09			
NCI-6	26.12	0.92			
NCI-7	24.78	3.20			
NCI-8	NA	—			
NCI-9	16.68	1.18			
NCI-10	5.03	3.29			
NCI-11	8.43	2.78			
NCI-12	3.38	-3			
NCI-13	3.87	0.98			
NCI-14	6.19	4.02			
NCI-15	10.26	4.02			
NCI-16	8.99	2.94			
NCI-17	12.96	2.95			
NCI-18	16.96	2.95			
NCI-19	17.80	1.01			
NCI-20	17.13	1.28			
P-1			could not locate P-1, P-3, P-4, P-6, P-9, P-10, or P-11		
P-2	16.75				
P-3					
P-4					
P-5	16.49				
P-6					
P-7	17.91	Bailer@Bottom			
P-8	18.24				
P-9					
P-10					
P-11					
P-12	Bailer stuck inside of casing. No W.L				

Table E.1
Groundwater Data
Volatile Organic Compounds (VOCs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Units	Acetone	Acrolein	Acrylonitrile	Benzene	Bromobenzene	Bromodichloromethane	Bromoform	Bromomethane	n-Butylbenzene	sec-Butylbenzene	tert-Butylbenzene	Carbon tetrachloride	Chlorobenzene	Chlorodibromomethane	Chloroethane	2-Chloroethyl vinyl ether	Chloroform	Chloromethane	2-Chlorotoluene	4-Chlorotoluene	1,2-Dibromo-3-Chloropropane	1,2-Dibromoethane	Dibromomethane	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	Dichlorodifluoromethane	1,1-Dichloroethane	1,2-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	1,2-Dichloropropane	1,1-Dichloropropene	1,3-Dichloropropane
MW-1	2/22/2011	FTN	ug/L	<2500	<2500	<500	<50	<50	<50	<50	<250	<50	<50	<50	<50	<50	<50	<250	<2500	<250	<130	<50	<50	<250	<50	<50	<50	<50	<50	<250	<50	<50	<50	<50	<50	<50	<50	<50
MW-5	2/22/2011	FTN	ug/L	<50	<50	<10	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<50	<5.0	<2.5	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MW-7	3/1/2011	FTN	ug/L	<50	<50	<10	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<50	<5.0	<2.5	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MW-7-D	3/1/2011	FTN	ug/L	<50	<50	<10	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<50	<5.0	<2.5	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-0	2/25/2011	FTN	ug/L	20	<50	<10	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<50	<5.0	<2.5	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-1	2/22/2011	FTN	ug/L	<50	<50	<10	0.73	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<50	<5.0	<2.5	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-2	2/22/2011	FTN	ug/L	<50	<50	<10	0.63	<1.0	<1.0	<1.0	<5.0	<1.0	2.2	0.67	<1.0	<1.0	<1.0	<5.0	<50	<5.0	<2.5	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-3	2/22/2011	FTN	ug/L	30	<50	<10	4.2	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<50	<5.0	<2.5	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-4	2/22/2011	FTN	ug/L	<50	<50	<10	6.5	<1.0	<1.0	<1.0	<5.0	<1.0	3	0.91	<1.0	<1.0	<1.0	<5.0	<50	<5.0	<2.5	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-5	2/23/2011	FTN	ug/L	<50	<50	<10	0.39	<1.0	<1.0	<1.0	<5.0	3.8	8.8	2	<1.0	<1.0	<1.0	<5.0	<50	<5.0	<2.5	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-6	2/23/2011	FTN	ug/L	19	<50	<10	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<50	<5.0	<2.5	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	0.95	<1.0	<1.0	<1.0	<1.0
NCI-7	2/23/2011	FTN	ug/L	21	<50	<10	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<50	<5.0	<2.5	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-7D	2/23/2011	FTN	ug/L	<50	<50	<10	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<50	<5.0	<2.5	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-9	2/24/2011	FTN	ug/L	22	<50	<10	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<50	<5.0	<2.5	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-10	2/24/2011	FTN	ug/L	<50	<50	<10	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<50	<5.0	<2.5	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-11	2/24/2011	FTN	ug/L	<50	<50	<10	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<50	<5.0	<2.5	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-12	2/25/2011	FTN	ug/L	20	<50	<10	0.38	<1.0	<1.0	<1.0	<5.0	<1.0	0.32	<1.0	<1.0	<1.0	<1.0	<5.0	<50	<5.0	<2.5	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-13	3/1/2011	FTN	ug/L	34	<50	<10	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<50	<5.0	<2.5	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-14	3/1/2011	FTN	ug/L	45	<50	<10	<1.0	<1.0	<1.0	<1.0	<5.0	1.6	3.6	0.97	<1.0	<1.0	<1.0	<5.0	<50	<5.0	<2.5	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-15	3/1/2011	FTN	ug/L	<50	<50	<10	8	<1.0	<1.0	<1.0	<5.0	0.55	1.8	0.42	<1.0	<1.0	<1.0	<5.0	<50	<5.0	<2.5	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-16	2/25/2011	FTN	ug/L	18	<50	<10	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<50	<5.0	<2.5	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-17	2/25/2011	FTN	ug/L	<50	<50	<10	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<50	<5.0	<2.5	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	1.5	<1.0	<1.0	<1.0	<1.0
NCI-18	2/25/2011	FTN	ug/L	<50	<50	<10	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<50	<5.0	<2.5	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-18-D	2/25/2011	FTN	ug/L	<50	<50	<10	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<50	<5.0	<2.5	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-19	2/23/2011	FTN	ug/L	18	<50	<10	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<50	<5.0	<2.5	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-20	2/23/2011	FTN	ug/L	32	<50	<10	0.39	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<50	<5.0	<2.5	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Number of Detects				11	0	0	8	0	0	0	0	3	6	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0
Number of Analysis				26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26
Minimum Detect				18	0	0	0.38	0	0	0	0	0.55	0.32	0.42	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.95	0	0	0	0
Maximum Detect				45	0	0	8	0	0	0	0	3.8	8.8	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.5	0	0	0	0
USEPA RSL Table - Tapwater (ug/L)				22000	0.042	0.045	0.41	88	0.12	8.5	8.7	na	na	na	0.44	91	0.15	21000	na	0.19	190	180	2600	0.00032	0.0065	8.2	370	na	0.43	390	2.4	0.15	340	73	110	0.39	na	730
Maximum Contaminant Level (MCL) (ug/L)				na	na	na	5	na	80	80	na	na	na	na	5	100	80	na	na	80	na	na	na	0.2	0.05	na	600	na	75	na	na	5	7	70	100	5	na	na

Table E.1
Groundwater Data
Volatile Organic Compounds (VOCs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Units	cis-1,3-Dichloropropene	trans-1,3-Dichloropropene	2,2-Dichloropropane	Di-isopropyl ether	Ethylbenzene	Hexachloro-1,3-butadiene	Isopropylbenzene	p-Isopropyltoluene	2-Butanone (MEK)	Methylene Chloride	4-Methyl-2-pentanone (MIBK)	Methyl tert-butyl ether	Naphthalene	n-Propylbenzene	Styrene	1,1,1,2-Tetrachloroethane	1,1,2,2-Tetrachloroethane	1,1,2-Trichloro-1,2,2-trifluoroethane	Tetrachloroethene	Toluene	1,2,3-Trichlorobenzene	1,2,4-Trichlorobenzene	1,1,1-Trichloroethane	1,1,2-Trichloroethane	Trichloroethene	Trichlorofluoromethane	1,2,3-Trichloropropane	1,2,4-Trimethylbenzene	1,2,3-Trimethylbenzene	1,3,5-Trimethylbenzene	Vinyl chloride	Xylenes, Total
MW-1	2/22/2011	FTN	ug/L	<50	<50	<50	<50	<50	<50	<50	31	<500	<250	<500	<50	<250	<50	<50	<50	<50	<50	<50	<250	<50	<50	<50	<50	<50	<250	<130	<50	17	<50	<50	<150
MW-5	2/22/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<5.0	<10	<1.0	2.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<2.5	<1.0	<1.0	<1.0	<1.0	<3.0
MW-7	3/1/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<5.0	<10	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<2.5	<1.0	<1.0	<1.0	<1.0	<3.0
MW-7-D	3/1/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<5.0	<10	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<2.5	<1.0	<1.0	<1.0	<1.0	<3.0
NCI-0	2/25/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	2.9	<10	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.2	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<2.5	<1.0	<1.0	<1.0	<1.0	<3.0
NCI-1	2/22/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<5.0	<10	<1.0	2.6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.85	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<2.5	0.57	1.1	0.38	<1.0	<3.0
NCI-2	2/22/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	7.1	<1.0	8.8	0.8	<10	<5.0	<10	<1.0	2	8.4	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<2.5	1.5	<1.0	2.1	<1.0	<3.0
NCI-3	2/22/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	0.51	<1.0	0.86	<1.0	<10	<5.0	<10	<1.0	67	0.37	<1.0	<1.0	<1.0	<1.0	<1.0	0.32	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<2.5	0.65	0.73	1.8	<1.0	<3.0
NCI-4	2/22/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	2.6	<1.0	15	3.1	<10	<5.0	<10	<1.0	67	2.9	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<2.5	20	36	22	<1.0	7.7
NCI-5	2/23/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	16	<1.0	25	30	<10	<5.0	<10	<1.0	88	16	<1.0	<1.0	<1.0	<1.0	<1.0	1.1	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<2.5	290	48	150	<1.0	220
NCI-6	2/23/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<5.0	<10	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<2.5	<1.0	<1.0	<1.0	<1.0	<3.0
NCI-7	2/23/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<5.0	<10	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<2.5	<1.0	<1.0	<1.0	<1.0	<3.0
NCI-7D	2/23/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<5.0	<10	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<2.5	<1.0	<1.0	<1.0	<1.0	<3.0
NCI-9	2/24/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	2.8	<1.0	<1.0	<1.0	<10	<5.0	<10	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	68	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<2.5	0.8	0.37	<1.0	<1.0	12
NCI-10	2/24/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	0.33	<1.0	<1.0	<1.0	<10	<5.0	<10	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	28	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<2.5	<1.0	0.57	<1.0	<1.0	1.5
NCI-11	2/24/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<5.0	<10	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.96	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<2.5	<1.0	<1.0	<1.0	<1.0	<3.0
NCI-12	2/25/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	1.6	<1.0	0.78	1.3	25	2.8	<10	<1.0	2.8	0.52	<1.0	<1.0	<1.0	<1.0	<1.0	24	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<2.5	7.6	4.8	4.7	<1.0	11
NCI-13	3/1/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<5.0	<10	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<2.5	<1.0	<1.0	<1.0	<1.0	<3.0
NCI-14	3/1/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	0.42	<1.0	15	<1.0	<10	<5.0	<10	<1.0	2.6	7.6	<1.0	<1.0	<1.0	<1.0	<1.0	0.35	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<2.5	2.3	0.42	<1.0	<1.0	<3.0
NCI-15	3/1/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	3.1	<1.0	5.2	0.82	<10	<5.0	<10	<1.0	24	1.7	<1.0	<1.0	<1.0	<1.0	<1.0	6.7	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<2.5	37	18	16	<1.0	14
NCI-16	2/25/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	1.3	<1.0	0.93	0.54	3.8	2.6	<10	<1.0	1.2	0.96	<1.0	<1.0	<1.0	<1.0	<1.0	0.42	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<2.5	5.6	2.7	1.4	<1.0	5.2
NCI-17	2/25/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	2.6	<10	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.66	<1.0	<1.0	<1.0	<1.0	3	<5.0	<2.5	0.56	0.76	0.53	<1.0	<3.0
NCI-18	2/25/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	2.9	<10	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<2.5	<1.0	<1.0	<1.0	<1.0	<3.0
NCI-18-D	2/25/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	2.8	<10	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<2.5	<1.0	<1.0	<1.0	<1.0	<3.0
NCI-19	2/23/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<5.0	<10	<1.0	1.4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<2.5	0.72	0.41	0.43	<1.0	<3.0
NCI-20	2/23/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	0.9	<1.0	<1.0	<1.0	5	<5.0	<10	<1.0	3.6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.2	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<2.5	0.34	0.55	0.36	<1.0	1.1
Number of Detects				0	0	0	0	11	0	8	7	3	6	0	0	12	8	0	0	0	0	0	13	0	0	0	0	1	0	0	13	14	11	0	8
Number of Analysis				26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26
Minimum Detect				0	0	0	0	0.33	0	0.78	0.54	3.8	2.6	0	0	1.2	0.37	0	0	0	0	0	0.32	0	0	0	0	3	0	0	0.34	0.37	0.36	0	1.1
Maximum Detect				0	0	0	0	16	0	25	31	25	2.9	0	0	88	16	0	0	0	0	0	68	0	0	0	0	3	0	0	290	48	150	0	220
USEPA RSL Table - Tapwater (ug/L)				na	na	na	830	1.5	0.86	680	na	7100	4.8	2000	12	0.14	1300	1600	0.52	0.067	59000	0.11	2300	29	2.3	9100	0.24	2	1300	0.00072	15	na	370	0.016	200
Maximum Contaminant Level (MCL) (ug/L)				na	na	na	na	700	na	na	na	na	5	na	na	na	na	100	na	na	na	5	1000	na	70	200	5	5	na	na	na	na	na	2	10000

Table E.2
Groundwater Data
Polycyclic Aromatic Hydrocarbons (PAHs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Units	Anthracene	Acenaphthene	Acenaphthylene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	1-Methylnaphthalene	2-Methylnaphthalene	Naphthalene	Phenanthrene	Pyrene
MW-1	2/22/2011	FTN	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<20	<20	<20	<2.0	<2.0
MW-5	2/22/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<1.0	<1.0	<1.0	<0.10	<0.10
MW-7	3/1/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<1.0	<1.0	<1.0	<0.10	<0.10
MW-7-D	3/1/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<1.0	<1.0	<1.0	<0.10	<0.10
NCI-0	2/25/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<1.0	<1.0	<1.0	<0.10	<0.10
NCI-1	2/22/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.026	0.027	0.29	<0.10	<0.10
NCI-2	2/22/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	8.8	<1.0	<1.0	<0.10	<0.10
NCI-3	2/22/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	2.5	2	<1.0	<0.10	<0.10
NCI-4	2/22/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	7.5	6.7	<1.0	<0.10	<0.10
NCI-5	2/23/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<1.0	<1.0	<1.0	<0.10	<0.10
NCI-6	2/23/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<1.0	<1.0	<1.0	<0.10	<0.10
NCI-7	2/23/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<1.0	<1.0	<1.0	<0.10	<0.10
NCI-7-D	2/23/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<1.0	<1.0	<1.0	<0.10	<0.10
NCI-9	2/24/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<1.0	<1.0	<1.0	<0.10	0.12
NCI-10	2/24/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<1.0	<1.0	<1.0	<0.10	<0.10
NCI-11	2/24/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<1.0	<1.0	<1.0	<0.10	<0.10
NCI-12	2/25/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	1	<0.10	3.4	1.3	2.4	<0.10	<0.10
NCI-13	3/1/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<1.0	<1.0	<1.0	<0.10	<0.10
NCI-14	3/1/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	5.5	1.9	2.5	<0.10	<0.10
NCI-15	3/1/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	20	17	16	<0.10	<0.10
NCI-16	2/25/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.58	0.57	1	<0.10	<0.10
NCI-17	2/25/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<1.0	<1.0	<1.0	<0.10	<0.10
NCI-18	2/25/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<1.0	<1.0	0.038	<0.10	<0.10
NCI-18-D	2/25/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<1.0	<1.0	0.008	<0.10	<0.10
NCI-19	2/23/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.4	0.41	0.57	<0.10	<0.10
NCI-20	2/23/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<1.0	<1.0	<1.0	<0.10	<0.10
			Number of Detects	0	0	0	0	0	0	0	0	0	0	0	1	0	9	8	8	0	1
			Number of Analysis	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26	26
			Minimum Detect	0	0	0	0	0	0	0	0	0	0	0	1	0	0.026	0.027	0.008	0	0.12
			Maximum Detect	0	0	0	0	0	0	0	0	0	0	0	1	0	20	17	16	0	0.12
			USEPA RSL Table - Tapwater (ug/L)	11000	2200	na	0.029	0.0029	0.029	na	0.29	2.9	0.0029	1500	1500	0.029	2.3	150	0.14	na	1100
			Maximum Contaminant Level (MCL) (ug/L)	na	na	na	na	0.2	na	na	na	na	na	na	na	na	na	na	na	na	na

Table E.3
Groundwater Data
Metals
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Units	Fluoride	Lead	Lead,Dissolved	Chromium	Chromium,Dissolved
MW-1	2/22/2011	FTN	ug/L	240	<45		<10	
MW-5	2/22/2011	FTN	ug/L		<1.0		<10	
MW-7	3/1/2011	FTN	ug/L	<100	0.3		<10	
MW-7-D	3/1/2011	FTN	ug/L	<100	0.51		<10	
NCI-0	2/25/2011	FTN	ug/L		4.8		14	
NCI-1	2/22/2011	FTN	ug/L		5.6		8.4	
NCI-2	2/22/2011	FTN	ug/L		<1.0		<10	
NCI-3	2/22/2011	FTN	ug/L		1.6		6	
NCI-4	2/22/2011	FTN	ug/L		10		2.9	
NCI-5	2/23/2011	FTN	ug/L	460	21	<1.0	44	<10
NCI-6	2/23/2011	FTN	ug/L	39	22	<1.0	28	<10
NCI-7	2/23/2011	FTN	ug/L	240	1.9		7.6	
NCI-7-D	2/23/2011	FTN	ug/L	220	2.6		7.4	
NCI-9	2/24/2011	FTN	ug/L		4.7		5.8	
NCI-10	2/24/2011	FTN	ug/L		160	<1.0	86	<10
NCI-11	2/24/2011	FTN	ug/L		1.9		<10	
NCI-12	2/25/2011	FTN	ug/L		79	<1.0	110	<10
NCI-13	3/1/2011	FTN	ug/L		12		22	
NCI-14	3/1/2011	FTN	ug/L		200		160	
NCI-15	3/1/2011	FTN	ug/L		14		11	
NCI-16	2/25/2011	FTN	ug/L		19		14	
NCI-17	2/25/2011	FTN	ug/L		3.9		10	
NCI-18	2/25/2011	FTN	ug/L		<1.0		<10	
NCI-18-D	2/25/2011	FTN	ug/L		2		2.6	
NCI-19	2/23/2011	FTN	ug/L		<1.0		<10	
NCI-20	2/23/2011	FTN	ug/L		0.42		3.3	
			Number of Detects	5	21	0	18	0
			Number of Analysis	7	26	4	26	4
			Minimum Detect	39	0.3	0	2.6	0
			Maximum Detect	460	200	0	160	0
			USEPA RSL Table - Tapwater (ug/L)	1500	na	na	na	na
			Maximum Contaminant Level (MCL) (ug/L)	na	15	15	100	100

Table E.4
Groundwater Data
Total Petroleum Hydrocarbons (TPH)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Units	TPH Gasoline Range	C10-C28 Diesel Range	C28-C40 Oil Range
MW-1	2/22/2011	FTN	ug/L	24000	41000	3400
MW-5	2/22/2011	FTN	ug/L	<100	2100	190
MW-7	3/1/2011	FTN	ug/L	<100	120	<100
MW-7-D	3/1/2011	FTN	ug/L	<100	<100	<100
NCI-0	2/25/2011	FTN	ug/L	<100	150	<100
NCI-1	2/22/2011	FTN	ug/L	<100	470	<100
NCI-2	2/22/2011	FTN	ug/L	220	620	<100
NCI-3	2/22/2011	FTN	ug/L	<100	1900	<100
NCI-4	2/22/2011	FTN	ug/L	280	2300	<100
NCI-5	2/23/2011	FTN	ug/L	960	1100	<100
NCI-6	2/23/2011	FTN	ug/L	<100	110	<100
NCI-7	2/23/2011	FTN	ug/L	<100	520	<100
NCI-7-D	2/23/2011	FTN	ug/L	<100	470	<100
NCI-9	2/24/2011	FTN	ug/L	220	800	100
NCI-10	2/24/2011	FTN	ug/L	<100	1400	100
NCI-11	2/24/2011	FTN	ug/L	<100	1100	59
NCI-12	2/25/2011	FTN	ug/L	180	2300	110
NCI-13	3/1/2011	FTN	ug/L	<100	620	130
NCI-14	3/1/2011	FTN	ug/L	330	6600	1300
NCI-15	3/1/2011	FTN	ug/L	470	8900	290
NCI-16	2/25/2011	FTN	ug/L	96	640	61
NCI-17	2/25/2011	FTN	ug/L	<100	5700	270
NCI-18	2/25/2011	FTN	ug/L	<100	380	50
NCI-18-D	2/25/2011	FTN	ug/L	<100	390	54
NCI-19	2/23/2011	FTN	ug/L	<100	52	<100
NCI-20	2/23/2011	FTN	ug/L	<100	1100	53
			Number of Detects	9	25	14
			Number of Analysis	26	26	26
			Minimum Detect	96	52	50
			Maximum Detect	24000	41000	3400
			USEPA RSL Table - Tapwater (ug/L)	na	na	na
			Maximum Contaminant Level (MCL) (ug/L)	na	na	na
			ADEQ TPH SL (ug/L)	200	400	700

Table E.5
Surface Soil Data
Volatile Organic Compounds (VOCs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Depth (ft)	Units	Acetone	Acrylonitrile	Benzene	Bromobenzene	Bromodichloromethane	Bromoform	Bromomethane	n-Butylbenzene	sec-Butylbenzene	tert-Butylbenzene	Carbon tetrachloride	Chlorobenzene	Chlorodibromomethane	Chloroethane	2-Chloroethyl vinyl ether	Chloroform	Chloromethane	2-Chlorotoluene	4-Chlorotoluene	1,2-Dibromo-3-Chloropropane	1,2-Dibromoethane	Dibromomethane	1,2-Dichlorobenzene	1,3-Dichlorobenzene
NCI-0-0.5	2/25/2011	FTN	0.5	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-1-0.5	2/21/2011	FTN	0.5	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-2-0.5	2/21/2011	FTN	0.5	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-3-0.5	2/21/2011	FTN	0.5	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-4-0.5	2/22/2011	FTN	0.5	mg/kg	0.055	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	0.032	0.014	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-4-0.5 D	2/22/2011	FTN	0.5	mg/kg	<25	<5.0	<0.50	<0.50	<0.50	<0.50	<2.5	<0.50	1	0.37	<0.50	<0.50	<0.50	<2.5	<25	<2.5	<1.3	<0.50	<0.50	<2.5	<0.50	<0.50	<0.50	<0.50
NCI-5-0.5	2/22/2011	FTN	0.5	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-6-0.5	2/23/2011	FTN	0.5	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-6-0.5 D	2/23/2011	FTN	0.5	mg/kg	0.084	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	0.0019	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-7-0.5	2/23/2011	FTN	0.5	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-8-0.5	2/24/2011	FTN	0.5	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-8-0.5 D	2/24/2011	FTN	0.5	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-9-0.5	2/23/2011	FTN	0.5	mg/kg	0.061	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-10-0.5	2/23/2011	FTN	0.5	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-11-0.5	2/23/2011	FTN	0.5	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-12-0.5	2/24/2011	FTN	0.5	mg/kg	<2.5	<0.50	<0.050	<0.050	<0.050	<0.050	<0.25	0.96	0.23	0.072	<0.050	<0.050	<0.050	<0.25	<2.5	<0.25	<0.13	<0.050	<0.050	<0.25	<0.050	<0.050	<0.050	<0.050
NCI-13-0.5	2/28/2011	FTN	0.5	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-19-0.5	2/22/2011	FTN	0.5	mg/kg	0.071	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-20-0.5	2/22/2011	FTN	0.5	mg/kg	0.092	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	0.0059	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SS-1 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SS-2 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SS-3 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SS-4 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SS-5 -0.5	2/22/2011	FTN	0.5	mg/kg	0.14	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	0.0034	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SS-5D -0.5	2/22/2011	FTN	0.5	mg/kg	0.14	<0.050	0.0058	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	0.0028	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SS-6 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.25	<0.050	0.0041	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	0.0026	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SS-7 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SS-8 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SS-9 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SS-10 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SS-11 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SS-12 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SS-13 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SS-14 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SS-15 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SS-16 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SS-16-D -0.5	2/22/2011	FTN	0.5	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SS-17 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SS-18 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SS-19 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
Number of Detects					7	0	2	0	0	0	0	1	5	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of Analysis					40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
Minimum Detect					0.055	0	0.0041	0	0	0	0	0.96	0.0019	0.0026	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maximum Detect					0.14	0	0.0058	0	0	0	0	0.96	1	0.37	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Human Health Screening																												
USEPA RSL Table - Residential Soil (mg/kg)					61000	0.24	1.1	300	0.27	61	7.3	na	na	na	0.61	290	0.68	15000	na	0.29	120	1600	5500	0.0054	0.034	25	1900	na
Ecological Screening																												
USEPA Ecological SL - Soil					NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
USEPA Region 4 Ecological SL					NA	1000	0.05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.01	0.01
PRG for Ecological Endpoints					NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endpoint																												

Table E.5
Surface Soil Data
Volatile Organic Compounds (VOCs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Depth (ft)	Units	1,4-Dichlorobenzene	Dichlorodifluoromethane	1,1-Dichloroethane	1,2-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	1,2-Dichloropropane	1,1-Dichloropropene	1,3-Dichloropropane	cis-1,3-Dichloropropene	trans-1,3-Dichloropropene	2,2-Dichloropropane	Di-isopropyl ether	Ethylbenzene	Hexachloro-1,3-butadiene	Isopropylbenzene	p-Isopropyltoluene	2-Butanone (MEK)	Methylene Chloride	4-Methyl-2-pentanone (MIBK)	Methyl tert-butyl ether	Naphthalene	n-Propylbenzene
NCI-0-0.5	2/25/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
NCI-1-0.5	2/21/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
NCI-2-0.5	2/21/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0017	<0.0050	<0.0050	<0.0050	<0.050	0.0037	<0.050	<0.0050	0.016	<0.0050
NCI-3-0.5	2/21/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	0.0042	<0.050	<0.0050	<0.025	<0.0050
NCI-4-0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.033	<0.0050	0.076	0.22	<0.050	<0.025	<0.050	<0.0050	0.0075	0.038
NCI-4-0.5 D	2/22/2011	FTN	0.5	mg/kg	<0.50	<2.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.54	3.1	<5.0	<2.5	<5.0	<0.50	1.9	0.4
NCI-5-0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
NCI-6-0.5	2/23/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
NCI-6-0.5 D	2/23/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.011	<0.050	<0.025	<0.050	<0.0050	<0.025	0.002
NCI-7-0.5	2/23/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
NCI-8-0.5	2/24/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
NCI-8-0.5 D	2/24/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
NCI-9-0.5	2/23/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
NCI-10-0.5	2/23/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
NCI-11-0.5	2/23/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
NCI-12-0.5	2/24/2011	FTN	0.5	mg/kg	<0.050	<0.25	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.08	<0.050	0.17	0.88	<0.50	0.085	<0.50	<0.050	0.9	0.16
NCI-13-0.5	2/28/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
NCI-19-0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0066	<0.0050	<0.0050	0.0035	<0.050	<0.025	<0.050	<0.0050	0.0026	<0.0050
NCI-20-0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.015	<0.0050	0.005	0.021	<0.050	<0.025	<0.050	<0.0050	0.053	0.0047
SS-1 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
SS-2 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
SS-3 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
SS-4 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
SS-5 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.011	<0.0050	<0.0050	0.019	<0.050	<0.025	<0.050	<0.0050	<0.025	0.004
SS-5D -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.01	<0.0050	<0.0050	0.013	<0.050	<0.025	<0.050	<0.0050	<0.025	0.0023
SS-6 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.02	<0.0050	0.0031	<0.0050	<0.050	<0.025	<0.050	<0.0050	<0.025	0.0033
SS-7 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
SS-8 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
SS-9 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
SS-10 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
SS-11 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
SS-12 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	0.0028	<0.050	<0.0050	<0.025	<0.0050
SS-13 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	0.0024	<0.050	<0.0050	<0.025	<0.0050
SS-14 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
SS-15 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	0.003	<0.050	<0.0050	<0.025	<0.0050
SS-16 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	0.0027	<0.050	<0.0050	<0.025	<0.0050
SS-16-D -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	0.0025	<0.050	<0.0050	<0.025	<0.0050
SS-17 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	0.0027	<0.050	<0.0050	<0.025	<0.0050
SS-18 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
SS-19 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	0.0033	<0.050	<0.0050	<0.025	<0.0050
Number of Detects					0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	5	8	0	10	0	0	6	8
Number of Analysis					40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
Minimum Detect					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0017	0	0.0031	0.0035	0	0.0024	0	0	0.0026	0.002
Maximum Detect					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.08	0	0.54	3.1	0	0.085	0	0	1.9	0.4
Human Health Screening																												
USEPA RSL Table - Residential Soil (mg/kg)					2.4	180	3.3	0.43	240	160	150	0.89	na	1600	na	na	na	1400	5.4	6.2	2100	na	28000	11	5300	43	3.6	3400
Ecological Screening																												
USEPA Ecological SL - Soil					NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
USEPA Region 4 Ecological SL					0.01	NA	NA	0.4	NA	NA	NA	700	NA	NA	NA	NA	NA	NA	0.04	NA	NA	NA	NA	NA	NA	NA	0.1	NA
PRG for Ecological Endpoints					20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endpoint					earthworm																							

Table E.5
Surface Soil Data
Volatile Organic Compounds (VOCs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Depth (ft)	Units	Styrene	1,1,1,2-Tetrachloroethane	1,1,2,2-Tetrachloroethane	1,1,2-Trichloro-1,2,2-trifluoroethane	Tetrachloroethene	Toluene	1,2,3-Trichlorobenzene	1,2,4-Trichlorobenzene	1,1,1-Trichloroethane	1,1,2-Trichloroethane	Trichloroethene	Trichlorofluoromethane	1,2,3-Trichloropropane	1,2,4-Trimethylbenzene	1,2,3-Trimethylbenzene	1,3,5-Trimethylbenzene	Vinyl chloride	Xylenes, Total
NCI-0-0.5	2/25/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-1-0.5	2/21/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-2-0.5	2/21/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	0.0038	0.0024	0.0018	<0.0050	0.0036
NCI-3-0.5	2/21/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	0.002	<0.0050	<0.0050	<0.0050	0.0025
NCI-4-0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	0.38	0.12	0.56	<0.0050	0.33
NCI-4-0.5 D	2/22/2011	FTN	0.5	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	<2.5	<0.50	<0.50	<0.50	<0.50	<0.50	<2.5	<1.3	10	6	9.7	<0.50	1.3
NCI-5-0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-6-0.5	2/23/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-6-0.5 D	2/23/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	0.0068	0.006	0.0054	<0.0050	0.0086
NCI-7-0.5	2/23/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-8-0.5	2/24/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-8-0.5 D	2/24/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-9-0.5	2/23/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-10-0.5	2/23/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-11-0.5	2/23/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-12-0.5	2/24/2011	FTN	0.5	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	0.049	<0.050	<0.050	<0.050	<0.050	<0.050	<0.25	<0.13	1.4	0.89	1.3	<0.050	0.64
NCI-13-0.5	2/28/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-19-0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.005	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	0.0029	0.0071	0.0023	<0.0050	0.011
NCI-20-0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0045	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	0.032	0.066	0.023	<0.0050	0.022
SS-1 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	0.1	<0.025	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
SS-2 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
SS-3 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
SS-4 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
SS-5 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.043	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	0.018	0.0041	0.0079	<0.0050	0.074
SS-5D -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.15	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	0.032	0.01	0.017	<0.0050	0.2
SS-6 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.11	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	0.0071	0.0027	0.0035	<0.0050	0.094
SS-7 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	<0.0050	0.0016	<0.0050	<0.0050	<0.015
SS-8 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
SS-9 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
SS-10 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
SS-11 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
SS-12 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
SS-13 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	0.026	<0.025	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
SS-14 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
SS-15 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
SS-16 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	0.0033	<0.025	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
SS-16-D -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
SS-17 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
SS-18 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
SS-19 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
Number of Detects					0	0	0	0	0	6	0	0	0	0	3	0	0	11	11	10	0	11
Number of Analysis					40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
Minimum Detect					0	0	0	0	0	0.0045	0	0	0	0	0.0033	0	0	0.002	0.0016	0.0018	0	0.0025
Maximum Detect					0	0	0	0	0	0.15	0	0	0	0	0.1	0	0	10	6	9.7	0	1.3
Human Health Screening																						
USEPA RSL Table - Residential Soil (mg/kg)					6300	1.9	0.56	43000	0.55	5000	49	22	8700	1.1	2.8	790	0.005	62	na	780	0.06	630
Ecological Screening																						
USEPA Ecological SL - Soil					NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
USEPA Region 4 Ecological SL					0.1	NA	NA	NA	0.01	0.05	0.01	0.01	NA	NA	0.001	NA	NA	NA	NA	NA	0.01	0.05
PRG for Ecological Endpoints					300	NA	NA	NA	NA	200	20	20	NA	NA	NA	NA	NA	NA	NA	NA	0.01	NA
Endpoint					plants					plants	earthworm	earthworm										

Table E.6
Surface Soil Data
Polycyclic Aromatic Hydrocarbons (PAHs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Depth (ft)	Units	Anthracene	Acenaphthene	Acenaphthylene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	1-Methylnaphthalene	2-Methylnaphthalene	Naphthalene	Phenanthrene	Pyrene
NCI-0-0.5	2/25/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-1-0.5	2/21/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-2-0.5	2/21/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-3-0.5	2/21/2011	FTN	0.5	mg/kg	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	0.43	<0.040	<0.040	0.1	0.069	0.04	0.11	0.25
NCI-4-0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-4-0.5 D	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	1.1	0.81	0.87	<0.020	<0.020
NCI-5-0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-6-0.5	2/23/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-6-0.5 D	2/23/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-7-0.5	2/23/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-8-0.5	2/24/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-8-0.5 D	2/24/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-9-0.5	2/23/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.099	0.096	0.093	<0.020	<0.020
NCI-10-0.5	2/23/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-11-0.5	2/23/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-13-0.5	2/28/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.0097
NCI-19-0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.96	0.38	0.11	<0.020	<0.020
NCI-20-0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.29	0.02	<0.020	<0.020	<0.020
SS-1 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-2 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-3 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-4 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-5 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	0.43	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.21	<0.020	0.32	0.19	<0.020	<0.020	<0.020
SS-5D -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	0.12	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.023	<0.020	0.1	0.018	<0.020	<0.020	<0.020
SS-6 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-7 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.22	<0.020	<0.020	0.031	0.02	0.028	0.07	0.36
SS-8 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.062	<0.020	<0.020	0.096	0.16	0.2	0.09	0.045
SS-9 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-10 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-11 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-12 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-13 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-14 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-15 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-16 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-16-D -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-17 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-18 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-19 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	5.7	2.6	19	5.4	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
				Number of Detects	0	2	0	0	1	1	1	1	0	0	3	2	0	9	9	6	3	4
				Number of Analysis	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39
				Minimum Detect	0	0.12	0	0	5.7	2.6	19	5.4	0	0	0.062	0.023	0	0.031	0.018	0.028	0.07	0.0097
				Maximum Detect	0	0.43	0	0	5.7	2.6	19	5.4	0	0	0.43	0.21	0	1.1	0.81	0.87	0.11	0.36
				Human Health Screening																		
				USEPA RSL Table - Residential Soil (mg/kg)	17000	3400	na	0.15	0.015	0.15	na	1.5	15	0.015	2300	2300	0.15	22	310	3.6	na	1700
				Ecological Screening																		
				USEPA Ecological SL - Soil	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
				USEPA Region 4 Ecological SL	20	20	NA	NA	0.1	NA	NA	NA	NA	NA	0.1	30	NA	NA	NA	NA	0.1	0.1
				PRG for Ecological Endpoints	NA	20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.1
				Endpoint		plants																

Table E.7
Surface Soil Data
Metals
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Depth (ft)	Units	Fluoride	Chromium,Hexavalent	Chromium	Lead
NCI-0-0.5	2/25/2011	FTN	0.5	mg/kg			2.8	4.4
NCI-1-0.5	2/21/2011	FTN	0.5	mg/kg			4.2	11
NCI-2-0.5	2/21/2011	FTN	0.5	mg/kg			3.2	3.5
NCI-3-0.5	2/21/2011	FTN	0.5	mg/kg			5.7	4.5
NCI-4-0.5	2/22/2011	FTN	0.5	mg/kg			3.6	6.1
NCI-4-0.5 D	2/22/2011	FTN	0.5	mg/kg			5.3	10
NCI-5-0.5	2/22/2011	FTN	0.5	mg/kg	43		7.6	8.8
NCI-6-0.5	2/23/2011	FTN	0.5	mg/kg	4.3		6.6	6
NCI-6-0.5 D	2/23/2011	FTN	0.5	mg/kg	2.1		10	8
NCI-7-0.5	2/23/2011	FTN	0.5	mg/kg	2.6		5.4	4.9
NCI-8-0.5	2/24/2011	FTN	0.5	mg/kg		<2.0	8.2	8.3
NCI-8-0.5 D	2/24/2011	FTN	0.5	mg/kg		<2.0	19	6.5
NCI-9-0.5	2/23/2011	FTN	0.5	mg/kg		1.7	7.3	10
NCI-10-0.5	2/23/2011	FTN	0.5	mg/kg			3	8.8
NCI-11-0.5	2/23/2011	FTN	0.5	mg/kg			3.6	35
NCI-12-0.5	2/24/2011	FTN	0.5	mg/kg			9.7	15
NCI-13-0.5	2/28/2011	FTN	0.5	mg/kg			8	6.9
NCI-19-0.5	2/22/2011	FTN	0.5	mg/kg			24	5.9
NCI-20-0.5	2/22/2011	FTN	0.5	mg/kg			13	9
SS-1 -0.5	2/22/2011	FTN	0.5	mg/kg	500		41	690
SS-2 -0.5	2/22/2011	FTN	0.5	mg/kg	1400		12	15
SS-3 -0.5	2/22/2011	FTN	0.5	mg/kg			3.2	4.8
SS-4 -0.5	2/22/2011	FTN	0.5	mg/kg			4.5	17
SS-5 -0.5	2/22/2011	FTN	0.5	mg/kg			5.5	16
SS-5D -0.5	2/22/2011	FTN	0.5	mg/kg			3.5	13
SS-6 -0.5	2/22/2011	FTN	0.5	mg/kg			3.7	28
SS-7 -0.5	2/22/2011	FTN	0.5	mg/kg			1.5	7.5
SS-8 -0.5	2/22/2011	FTN	0.5	mg/kg			1.8	5.1
SS-9 -0.5	2/22/2011	FTN	0.5	mg/kg	12		4	4.7
SS-10 -0.5	2/22/2011	FTN	0.5	mg/kg	35		8.6	12
SS-11 -0.5	2/22/2011	FTN	0.5	mg/kg	37		8.2	10
SS-12 -0.5	2/22/2011	FTN	0.5	mg/kg	33		12	11
SS-13 -0.5	2/22/2011	FTN	0.5	mg/kg	750		7.5	6.3
SS-14 -0.5	2/22/2011	FTN	0.5	mg/kg	6.2		4.3	9.7
SS-15 -0.5	2/22/2011	FTN	0.5	mg/kg	16		3.7	3.9
SS-16 -0.5	2/22/2011	FTN	0.5	mg/kg	6.6		4.3	3.7
0.5	2/22/2011	FTN	0.5	mg/kg	6.9		3.7	3.8
SS-17 -0.5	2/22/2011	FTN	0.5	mg/kg	5.7		2.5	2.9
SS-18 -0.5	2/22/2011	FTN	0.5	mg/kg	2.2		9.9	6.7
SS-19 -0.5	2/22/2011	FTN	0.5	mg/kg	2.5		3.5	7.5
T-1 -0.5	2/22/2011	FTN	0.5	mg/kg				
T-2 -0.5	2/22/2011	FTN	0.5	mg/kg				
				Number of Detects	18	1	40	40
				Number of Analysis	18	3	40	40
				Minimum Detect	2.1	1.7	1.5	2.9
				Maximum Detect	1400	1.7	41	690
				Background Concentration (Shacklette and Boerngen, 1984)	na	10	10	10
				Human Health Screening				
				USEPA RSL Table - Residential Soil (mg/kg)	3100	0.29	na	400
				Ecological Screening				
				USEPA Ecological SL - Soil	na	81	26	NA
				USEPA Region 4 Ecological SL	na	0.4	0.4	200
				PRG for Ecological Endpoints	na	0.4	0.4	NA
				Endpoint	na	earthworm	earthworm	

Table E.8
Surface Soil Data
Total Petroleum Hydrocarbons (TPH)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Depth (ft)	Units	TPH Gasoline Range	C10-C28 Diesel Range	C28-C40 Oil Range
NCI-0-0.5	2/25/2011	FTN	0.5	mg/kg	<0.50	<4.0	<4.0
NCI-1-0.5	2/21/2011	FTN	0.5	mg/kg	<0.50	84	55
NCI-2-0.5	2/21/2011	FTN	0.5	mg/kg	<0.50	<4.0	<4.0
NCI-3-0.5	2/21/2011	FTN	0.5	mg/kg	<0.50	360	<80
NCI-4-0.5	2/22/2011	FTN	0.5	mg/kg	7.5	11000	2800
NCI-4-0.5 D	2/22/2011	FTN	0.5	mg/kg	360	3600	780
NCI-5-0.5	2/22/2011	FTN	0.5	mg/kg	<0.50	1800	360
NCI-6-0.5	2/23/2011	FTN	0.5	mg/kg	<0.50	120	78
NCI-6-0.5 D	2/23/2011	FTN	0.5	mg/kg	<0.50	290	76
NCI-7-0.5	2/23/2011	FTN	0.5	mg/kg	<0.50	<20	<20
NCI-8-0.5	2/24/2011	FTN	0.5	mg/kg	<0.50	130	160
NCI-8-0.5 D	2/24/2011	FTN	0.5	mg/kg	<0.50	<4.0	<4.0
NCI-9-0.5	2/23/2011	FTN	0.5	mg/kg	<0.50	4800	540
NCI-10-0.5	2/23/2011	FTN	0.5	mg/kg	<0.50	20	10
NCI-11-0.5	2/23/2011	FTN	0.5	mg/kg	<0.50	70	71
NCI-12-0.5	2/24/2011	FTN	0.5	mg/kg	44	11000	790
NCI-13-0.5	2/28/2011	FTN	0.5	mg/kg	<0.50	340	130
NCI-19-0.5	2/22/2011	FTN	0.5	mg/kg	1.6	17000	2100
NCI-20-0.5	2/22/2011	FTN	0.5	mg/kg	3	22000	2500
SS-1 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.50	22	62
SS-2 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.50	96	52
SS-3 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.50	89	53
SS-4 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.50	130	140
SS-5 -0.5	2/22/2011	FTN	0.5	mg/kg	1.8	6600	2000
SS-5D -0.5	2/22/2011	FTN	0.5	mg/kg	4.7	3500	1600
SS-6 -0.5	2/22/2011	FTN	0.5	mg/kg	2.9	9200	1800
SS-7 -0.5	2/22/2011	FTN	0.5	mg/kg	1.5	6900	970
SS-8 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.50	160	160
SS-9 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.50	11	3.1
SS-10 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.50	19	12
SS-11 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.50	6.9	7.8
SS-12 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.50	260	65
SS-13 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.50	82	34
SS-14 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.50	110	55
SS-15 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.50	24	9.7
SS-16 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.50	130	48
SS-16-D -0.5	2/22/2011	FTN	0.5	mg/kg	<0.50	120	37
SS-17 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.50	14	7.9
SS-18 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.50	6.2	13
SS-19 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.50	320	200
				Number of Detects	9	36	35
				Number of Analysis	40	40	40
				Minimum Detect	1.5	6.2	3.1
				Maximum Detect	360	22000	2800
				Human Health Screening			
				USEPA RSL Table - Residential Soil (mg/kg)	na	na	na
				ADEQ TPH SL (mg/kg)	440	2300	4500
				Ecological Screening			
				USEPA Ecological SL - Soil	na	na	na
				USEPA Region 4 Ecological SL	na	na	na
				PRG for Ecological Endpoints	na	na	na
				Endpoint			

Table E.9
Surface Soil Data
Polychlorinated Biphenyls (PCBs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Depth (ft)	Units	PCB 1016	PCB 1221	PCB 1232	PCB 1242	PCB 1248	PCB 1254	PCB 1260
T-1 -0.5 FT	2/22/2010	FTN	0.5	mg/kg	<0.085	<0.085	<0.085	<0.085	<0.085	<0.085	<0.085
T-2 -0.5 FT	2/22/2010	FTN	0.5	mg/kg	<0.085	<0.085	<0.085	<0.085	<0.085	<0.085	<0.085
				Number of Detects	0	0	0	0	0	0	0
				Number of Analysis	2	2	2	2	2	2	2
				Minimum Detect	0	0	0	0	0	0	0
				Maximum Detect	0	0	0	0	0	0	0
				Human Health Screening							
				USEPA RSL Table - Residential Soil (mg/kg)	3.9	0.14	0.14	0.22	0.22	0.22	0.22
				Ecological Screening							
				USEPA Ecological SL - Soil	NA	NA	NA	NA	NA	NA	NA
				USEPA Region 4 Ecological SL	0.02	0.02	0.02	0.02	0.02	0.02	0.02
				PRG for Ecological Endpoints	0.371	0.371	0.371	0.371	0.371	0.371	0.371
				Endpoint	piscivores birds	piscivores birds	piscivores birds	piscivores birds	piscivores birds	piscivores birds	piscivores birds

Table E.10
Subsurface Soil Data
Volatile Organic Compounds (VOCs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Depth (ft)	Units	Acetone	Acrylonitrile	Benzene	Bromobenzene	Bromodichloromethane	Bromoform	Bromomethane	n-Butylbenzene	sec-Butylbenzene	tert-Butylbenzene	Carbon tetrachloride	Chlorobenzene	Chlorodibromomethane	Chloroethane	2-Chloroethyl vinyl ether	Chloroform	Chloromethane	2-Chlorotoluene	4-Chlorotoluene	1,2-Dibromo-3-Chloropropane	1,2-Dibromoethane	Dibromomethane	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	Dichlorodifluoromethane	1,1-Dichloroethane	1,2-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	1,2-Dichloropropane	1,1-Dichloropropene	1,3-Dichloropropane	cis-1,3-Dichloropropene	trans-1,3-Dichloropropene
NCI-0-10	2/25/2011	FTN	10	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-0-2	2/25/2011	FTN	2	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-0-23	2/25/2011	FTN	23	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-0-23D	2/25/2011	FTN	23	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-1-2	2/21/2011	FTN	2	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-1-15	2/21/2011	FTN	15	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	0.0025	0.0019	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-1-20-25	2/21/2011	FTN	20-25	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-2-14	2/21/2011	FTN	14	mg/kg	0.1	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-2-17	2/21/2011	FTN	17	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	0.0043	0.0014	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-2-2	2/21/2011	FTN	2	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-3-2	2/21/2011	FTN	2	mg/kg	0.13	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-3-10	2/21/2011	FTN	10	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-3-16.5	2/21/2011	FTN	16.5	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-4-2	2/22/2011	FTN	2	mg/kg	<25	<5.0	<0.50	<0.50	<0.50	<0.50	<2.5	<0.50	1.4	<0.50	<0.50	<0.50	<0.50	<2.5	<25	<2.5	<1.3	<0.50	<0.50	<2.5	<0.50	<0.50	<0.50	<0.50	<0.50	<2.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
NCI-4-2 D	2/22/2011	FTN	2	mg/kg	<50	<10	<1.0	<1.0	<1.0	<1.0	<5.0	8.5	3.5	<1.0	<1.0	<1.0	<1.0	<5.0	<50	<5.0	<2.5	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-4-14	2/22/2011	FTN	14	mg/kg	<25	<5.0	<0.50	<0.50	<0.50	<0.50	<2.5	<0.50	0.91	<0.50	<0.50	<0.50	<0.50	<2.5	<25	<2.5	<1.3	<0.50	<0.50	<2.5	<0.50	<0.50	<0.50	<0.50	<0.50	<2.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
NCI-4-23	2/22/2011	FTN	23	mg/kg	<2.5	<0.50	<0.050	<0.050	<0.050	<0.050	<0.25	<0.050	0.27	0.05	<0.050	<0.050	<0.050	<0.25	<2.5	<0.25	<0.13	<0.050	<0.050	<0.25	<0.050	<0.050	<0.050	<0.050	<0.050	<0.25	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
NCI-5-2	2/22/2011	FTN	2	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-5-6	2/22/2011	FTN	6	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-5-29	2/22/2011	FTN	29	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-5-41	2/22/2011	FTN	41	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	0.015	0.0025	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-6-2	2/23/2011	FTN	2	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-6-2 D	2/23/2011	FTN	2	mg/kg	0.24	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-6-15	2/23/2011	FTN	15	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-6-24	2/23/2011	FTN	24	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-7-2	2/23/2011	FTN	2	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-7-14	2/23/2011	FTN	14	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-7-23	2/23/2011	FTN	23	mg/kg	0.099	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	0.002	0.004	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-8-2	2/24/2011	FTN	2	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-8-2 D	2/24/2011	FTN	2	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-8-10	2/24/2011	FTN	10	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-8-34	2/24/2011	FTN	34	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-9-2	2/23/2011	FTN	2	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	0.033	0.0075	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-9-10	2/23/2011	FTN	10	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-9-12	2/23/2011	FTN	12	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-10-2	2/23/2011	FTN	2	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-10-8	2/23/2011	FTN	8	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-10-9	2/23/2011	FTN	9	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-11-2	2/23/2011	FTN	2	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-11-4	2/23/2011	FTN	4	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-11-9	2/23/2011	FTN	9	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-12-2	2/24/2011	FTN	2	mg/kg	<2.5	<0.50	<0.050	<0.050	<0.050	<0.050	<0.25	<0.050	0.12	0.049	<0.050	<0.050	<0.050	<0.25	<2.5	<0.25	<0.13	<0.050	<0.050	<0.25	<0.050	<0.050	<0.050	<0.050	<0.050	<0.25	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
NCI-12-10	2/24/2011	FTN	10	mg/kg	<2.5	<0.50	<0.050	<0.050	<0.050	<0.050	<0.25	0.27	0.32	0.091	<0.050	<0.050	<0.050	<0.25	<2.5	<0.25	<0.13	<0.050	<0.050	<0.25	<0.050	<0.050	<0.050	<0.050	<0.050	<0.25	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
NCI-12-14	2/24/2011	FTN	14	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-13-2	2/28/2011	FTN	2	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-13-10	2/28/2011	FTN	10	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-13-12	2/28/2011	FTN	12	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-19-2	2/22/2011	FTN	2	mg/kg	<2.5	<0.50	<0.050	<0.050	<0.050	<0.050	<0.25	0.14	0.13	0.047	<0.050	<0.050	<0.050	<0.25	<2.5	<0.25	<0.13	<0.050	<0.050	<0.25	<0.050	<0.050	<0.050	<0.050	<0.050	<0.25	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
NCI-19-10	2/22/2011	FTN	10	mg/kg	<2.5	<0.50	0.042	<0.050	<0.050	<0.050	<0.25	0.58	0.85	0.15	<0.050	<0.050	<0.050	<0.25	<2.5	<0.25	<0.13	<0.050	<0.050	<0.25	<0.050	<0.050	<0.050	<0.050	<0.050	<0.25	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
NCI-19-21	2/22/2011	FTN	21	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	0.0026	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-20-2	2/22/2011	FTN	2	mg/kg	0.19	<0.050	0.0079	<0.0050	<0.0050	<0.0050	<0.025	0.02	0.014	0.0054	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-20-14	2/22/2011	FTN	14	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-20-20	2/22/2011	FTN	20	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Number of Detects					5	0	2	0	0	0	0	6	15	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of Analysis					53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53
Minimum Detect					0.099	0	0.0079	0	0	0	0	0.002	0.0025	0.0014	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maximum Detect					0.24	0	0.042	0	0	0	0	8.5	3.5	0.15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Human Health Screening																																								
USEPA RSL Table - Residential Soil (mg/kg)					61000	0.24	1.1	300	0.27	61	7.3	na	na	na	0.61	290	0.68	15000	na	0.29	120	1600	5500	0.0054	0.034	25	1900	na	2.4	180	3.3	0.43	240	160	150	0.89	na	1600	na	na
USEPA RSL Table - Protection of Groundwater (mg/kg)					4.5	0.0000099	0.0026	0.059	0.022	0.021	0.0022	na	na	na	0.0019	0.068	0.021	5.9	na	0.022	0.049	0.71	2.5	0.000086	0.000014	0.002	0.58	na	0.072	0.61	0.00069	0.0014	0.0025	0.021	0.029	0.0017	na	0.25	na	na
Ecological Screening																																								
USEPA Ecological SL - Soil					NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
USEPA Region 4 Ecological SL					NA	1000	0.05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.01	0.01	0.01	NA	NA	0.4	NA	NA	NA	700	NA	NA	NA	NA
PRG for Ecological Endpoints Endpoint					NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	20 earthworm	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table E.10
Subsurface Soil Data
Volatile Organic Compounds (VOCs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Depth (ft)	Units	2,2-Dichloropropane	Di-isopropyl ether	Ethylbenzene	Hexachloro-1,3-butadiene	Isopropylbenzene	p-Isopropyltoluene	2-Butanone (MEK)	Methylene Chloride	4-Methyl-2-pentanone (MIBK)	Methyl tert-butyl ether	Naphthalene	n-Propylbenzene	Styrene	1,1,1,2-Tetrachloroethane	1,1,2,2-Tetrachloroethane	1,1,2-Trichloro-1,2,2-trifluoroethane	Tetrachloroethene	Toluene	1,2,3-Trichlorobenzene	1,2,4-Trichlorobenzene	1,1,1-Trichloroethane	1,1,2-Trichloroethane	Trichloroethene	Trichlorofluoromethane	1,2,3-Trichloropropane	1,2,4-Trimethylbenzene	1,2,3-Trimethylbenzene	1,3,5-Trimethylbenzene	Vinyl chloride	Xylenes, Total
NCI-0-10	2/25/2011	FTN	10	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-0-2	2/25/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-0-23	2/25/2011	FTN	23	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.025	<0.050	<0.0050	0.0027	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	0.0034	<0.0050	<0.0050	<0.0050	<0.015
NCI-0-23D	2/25/2011	FTN	23	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-1-2	2/21/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-1-15	2/21/2011	FTN	15	mg/kg	<0.0050	<0.0050	0.0046	<0.0050	0.0053	0.0078	<0.050	<0.025	<0.050	<0.0050	0.14	0.0039	0.0016	<0.0050	<0.0050	<0.0050	<0.0050	0.0053	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	0.08	0.098	0.058	<0.0050	0.034
NCI-1-20-25	2/21/2011	FTN	20-25	mg/kg	<0.0050	<0.0050	0.0017	<0.0050	<0.0050	<0.0050	<0.050	<0.025	<0.050	<0.0050	0.004	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0035	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	0.017	0.018	0.0097	<0.0050	0.0092
NCI-2-14	2/21/2011	FTN	14	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	0.0046	<0.050	<0.0050	0.0025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-2-17	2/21/2011	FTN	17	mg/kg	<0.0050	<0.0050	0.0027	<0.0050	0.0045	0.0037	<0.050	0.0042	<0.050	<0.0050	<0.025	0.0052	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	0.0019	<0.0050	<0.0050	<0.0050	<0.015
NCI-2-2	2/21/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	0.0044	<0.050	<0.0050	0.0032	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	0.0024
NCI-3-2	2/21/2011	FTN	2	mg/kg	<0.0050	<0.0050	0.0017	<0.0050	<0.0050	<0.0050	<0.050	0.0034	<0.050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0023	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	0.0027	<0.0050	<0.0050	<0.0050	0.0052
NCI-3-10	2/21/2011	FTN	10	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	0.0027
NCI-3-16.5	2/21/2011	FTN	16.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.025	<0.050	<0.0050	0.031	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	0.0024	0.0019	0.0024	<0.0050	<0.015
NCI-4-2	2/22/2011	FTN	2	mg/kg	<0.50	<0.50	0.32	<0.50	1.1	6.1	<5.0	<2.5	<5.0	<0.50	2.4	0.96	<0.50	<0.50	<0.50	<0.50	<0.50	<2.5	<0.50	<0.50	<0.50	<0.50	<0.50	<2.5	<1.3	14	5	13	<0.50	2
NCI-4-2 D	2/22/2011	FTN	2	mg/kg	<1.0	<1.0	0.47	<1.0	2.4	10	<10	<5.0	<10	<1.0	4.6	2.1	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<2.5	39	14	27	<1.0	4
NCI-4-14	2/22/2011	FTN	14	mg/kg	<0.50	<0.50	0.19	<0.50	0.66	3.2	<5.0	<2.5	<5.0	<0.50	3	0.6	<0.50	<0.50	<0.50	<0.50	<0.50	<2.5	<0.50	<0.50	<0.50	<0.50	<0.50	<2.5	<1.3	9	3	6.7	<0.50	2.4
NCI-4-23	2/22/2011	FTN	23	mg/kg	<0.050	<0.050	0.073	<0.050	0.26	0.91	<0.50	<0.25	<0.50	<0.050	0.47	0.21	<0.050	<0.050	<0.050	<0.050	<0.050	<0.25	<0.050	<0.050	<0.050	<0.050	<0.050	<0.25	<0.13	2.6	0.85	2	<0.050	1.4
NCI-5-2	2/22/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	0.0032	<0.050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-5-6	2/22/2011	FTN	6	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-5-29	2/22/2011	FTN	29	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-5-41	2/22/2011	FTN	41	mg/kg	<0.0050	<0.0050	0.0061	<0.0050	0.017	0.046	<0.050	<0.025	<0.050	<0.0050	0.082	0.014	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	0.28	0.045	0.14	<0.0050	0.096
NCI-6-2	2/23/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-6-2 D	2/23/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0064	0.049	<0.025	<0.050	<0.0050	0.0096	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0018	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	0.0059	0.0039	0.0041	<0.0050	0.0082
NCI-6-15	2/23/2011	FTN	15	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-6-24	2/23/2011	FTN	24	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-7-2	2/23/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-7-14	2/23/2011	FTN	14	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-7-23	2/23/2011	FTN	23	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0026	0.0091	<0.050	<0.025	<0.050	<0.0050	0.0047	0.002	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	0.01	0.0068	0.0059	<0.0050	0.0029
NCI-8-2	2/24/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-8-2 D	2/24/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-8-10	2/24/2011	FTN	10	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	0.0078	<0.050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-8-34	2/24/2011	FTN	34	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	0.0072	<0.050	<0.0050	0.0019	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-9-2	2/23/2011	FTN	2	mg/kg	<0.0050	<0.0050	0.0072	<0.0050	0.029	0.17	<0.050	<0.025	<0.050	<0.0050	0.11	0.022	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0021	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	0.19	0.16	0.066	<0.0050	0.064
NCI-9-10	2/23/2011	FTN	10	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.025	<0.050	<0.0050	0.003	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-9-12	2/23/2011	FTN	12	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-10-2	2/23/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-10-8	2/23/2011	FTN	8	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-10-9	2/23/2011	FTN	9	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-11-2	2/23/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-11-4	2/23/2011	FTN	4	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-11-9	2/23/2011	FTN	9	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-12-2	2/24/2011	FTN	2	mg/kg	<0.050	<0.050	0.28	<0.050	0.096	0.51	<0.50	0.084	<0.50	<0.050	0.68	0.11	<0.050	<0.050	<0.050	<0.050	<0.050	0.13	<0.050	<0.050	<0.050	<0.050	<0.050	<0.25	<0.13	0.89	0.54	0.88	<0.050	0.59
NCI-12-10	2/24/2011	FTN	10	mg/kg	<0.050	<0.050	0.11	<0.050	0.27	0.97	<0.50	0.081	<0.50	<0.050	0.98	0.22	<0.050	<0.050	<0.050	<0.050	<0.050	0.035	<0.050	<0.050	<0.050	<0.050	<0.050	<0.25	<0.13	2.8	1.3	2.2	<0.050	1.3
NCI-12-14	2/24/2011	FTN	14	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	0.0082	<0.050	<0.0050	0.0096	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	0.0025	0.002	0.0015	<0.0050	<0.015
NCI-13-2	2/28/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-13-10	2/28/2011	FTN	10	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-13-12	2/28/2011	FTN	12	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-19-2	2/22/2011	FTN	2	mg/kg	<0.050	<0.050	0.64	<0.050	0.1	0.59	<0.50	<0.25	<0.50	<0.050	0.4	0.16	<0.050	<0.050	<0.050	<0.050	<0.050	0.2	<0.050	<0.050	<0.050	<0.050	<0.050	<0.25	<0.13	0.14	0.71	0.086	<0.050	0.56
NCI-19-10	2/22/2011	FTN	10	mg/kg	<0.050	<0.050	0.32	<0.050	1	1.6	<0.50	<0.25	<0.50	<0.050	6.6	0.73	<0.050	<0.050	<0.050	<0.050	<0.050	0.029	<0.050	<0.050	<0.050	<0.050	<0.050	<0.25	<0.13	2	0.52	0.68	<0.050	0.98
NCI-19-21	2/22/2011	FTN	21	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.002	0.0099	<0.050	<0.025	<0.050	<0.0050	0.012	0.0017	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	0.014	0.0056	0.0084	<0.0050	0.0026
NCI-20-2	2/22/2011	FTN	2	mg/kg	<0.0050	<0.0050	0.2	<0.0050	0.019	0.04	<0.050	<0.025	<0.050	<0.0050	0.064	0.028	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.14	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	0.0055	0.066	0.0021	<0.0050	0.1
NCI-20-14	2/22/2011	FTN	14	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-20-20	2/22/2011	FTN	20	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
Number of Detects					0	0	15	0	15	16	1	10	0	0	23	15	1	0	0	0	0	10	0	0	0	0	0	0	0	21	18	18	0	19
Number of Analysis					53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53
Minimum Detect					0	0	0.0017	0	0.002	0.0037	0.049	0.0032	0	0	0.0019	0.0017	0.0016	0	0	0	0	0.0018	0	0	0	0	0	0	0	0.0019	0.0019	0.0015	0	0.0024
Maximum Detect					0	0	0.64	0	2.4	10	0.049	0.084	0	0	6.6	2.1	0.0016	0	0	0	0	0.2	0	0	0	0	0	0	0	39	14	27	0	4
Human Health Screening																																		
USEPA RSL Table - Residential Soil (mg/kg)					na	1400	5.4	6.2	2100	na	28000	11	5300	43	3.6	3400	6300	1.9	0.56	43000	0.55	5000	49	22	8700	1.1	2.8	790	0.005	62	na	780	0.06	630
USEPA RSL Table - Protection of Groundwater (mg/kg)					na	0.21	0.78	0.0017	1.1	na	1.5	0.0013	0.45	0.0028	0.00047	2.5	0.11	0.0002	0.000026	150	0.0023	0.69	0.087	0.2	0.07	0.0016	0.0018	0.83	0.00000031	0.021	na	0.52	0.00069	9.8
Ecological Screening																																		
USEPA Ecological SL - Soil					NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
USEPA Region 4 Ecological SL					NA	NA	0.04	NA	NA	NA	NA	NA	NA	NA	0.1	NA	0.1	NA	NA	NA	0.01	0.05	0.01	0.01	NA	NA	0.001	NA	NA	NA	NA	NA	0.01	0.05
PRG for Ecological Endpoints					NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	300	NA	NA	NA	NA	200	20	20	NA	NA	NA	NA	NA	NA	NA	NA	0.01	NA
Endpoint																	plants					plants	earthworm	earthworm										

Table E.11
Subsurface Soil Data
Polycyclic Aromatic Hydrocarbons (PAHs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Depth (ft)	Units	Anthracene	Acenaphthene	Acenaphthylene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	1-Methylnaphthalene	2-Methylnaphthalene	Naphthalene	Phenanthrene	Pyrene
NCI-0-10	2/25/2011	FTN	10	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-0-2	2/25/2011	FTN	2	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-0-23	2/25/2011	FTN	23	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-0-23D	2/25/2011	FTN	23	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-1-2	2/21/2011	FTN	2	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-1-15	2/21/2011	FTN	15	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-1-20-25	2/21/2011	FTN	20-25	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.0087	0.0088	0.023	<0.020	<0.020
NCI-2-14	2/21/2011	FTN	14	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.0076	0.0068	<0.020	<0.020	<0.020
NCI-2-17	2/21/2011	FTN	17	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-2-2	2/21/2011	FTN	2	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-3-2	2/21/2011	FTN	2	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-3-10	2/21/2011	FTN	10	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-3-16.5	2/21/2011	FTN	16.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.018	0.016	0.015	<0.020	<0.020
NCI-4-2	2/22/2011	FTN	2	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.28	0.62	0.54	<0.020	<0.020
NCI-4-2 D	2/22/2011	FTN	2	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	4.8	6.6	4	<0.020	<0.020
NCI-4-14	2/22/2011	FTN	14	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	9.9	13	7.5	<0.020	<0.020
NCI-4-23	2/22/2011	FTN	23	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.069	<0.020	<0.020
NCI-5-2	2/22/2011	FTN	2	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-5-6	2/22/2011	FTN	6	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-5-29	2/22/2011	FTN	29	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-5-41	2/22/2011	FTN	41	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.25	0.26	0.21	<0.020	<0.020
NCI-6-2	2/23/2011	FTN	2	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-6-2 D	2/23/2011	FTN	2	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-6-15	2/23/2011	FTN	15	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-6-24	2/23/2011	FTN	24	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-7-2	2/23/2011	FTN	2	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-7-14	2/23/2011	FTN	14	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-7-23	2/23/2011	FTN	23	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-8-2	2/24/2011	FTN	2	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-8-2 D	2/24/2011	FTN	2	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-9-2	2/24/2011	FTN	2	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.4	0.35	0.48	<0.020	<0.020
NCI-9-10	2/24/2011	FTN	10	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.017	0.0083	<0.020	<0.020	<0.020
NCI-9-12	2/23/2011	FTN	12	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-10-2	2/23/2011	FTN	2	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-10-8	2/23/2011	FTN	8	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.14	0.056	<0.020	<0.020	<0.020
NCI-10-9	2/23/2011	FTN	9	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.014
NCI-11-2	2/23/2011	FTN	2	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-11-4	2/23/2011	FTN	4	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-11-9	2/23/2011	FTN	9	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.0094	<0.020	<0.020	0.087	0.052	0.049	<0.020	0.13
NCI-13-2	2/23/2011	FTN	2	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-13-10	2/28/2011	FTN	10	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-13-12	2/28/2011	FTN	12	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-19-2	2/22/2011	FTN	2	mg/kg	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	1.7	0.78	0.36	<0.040	<0.040
NCI-19-10	2/22/2011	FTN	10	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	4.5	5	4.2	<0.020	<0.020
NCI-19-21	2/22/2011	FTN	21	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.0079	0.0072	0.0079	<0.020	<0.020
NCI-20-2	2/22/2011	FTN	2	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.28	0.094	0.16	<0.020	<0.020
NCI-20-14	2/22/2011	FTN	14	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-20-20	2/22/2011	FTN	20	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
				Number of Detects	0	0	0	0	0	0	0	0	0	0	1	0	0	15	15	13	0	2
				Number of Analysis	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48
				Minimum Detect	0	0	0	0	0	0	0	0	0	0	0.0094	0	0	0.0076	0.0068	0.0079	0	0.014
				Maximum Detect	0	0	0	0	0	0	0	0	0	0	0.0094	0	0	9.9	13	7.5	0	0.13
				Human Health Screening																		
				USEPA RSL Table - Residential Soil (mg/kg)	17000	3400	na	0.15	0.015	0.15	na	1.5	15	0.015	2300	2300	0.15	22	310	3.6	na	1700
				USEPA RSL Table - Protection of Groundwater (mg/kg)	360	22	na	0.01	0.24	0.035	na	0.35	1.1	0.011	160	27	0.12	0.012	0.75	0.00047	na	120
				Ecological Screening																		
				USEPA Ecological SL - Soil	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
				USEPA Region 4 Ecological SL	20	20	NA	NA	0.1	NA	NA	NA	NA	NA	0.1	30	NA	NA	NA	NA	0.1	0.1
				PRG for Ecological Endpoints	NA	20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.1
				Endpoint		plants																

Table E.12
Subsurface Soil Data
Metals
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Depth (ft)	Units	Fluoride	Chromium,Hexavalent	Chromium	Lead
NCI-0-10 FT	2/25/2011	FTN	10	mg/kg			18	9.1
NCI-0-2 FT	2/25/2011	FTN	2	mg/kg			2.8	3.7
NCI-0-23 FT	2/25/2011	FTN	23	mg/kg			4.2	4.3
NCI-0-23D	2/25/2011	FTN	23	mg/kg			2	3.9
NCI-1-2 FT	2/21/2011	FTN	2	mg/kg			0.58	1.7
NCI-1-15 FT	2/21/2011	FTN	15	mg/kg			6	6.6
NCI-1-20-25 FT	2/21/2011	FTN	20-25	mg/kg			2.2	2.3
NCI-2-14 FT	2/21/2011	FTN	14	mg/kg			4.6	3.2
NCI-2-17 FT	2/21/2011	FTN	17	mg/kg			2.2	2
NCI-2-2 FT	2/21/2011	FTN	2	mg/kg			5.3	5
NCI-3-2 FT	2/21/2011	FTN	2	mg/kg			3.7	5.8
NCI-3-10 FT	2/21/2011	FTN	10	mg/kg			5.9	4.1
NCI-3-16.5 FT	2/21/2011	FTN	16.5	mg/kg			2.3	3.4
NCI-4-2 FT	2/22/2011	FTN	2	mg/kg			9.7	12
NCI-4-2 FT D	2/22/2011	FTN	2	mg/kg			4.1	18
NCI-4-14 FT	2/22/2011	FTN	14	mg/kg			4.8	5.1
NCI-4-23 FT	2/22/2011	FTN	23	mg/kg			3.1	3
NCI-5-2 FT	2/22/2011	FTN	2	mg/kg	43		5.1	6.7
NCI-5-6 FT	2/22/2011	FTN	6	mg/kg	2.2		6.4	4.5
NCI-5-29 FT	2/22/2011	FTN	29	mg/kg	3.8		5.4	3
NCI-5-41 FT	2/22/2011	FTN	41	mg/kg	2.3		11	3.6
NCI-6-2 FT	2/23/2011	FTN	2	mg/kg	2		10	5.5
NCI-6-2 FT D	2/23/2011	FTN	2	mg/kg	1.9		12	5.5
NCI-6-15 FT	2/23/2011	FTN	15	mg/kg	2		3.8	6.6
NCI-6-24 FT	2/23/2011	FTN	24	mg/kg	2.1		4.2	2.1
NCI-7-2 FT	2/23/2011	FTN	2	mg/kg	2.2		4.7	5.4
NCI-7-14 FT	2/23/2011	FTN	14	mg/kg	3.2		1.8	2.9
NCI-7-23 FT	2/23/2011	FTN	23	mg/kg	2.1		3.2	3.3
NCI-8-2 FT	2/24/2011	FTN	2	mg/kg		<2.0	14	7.2
NCI-8-2 FT D	2/24/2011	FTN	2	mg/kg		<2.0	10	7.6
NCI-8-10	2/24/2011	FTN	10	mg/kg		1.9	8.6	5.5
NCI-8-34	2/24/2011	FTN	34	mg/kg		0.62	12	11
NCI-9-2 FT	2/23/2011	FTN	2	mg/kg		<2.0	6.4	16
NCI-9-10 FT	2/23/2011	FTN	10	mg/kg		<2.0	1.7	3
NCI-9-12 FT	2/23/2011	FTN	12	mg/kg		<2.0	2.4	3.1
NCI-10-2 FT	2/23/2011	FTN	2	mg/kg			5.6	5.1
NCI-10-8 FT	2/23/2011	FTN	8	mg/kg			4.4	10
NCI-10-9 FT	2/23/2011	FTN	9	mg/kg			12	8.8
NCI-11-2 FT	2/23/2011	FTN	2	mg/kg			3.1	4.1
NCI-11-4 FT	2/23/2011	FTN	4	mg/kg			4.6	4.7
NCI-11-9 FT	2/23/2011	FTN	9	mg/kg			2.4	2.9
NCI-12-2	2/24/2011	FTN	2	mg/kg			13	21
NCI-12-10	2/24/2011	FTN	10	mg/kg			8	10
NCI-12-14	2/24/2011	FTN	14	mg/kg			1.4	2.5
NCI-13-2	2/28/2011	FTN	2	mg/kg			3.2	5
NCI-13-10	2/28/2011	FTN	10	mg/kg			5.7	3
NCI-13-12	2/28/2011	FTN	12	mg/kg			5.5	3.3
NCI-19-2 FT	2/22/2011	FTN	2	mg/kg			21	5.6
NCI-19-10 FT	2/22/2011	FTN	10	mg/kg			4.6	4.1
NCI-19-21 FT	2/22/2011	FTN	21	mg/kg			3.3	1.4
NCI-20-2 FT	2/22/2011	FTN	2	mg/kg			21	38
NCI-20-14 FT	2/22/2011	FTN	14	mg/kg			2.7	2.1
NCI-20-20 FT	2/22/2011	FTN	20	mg/kg			6	2.9
				Number of Detects	11	2	53	53
				Number of Analysis	11	7	53	53
				Minimum Detect	1.9	0.62	0.58	1.4
				Maximum Detect	43	1.9	21	38
				Background Concentration (Shacklette and Boerngen, 1984)	na	10	10	10
				Human Health Screening				
				USEPA RSL Table - Residential Soil (mg/kg)	3100	0.29	na	400
				USEPA RSL Table - Protection of Groundwater (mg/kg)	na	0.00083	180000	14
				Ecological Screening				
				USEPA Ecological SL - Soil	na	81	26	NA
				USEPA Region 4 Ecological SL	na	0.4	0.4	200
				PRG for Ecological Endpoints	na	0.4	0.4	NA
				Endpoint	na	earthworm	earthworm	

Table E.13
Subsurface Soil Data
Total Petroleum Hydrocarbons (TPH)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Depth (ft)	Units	TPH Gasoline Range	C10-C28 Diesel Range	C28-C40 Oil Range
NCI-0-10	2/25/2011	FTN	10	mg/kg	<0.50	<4.0	<4.0
NCI-0-2	2/25/2011	FTN	2	mg/kg	<0.50	<4.0	<4.0
NCI-0-23	2/25/2011	FTN	23	mg/kg	<0.50	<4.0	<4.0
NCI-0-23D	2/25/2011	FTN	23	mg/kg	<0.50	<4.0	<4.0
NCI-1-2	2/21/2011	FTN	2	mg/kg	<0.50	69	31
NCI-1-15	2/21/2011	FTN	15	mg/kg	0.96	82	<40
NCI-1-20-25	2/21/2011	FTN	20-25	mg/kg	1.7	<4.0	<4.0
NCI-2-14	2/21/2011	FTN	14	mg/kg	<0.50	12	2.2
NCI-2-17	2/21/2011	FTN	17	mg/kg	0.37	<4.0	<4.0
NCI-2-2	2/21/2011	FTN	2	mg/kg	<0.50	<4.0	<4.0
NCI-3-2	2/21/2011	FTN	2	mg/kg	<0.50	750	250
NCI-3-10	2/21/2011	FTN	10	mg/kg	<0.50	5.7	2
NCI-3-16.5	2/21/2011	FTN	16.5	mg/kg	<0.50	690	73
NCI-4-2	2/22/2011	FTN	2	mg/kg	920	3700	1700
NCI-4-2 D	2/22/2011	FTN	2	mg/kg	1500	7800	1600
NCI-4-14	2/22/2011	FTN	14	mg/kg	440	2600	970
NCI-4-23	2/22/2011	FTN	23	mg/kg	130	360	150
NCI-5-2	2/22/2011	FTN	2	mg/kg	<0.50	650	190
NCI-5-6	2/22/2011	FTN	6	mg/kg	<0.50	<4.0	<4.0
NCI-5-29	2/22/2011	FTN	29	mg/kg	<0.50	<4.0	<4.0
NCI-5-41	2/22/2011	FTN	41	mg/kg	9	1200	160
NCI-6-2	2/23/2011	FTN	2	mg/kg	<0.50	<4.0	<4.0
NCI-6-2 D	2/23/2011	FTN	2	mg/kg	<0.50	<4.0	<4.0
NCI-6-15	2/23/2011	FTN	15	mg/kg	<0.50	<4.0	<4.0
NCI-6-24	2/23/2011	FTN	24	mg/kg	<0.50	<4.0	<4.0
NCI-7-2	2/23/2011	FTN	2	mg/kg	<0.50	2.2	4.1
NCI-7-14	2/23/2011	FTN	14	mg/kg	<0.50	<4.0	<4.0
NCI-7-23	2/23/2011	FTN	23	mg/kg	<0.50	<4.0	<4.0
NCI-8-2	2/24/2011	FTN	2	mg/kg	<0.50	66	35
NCI-8-2 D	2/24/2011	FTN	2	mg/kg	<0.50	78	45
NCI-8-10	2/24/2011	FTN	10	mg/kg	<0.50	<4.0	11
NCI-8-34	2/24/2011	FTN	34	mg/kg	<0.50	7.9	29
NCI-9-2	2/23/2011	FTN	2	mg/kg	4	5200	980
NCI-9-10	2/23/2011	FTN	10	mg/kg	0.75	12	3.2
NCI-9-12	2/23/2011	FTN	12	mg/kg	0.33	14	3.4
NCI-10-2	2/23/2011	FTN	2	mg/kg	<0.50	5.6	4.5
NCI-10-8	2/23/2011	FTN	8	mg/kg	1.6	4000	1500
NCI-10-9	2/23/2011	FTN	9	mg/kg	0.38	<4.0	<4.0
NCI-11-2	2/23/2011	FTN	2	mg/kg	<0.50	<4.0	<4.0
NCI-11-4	2/23/2011	FTN	4	mg/kg	<0.50	<4.0	<4.0
NCI-11-9	2/23/2011	FTN	9	mg/kg	<0.50	<4.0	<4.0
NCI-12-2	2/24/2011	FTN	2	mg/kg	27	8800	880
NCI-12-10	2/24/2011	FTN	10	mg/kg	64	3500	300
NCI-12-14	2/24/2011	FTN	14	mg/kg	0.26	44	11
NCI-13-2	2/28/2011	FTN	2	mg/kg	<0.50	560	130
NCI-13-10	2/28/2011	FTN	10	mg/kg	<0.50	18	<4.0
NCI-13-12	2/28/2011	FTN	12	mg/kg	<0.50	2.2	<4.0
NCI-19-2	2/22/2011	FTN	2	mg/kg	92	20000	2200
NCI-19-10	2/22/2011	FTN	10	mg/kg	180	4900	740
NCI-19-21	2/22/2011	FTN	21	mg/kg	0.77	6.8	3.2
NCI-20-2	2/22/2011	FTN	2	mg/kg	7.8	21000	2300
NCI-20-14	2/22/2011	FTN	14	mg/kg	1	<4.0	<4.0
NCI-20-20	2/22/2011	FTN	20	mg/kg	<0.50	<4.0	<4.0
				Number of Detects	21	31	29
				Number of Analysis	53	53	53
				Minimum Detect	0.26	2.2	2
				Maximum Detect	1500	21000	2300
				Human Health Screening			
				USEPA RSL Table - Residential Soil (mg/kg)	na	na	na
				USEPA RSL Table - Protection of Groundwater (mg/kg)	na	na	na
				ADEQ TPH SL (mg/kg)	440	2300	4500
				Ecological Screening			
				USEPA Ecological SL - Soil	na	na	na
				USEPA Region 4 Ecological SL	na	na	na
				PRG for Ecological Endpoints	na	na	na
				Endpoint			

Table E.14
Subsurface Soil Data
Polychlorinated Biphenyls (PCBs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Depth (ft)	Units	PCB 1016	PCB 1221	PCB 1232	PCB 1242	PCB 1248	PCB 1254	PCB 1260
T-1-2	2/28/2011	FTN	2	mg/kg	<0.017	<0.017	<0.017	<0.017	<0.017	<0.017	<0.017
T-2-2	2/28/2011	FTN	2	mg/kg	<0.017	<0.017	<0.017	<0.017	<0.017	<0.017	0.023
				Number of Detects	0	0	0	0	0	0	1
				Number of Analysis	2	2	2	2	2	2	2
				Minimum Detect	0	0	0	0	0	0	0.023
				Maximum Detect	0	0	0	0	0	0	0.023
				Human Health Screening							
				USEPA RSL Table - Residential Soil (mg/kg)	3.9	0.14	0.14	0.22	0.22	0.22	0.22
				USEPA RSL Table - Protection of Groundwater (mg/kg)	0.092	0.00012	0.00012	0.0053	0.0052	0.0088	0.024
				Ecological Screening							
				USEPA Ecological SL - Soil	NA	NA	NA	NA	NA	NA	NA
				USEPA Region 4 Ecological SL	0.02	0.02	0.02	0.02	0.02	0.02	0.02
				PRG for Ecological Endpoints	0.371	0.371	0.371	0.371	0.371	0.371	0.371
				Endpoint	piscivores birds	piscivores birds	piscivores birds	piscivores birds	piscivores birds	piscivores birds	piscivores birds

Table E.15
Surface Water Data
Polycyclic Aromatic Hydrocarbons (PAHs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Units	Anthracene	Acenaphthene	Acenaphthylene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	1-Methylnaphthalene	2-Methylnaphthalene	Naphthalene	Phenanthrene	Pyrene
SW-1	2/28/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<1.0	<1.0	<1.0	<0.10	<0.10
SW-2	2/24/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<1.0	<1.0	<1.0	<0.10	<0.10
SW-3	2/25/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<1.0	<1.0	<1.0	<0.10	<0.10
SW-4	2/24/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<1.0	<1.0	<1.0	<0.10	<0.10
SW-5	2/24/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<1.0	<1.0	<1.0	<0.10	<0.10
SW-6	2/23/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<1.0	<1.0	<1.0	<0.10	<0.10
SW-7	2/25/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<1.0	<1.0	<1.0	<0.10	<0.10
SW-7D	2/25/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<1.0	<1.0	<1.0	<0.10	<0.10
Number of Detects				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Number of Analysis				8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
Minimum Detect				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maximum Detect				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Human Health Screening																					
USEPA RSL Table - Tapwater (ug/L)				11000	2200	na	0.029	0.0029	0.029	na	0.29	2.9	0.0029	1500	1500	0.029	2.3	150	0.14	na	1100
Maximum Contaminant Level (MCL) (ug/L)				na	na	na	na	0.2	na	na	na	na	na	na	na	na	na	na	na	na	na
AWQC Human Health for Consumption of Organisms (ug/L)				40000	990	na	0.018	0.018	0.018	na	0.18	0.018	0.018	140	5300	0.018	na	na	na	na	4000
Ecological Screening																					
APC & EC Reg. 2																					
Acute				na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Chronic				na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
Federal AWQC																					
CMC (acute)				na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
CCC (chronic)				na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na	na
USEPA Region 4																					
Acute				na	170	na	na	na	na	na	na	na	na	398	na	na	na	na	230	na	na
Chronic				na	17	na	na	na	na	na	na	na	na	39.8	na	na	na	na	62	na	na
PRG for Ecological Endpoints				0.00073	0.023	na	0.000027	0.000014	na	na	na	na	na	0.0062	0.0039	na	0.0021	na	0.012	0.0063	na
Endpoint				aquatic life	aquatic life		aquatic life	aquatic life						aquatic life	aquatic life		aquatic life		aquatic life	aquatic life	

Table E.16
Surface Water Data
Metals
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Units	Chromium	Lead
SW-1	2/28/2011	FTN	ug/L	<10	3.1
SW-2	2/24/2011	FTN	ug/L	<10	<5.0
SW-3	2/25/2011	FTN	ug/L	2.9	7.4
SW-4	2/24/2011	FTN	ug/L	<10	<5.0
SW-5	2/24/2011	FTN	ug/L	<10	<5.0
SW-6	2/23/2011	FTN	ug/L	<10	<5.0
SW-7	2/25/2011	FTN	ug/L	<10	4.5
SW-7D	2/25/2011	FTN	ug/L	4.3	3.4
			Number of Detects	2	4
			Number of Analysis	8	8
			Minimum Detect	2.9	3.1
			Maximum Detect	4.3	7.4
			Human Health Screening		
			USEPA RSL Table - Tapwater (ug/L)	na	na
			Maximum Contaminant Level (MCL) (ug/L)	100	15
			QC Human Health for Consumption of Organisms (ug/L)	na	na
			Ecological Screening		
			APC & EC Reg. 2		
			Acute	na	na
			Chronic	101	1.17
			Federal AWQC		
			CMC (acute)	na	65
			CCC (chronic)	na	2.5
			USEPA Region 4		
			Acute	na	33.78
			Chronic	na	1.32
			PRG for Ecological Endpoints	0.21	0.0032
			Endpoint	aquatic life	aquatic life

Table E.17
Surface Water Data
Total Petroleum Hydrocarbons (TPH)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Units	TPH Gasoline Range	C10-C28 Diesel Range	C28-C40 Oil Range
SW-1	2/28/2011	FTN	ug/L	<100	200	97
SW-2	2/24/2011	FTN	ug/L	<100	110	<100
SW-3	2/25/2011	FTN	ug/L	<100	210	57
SW-4	2/24/2011	FTN	ug/L	<100	87	<100
SW-5	2/24/2011	FTN	ug/L	<100	120	<100
SW-6	2/23/2011	FTN	ug/L	<100	180	<100
SW-7	2/25/2011	FTN	ug/L	<100	3200	250
SW-7D	2/25/2011	FTN	ug/L	<100	3700	280
			Number of Detects	0	8	4
			Number of Analysis	8	8	8
			Minimum Detect	0	87	57
			Maximum Detect	0	3700	280
			USEPA RSL Table - Tapwater (ug/L)	na	na	na
			Maximum Contaminant Level (MCL) (ug/L)	na	na	na
			ADEQ TPH SL (ug/L)	200	400	700

Table E.18
Sediment Data
Volatile Organic Compounds (VOCs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Units	Acetone	Acrylonitrile	Benzene	Bromobenzene	Bromodichloromethane	Bromoform	Bromomethane	n-Butylbenzene	sec-Butylbenzene	tert-Butylbenzene	Carbon tetrachloride	Chlorobenzene	Chlorodibromomethane	Chloroethane	2-Chloroethyl vinyl ether	Chloroform	Chloromethane	2-Chlorotoluene	4-Chlorotoluene	1,2-Dibromo-3-Chloropropane	1,2-Dibromoethane	Dibromomethane	1,2-Dichlorobenzene	1,3-Dichlorobenzene
SD-1	3/5/2011	FTN	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SD-1-D	3/5/2011	FTN	mg/kg	0.06	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SD-2	3/2/2011	FTN	mg/kg	0.06	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SD-3	3/2/2011	FTN	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SD-4	2/27/2011	FTN	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SD-5	2/27/2011	FTN	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SD-6	2/27/2011	FTN	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
			Number of Detects	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			Number of Analysis	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
			Minimum Detect	0.06	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			Maximum Detect	0.06	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Human Health Screening																											
USEPA RSL Table - Residential Soil (mg/kg)				61000	0.24	1.1	300	0.27	61	7.3	na	na	na	0.61	290	0.68	15000	na	0.29	120	1600	5500	0.0054	0.034	25	1900	na
Ecological Screening																											
USEPA Region 4 Ecological SL - Sediment				NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
USEPA Region 5 Ecological SL - Sediment				0.0099	0.0012	0.142	NA	NA	0.492	NA	NA	NA	NA	1.45	0.291	NA	NA	NA	0.121	NA	NA	NA	NA	NA	NA	0.294	NA
PRG for Ecological Endpoints				0.0091	NA	0.16	NA	NA	NA	NA	NA	NA	NA	2	0.417	NA	NA	NA	0.96	NA	NA	NA	NA	NA	NA	0.33	1.70

Table E.18
Sediment Data
Volatile Organic Compounds (VOCs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Units	1,4-Dichlorobenzene	Dichlorodifluoromethane	1,1-Dichloroethane	1,2-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	1,2-Dichloropropane	1,1-Dichloropropene	1,3-Dichloropropane	cis-1,3-Dichloropropene	trans-1,3-Dichloropropene	2,2-Dichloropropane	Di-isopropyl ether	Ethylbenzene	Hexachloro-1,3-butadiene	Isopropylbenzene	p-Isopropyltoluene	2-Butanone (MEK)	Methylene Chloride	4-Methyl-2-pentanone (MIBK)	Methyl tert-butyl ether	Naphthalene	n-Propylbenzene
SD-1	3/5/2011	FTN	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
SD-1-D	3/5/2011	FTN	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.025	<0.050	<0.0050	0.0017	<0.0050
SD-2	3/2/2011	FTN	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.003	<0.0050	<0.050	<0.025	<0.050	<0.0050	0.0022	<0.0050
SD-3	3/2/2011	FTN	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
SD-4	2/27/2011	FTN	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
SD-5	2/27/2011	FTN	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
SD-6	2/27/2011	FTN	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
			Number of Detects	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2	0
			Number of Analysis	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
			Minimum Detect	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.003	0	0	0	0	0	0.0017	0
			Maximum Detect	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.003	0	0	0	0	0	0.0022	0
Human Health Screening																											
USEPA RSL Table - Residential Soil (mg/kg)				2.4	180	3.3	0.43	240	160	150	0.89	na	1600	na	na	na	1400	5.4	6.2	2100	na	28000	11	5300	43	3.6	3400
Ecological Screening																											
USEPA Region 4 Ecological SL - Sediment				NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	330	NA
USEPA Region 5 Ecological SL - Sediment				0.318	NA	0.00058	0.26	0.26	NA	0.654	0.333	NA	NA	NA	NA	NA	NA	0.175	0.0265	NA	NA	NA	NA	0.025	NA	0.179	NA
PRG for Ecological Endpoints				0.35	NA	0.027	4.3	3.5	0.4	0.4	NA	NA	NA	0.23	0.23	NA	NA	5.4	NA	NA	NA	0.27	18	15	NA	0.39	NA

Table E.18
Sediment Data
Volatile Organic Compounds (VOCs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Units	Styrene	1,1,1,2-Tetrachloroethane	1,1,2,2-Tetrachloroethane	1,1,2-Trichloro-1,2,2-trifluoroethane	Tetrachloroethene	Toluene	1,2,3-Trichlorobenzene	1,2,4-Trichlorobenzene	1,1,1-Trichloroethane	1,1,2-Trichloroethane	Trichloroethene	Trichlorofluoromethane	1,2,3-Trichloropropane	1,2,4-Trimethylbenzene	1,2,3-Trimethylbenzene	1,3,5-Trimethylbenzene	Vinyl chloride	Xylenes, Total
SD-1	3/5/2011	FTN	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
SD-1-D	3/5/2011	FTN	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
SD-2	3/2/2011	FTN	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
SD-3	3/2/2011	FTN	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
SD-4	2/27/2011	FTN	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
SD-5	2/27/2011	FTN	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
SD-6	2/27/2011	FTN	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
			Number of Detects	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			Number of Analysis	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
			Minimum Detect	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			Maximum Detect	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			Human Health Screening																		
			USEPA RSL Table - Residential Soil (mg/kg)	6300	1.9	0.56	43000	0.55	5000	49	22	8700	1.1	2.8	790	0.005	62	na	780	0.06	630
			Ecological Screening																		
			USEPA Region 4 Ecological SL - Sediment	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
			USEPA Region 5 Ecological SL - Sediment	0.254	NA	0.85	NA	0.99	1.22	NA	5.062	0.213	0.213	0.112	NA	NA	NA	NA	NA	NA	NA
			PRG for Ecological Endpoints	NA	NA	5.4	NA	3.2	0.05	NA	9.7	9.6	9.8	52	NA	NA	NA	NA	NA	NA	0.16

Table E.19
Sediment Data
Polycyclic Aromatic Hydrocarbons (PAHs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Units	Anthracene	Acenaphthene	Acenaphthylene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	1-Methylnaphthalene	2-Methylnaphthalene	Naphthalene	Phenanthrene	Pyrene
SD-1	FTN	3/11/2011	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.028	0.017	<0.020	<0.020	<0.020
SD-1-D	FTN	3/11/2011	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.062	0.044	<0.020	<0.020	<0.020
SD-2	FTN	3/6/2011	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.9	<0.020	<0.020	0.44	0.064	<0.020	0.32	0.43
SD-3	FTN	3/7/2011	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.076	0.051	<0.020	<0.020
SD-4	FTN	3/2/2011	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SD-5	FTN	3/2/2011	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SD-6	FTN	3/2/2011	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Number of Detects				0	0	0	0	0	0	0	0	0	0	1	0	0	3	4	1	1	1
Number of Analysis				7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
Minimum Detect				0	0	0	0	0	0	0	0	0	0	0.9	0	0	0.028	0.017	0.051	0.32	0.43
Maximum Detect				0	0	0	0	0	0	0	0	0	0	0.9	0	0	0.44	0.076	0.051	0.32	0.43
Human Health Screening																					
USEPA RSL Table - Residential Soil (mg/kg)				17000	3400	na	0.15	0.015	0.15	na	1.5	15	0.015	2300	2300	0.15	22	310	3.6	na	1700
Ecological Screening																					
USEPA Region 4 Ecological SL - Sediment				0.33	0.33	0.33	0.33	0.33	0.655	0.655	0.655	0.33	0.33	0.33	0.33	0.655	NA	0.33	0.33	NA	0.33
USEPA Region 5 Ecological SL - Sediment				0.0572	0.00671	0.00587	0.108	0.15	10.4	0.17	0.24	0.166	0.033	0.423	0.0774	0.2	NA	0.0202	0.176	0.204	0.195
PRG for Ecological Endpoints				0.25	0.089	0.13	0.69	0.394	NA	6.3	NA	0.85	0.0282	0.834	0.14	0.837	NA	NA	0.39	NA	1.4

Table E.20
Sediment Data
Metals
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Units	Chromium	Lead
SD-1	3/8/2011	FTN	mg/kg	3.9	13
SD-1-D	3/8/2011	FTN	mg/kg	4.4	14
SD-2	3/9/2011	FTN	mg/kg	2.3	28
SD-3	3/9/2011	FTN	mg/kg	3	40
SD-4	2/26/2011	FTN	mg/kg	3.5	6.5
SD-5	2/26/2011	FTN	mg/kg	1.2	2.8
SD-6	2/26/2011	FTN	mg/kg	4.1	4.8
			Number of Detects	7	7
			Number of Analysis	7	7
			Minimum Detect	1.2	2.8
			Maximum Detect	4.4	40
			ncentration (Shacklette and Boerngen, 1984)	10	10
			Human Health Screening		
			USEPA RSL Table - Residential Soil (mg/kg)	na	400
			Ecological Screening		
			USEPA Region 4 Ecological SL - Sediment	52.3	30.2
			PRG for Ecological Endpoints	159	110

Table E.22
Sediment Data
Total Petroleum Hydrocarbons (TPH)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Units	TPH (GC/FID) Low Fraction	C10-C28 Diesel Range	C28-C40 Oil Range
SD-1	3/8/2011	FTN	mg/kg	0.42	810	210
SD-1-D	3/8/2011	FTN	mg/kg	1.1	1000	200
SD-2	3/3/2011	FTN	mg/kg	1.6	1400	640
SD-3	3/3/2011	FTN	mg/kg	2.3	1600	440
SD-4	3/1/2011	FTN	mg/kg	<0.50	<4.0	<4.0
SD-5	3/1/2011	FTN	mg/kg	<0.50	78	15
SD-6	3/1/2011	FTN	mg/kg	<0.50	22	<20
			Number of Detects	4	6	5
			Number of Analysis	7	7	7
			Minimum Detect	0.42	22	15
			Maximum Detect	2.3	1600	640
			Human Health Screening			
			USEPA RSL Table - Residential Soil (mg/kg)	na	na	na
			ADEQ TPH Soil (mg/kg)	440	2300	4500
			Ecological Screening			
			USEPA Region 4 Ecological SL - Sediment	na	na	na
			USEPA Region 5 Ecological SL - Sediment	na	na	na
			PRG for Ecological Endpoints	na	na	na

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DRAFT

HUMAN HEALTH RISK ASSESSMENT
and
SCREENING LEVEL ECOLOGICAL RISK ASSESSMENT

Former Norphlet Chemical, Inc (NCI)
Norphlet, Arkansas

FTN Associates, Ltd.

April, 2011

Prepared for:
Arkansas Department of Environmental Quality

Prepared by:
Center for Toxicology and Environmental Health, L.L.C.

Project Number 9313

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1.0 INTRODUCTION

The human health risk assessment (HHRA) and screening level ecological risk assessment (SLERA) presented in this report were conducted for the former Norphlet Chemical, Inc. (NCI) site located at 600 Macmillan Road (Highway 335) in Norphlet, Union County, Arkansas ("the Site") as part of a Comprehensive Site Assessment. The HHRA and SLERA were performed in accordance with the Risk Assessment Work Plan (CTEH, 2011) and rely on guidance provided in the Arkansas Brownfields User's Guide (ADEQ, 2007) and associated United States Environmental Protection Agency (USEPA) guidance. Data compiled from investigations by FTN Associates, Ltd. (FTN) were used in the HHRA and SLERA.

This report addresses potential health risks related to current and future human exposure to chemicals detected in groundwater, soil, surface water, and sediment within the property boundaries. The methods and assumptions used in the HHRA were outlined in a work plan submitted to the ADEQ (CTEH, 2011). In accordance with the information presented in the ecological checklist for the Site, a SLERA was conducted since the Site is located near environmental features or ecological habitats such as surface water and forested areas. The ecological checklist is presented in Appendix D.

1.1 Site Description

The Site is approximately 100 acres and the location of the former MacMillan Ring-Free Oil Refinery, which closed in 1987. The facility was inactive from 1987 until it was refurbished as a chemical manufacturing plant in early 2006 that was designed to produce Freon 134A. The plant failed to produce the product, and the plant has never operated as intended. The Site is in a rural area at the end of MacMillan Road, off Highway 335. It is bordered by a residential subdivision and the Norphlet Public School on the west, Hayes Creek on the north and east, and Massey Creek and bottomlands associated with the creek to the southwest. Future plans for the use of the property are unknown; however, the surrounding property is used for commercial and residential purposes.

2.0 DATA SUMMARY AND EVALUATION

Groundwater, soil, surface water and sediment data used for the HHRA were obtained from the Site investigation performed by FTN in February, 2011. Chemicals of potential concern (COPCs) in this HHRA and SLERA were identified by comparing detected concentrations with health-protective screening levels and typical background concentrations.

Groundwater, soil, surface water, and sediment data were compared to United States Environmental Protection Agency (USEPA) Regional risk-based screening levels (RSLs) (USEPA, 2010a). In accordance with the risk assessment work plan prepared by CTEH and approved by ADEQ (RAWP; CTEH, 2011), maximum concentrations of chemicals detected in all media were compared to residential RSLs and other risk-based screening levels to select COPCs in accordance with the RAWP. For soils, the USEPA RSLs address the ingestion, skin contact, and inhalation routes of exposure to a chemical as well as the potential to degrade groundwater quality. USEPA RSLs for tapwater, USEPA MCLs (maximum contaminant levels), and national ambient water quality criteria (AWQC) for consumption of aquatic organisms were used to assess concentrations of chemicals in surface water. Residential soil RSLs were used to assess chemical concentrations in surface soil (depth of 6 inches or less below ground surface (bgs)), subsurface soil samples (deeper than 6 inches below ground surface), and sediment. In addition, soil RSLs for protection of groundwater (GWP) were compared to detected chemical concentrations in subsurface soil.

Chemicals detected in groundwater, soil, surface water, and sediment at concentrations below the health-protective screening levels were eliminated from further evaluation in the HHRA.

Groundwater, soil, surface water, and sediment data along with the appropriate screening values are presented in Tables 2.0a – 2.0u. Media were analyzed for volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), metals, polychlorinated biphenyls (PCBs), and total petroleum hydrocarbon fractions (TPH-diesel range organics (DRO), TPH-oil range organics (ORO), and TPH-gasoline range organics (GRO)).

For the purpose of the SLERA, chemicals detected in soil, surface water, and sediment were screened using endpoints for ecological receptors. The selection of ecological COPCs is presented in Section 6.4 of this report.

2.1 Chemicals of Potential Concern in Groundwater

Groundwater at the Site is shallow (approximately 8 feet below ground surface) and is not currently used for potable purposes. Since future use of the Site is not known, residential use of groundwater was evaluated in the HHRA. Benzene, chromium, lead, 1-methylnaphthalene, naphthalene, 1,2,4-trimethylbenzene, and TPH (DRO, GRO, and ORO) were detected above the RSL for tapwater or the MCL. Tables 2.0a – 2.0d summarize these chemicals in groundwater, the frequency of occurrence of the chemical, the minimum detected concentration, and the maximum detected concentration.

2.2 Chemicals of Potential Concern in Surface Soil

The potential for human exposure to chemicals in soil is affected by the depth and spatial distribution of contaminants in soil. Chemicals present in soils at or near the soil surface (0 to 0.5 ft bgs) are much more likely to be directly contacted than chemicals in deeper soils. Surface soil samples were collected at a depth from 0 – 0.5 ft bgs and analyzed for VOCs, PAHs, metals, PCBs and TPH.

Screening of surface soil data indicated that the higher concentrations of certain potentially carcinogenic PAHs (benzo(a)pyrene, benzo(b)fluoranthene, and benzo(k)fluoranthene) in surface soil occur primarily in the sample location SS-19-0.5. To account for this uneven distribution of soil contamination and in keeping with USEPA guidance (USEPA, 1989), the site was divided into two areas; these areas of surface soil are described as the “hotspot area” and “non-hotspot area”. The hotspot area consists of surface soil sample SS-19-0.5 and the non-hotspot area consists of all other surface soil samples. Separate exposure and risk calculations were calculated for the non-hotspot area and the hot spot area.

Benzo(a)pyrene, benzo(b)fluoranthene, and benzo(k)fluoranthene were detected in surface soil above the screening level and were retained as COPCs for the hotspot area. Hexavalent chromium and TPH-DRO were detected in surface soil above the screening level and were retained as COPCs for the non-hotspot area.

Tables 2.0e – 2.0i summarize surface soil data results, the frequency of occurrence, the minimum detected concentration, and the maximum detected concentrations of chemicals in soil.

2.3 Chemicals of Potential Concern in Subsurface Soil

Direct contact with chemicals in subsurface soils may occur during excavation of soils for a construction project. Subsurface soil samples collected by FTN in 2011 were collected deeper than 0.5 foot bgs and were analyzed for VOCs, PAHs, metals, PCBs, and TPH.

Because contact with surface soils may occur during times of excavation, COPCs for surface soils were also considered to be COPCs for subsurface soils. Subsurface soils were also divided into hotspot and non-hotspot areas of concern.

Chemicals detected above residential soil RSLs and retained as COPCs in subsurface soil for the hotspot area are benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, and methylene chloride. Chemicals detected above residential soil RSLs and retained as COPCs in subsurface soil for the non-hotspot area are hexavalent chromium, TPH-DRO, TPH-GRO, and naphthalene.

Several chemicals were detected in non-hotspot subsurface soil at concentrations below risk-based RSLs but above the more stringent GWP values. Although it is not believed that these chemicals pose a risk to human health, they were detected in groundwater at low concentrations. For this reason, benzene, isopropylbenzene, methylene chloride, 1-methylnaphthalene, 2-methylnaphthalene, 1,2,4-trimethylbenzene, and 1,3,5-trimethylbenzene, were retained as COPCs in non-hotspot subsurface soil.

Tables 2.0j – 2.0n summarize subsurface soil data results, the frequency of occurrence of the chemical, the minimum detected concentration, and the maximum detected concentration.

2.4 Chemicals of Potential Concern in Surface Water and Sediment

Eight surface water samples and seven sediment samples were collected by FTN in 2011 from the on-site pond. Only TPH-DRO was detected in surface water above the ADEQ derived screening level for residential tapwater.

No chemicals were detected above the residential soil RSLs in sediment.

Tables 2.0o – 2.0q and 2.0r – 2.0u summarize surface water and sediment data results, the frequency of occurrence of the chemical, the minimum detected concentration, and the maximum detected concentration.

3.0 EXPOSURE ASSESSMENT

The objectives of the exposure assessment are to evaluate potential pathways of human exposure to COPCs in groundwater, surface soil, subsurface soil, surface water, and sediment at the Site. Once complete exposure pathways are identified (for example, ingestion of benzo(a)pyrene in soil), COPC exposures are calculated for each potential receptor (such as a resident). This section analyzes exposure conditions that may exist for current and future conditions at the Site.

The exposure assessment calculates chemical intakes for potentially exposed populations that could be considered representative of "reasonable maximum exposure" (RME). The RME is defined by the USEPA as "the highest exposure that is reasonably expected to occur at a site" (USEPA, 1989). The intent of the RME scenario is to calculate chemical intakes that do not underestimate exposure under conservative exposure conditions.

Data from groundwater, soil, surface water, and sediment sample locations within the site boundaries were used in the exposure calculations for chemicals detected in media.

3.1 Characterization of Exposure Setting

The majority of the Site is undeveloped and consists mainly of hardwood trees. The Site is located in a rural area and is bordered by a residential subdivision and Norphlet Public School on the west, Hayes Creek on the east, and low lands associated with Massey Creek in the south. The Site is relatively flat with primary surface water runoff to the south and east.

3.2 Exposure Pathway Analysis

As stated by the USEPA, an exposure pathway "describes the course a chemical or physical agent takes from the source to the exposed individual. An exposure pathway analysis links the

sources, locations, and types of environmental releases with population locations and activity patterns to determine the significant pathways of human exposure" (USEPA, 1989).

An exposure pathway is made up of four elements. These are:

- A source and mechanism of chemical release,
- A retention or transport medium,
- A point of potential human contact with the contaminated medium, and;
- An exposure route at the contact point.

In the following discussion, exposure pathways to chemicals in soil, surface water, and sediment are identified. These exposure pathways are developed based on current and future use of the Site. This HHRA assumes that soils at the Site may be disturbed.

Exposure pathways to chemicals detected in groundwater, surface soil, subsurface soil, surface water, and sediment are summarized in Figure 3.2. The potential for current and future human exposure to chemicals in groundwater, soil, surface water, and sediment is discussed below.

3.2.1 Current Exposure Pathways

NCI is an abandoned chemical manufacturing and has been idled since September 2008. Currently, there is no known use of the property. However, due to its close proximity to a residential community and local high school, it is possible that trespassers may come on-site and directly contact chemicals in the surface soil. Under current conditions, a trespassing adolescent was assumed to be directly exposed to COPCs in surface soil via incidental ingestion, skin contact, and inhalation of COPCs in dust particles released from soil.

3.2.2 Future Exposure Pathways

Future use of the property is not known; therefore exposure scenarios for the future indoor and outdoor commercial/industrial (C/I) worker, construction worker, and resident (child and adult) were evaluated.

Future indoor C/I workers may be exposed to COPCs in surface soil and groundwater. Potential routes of exposure for the indoor C/I worker are incidental ingestion of dust generated from

surface soil and inhalation of volatile COPCs migrating into indoor air released from subsurface soil and/or groundwater. According to the ADEQ SPL Site Summary (ADEQ, 2010), the municipal drinking water supply for the Norphlet area is derived from two groundwater wells located to the northwest of the Site and up gradient from the general regional direction of the Site. Although unlikely, groundwater may be used on-site in the future. In this case, a future on-site worker may ingest chemicals in groundwater used as a potable water supply.

Future outdoor C/I workers may be exposed to COPCs in surface soil. Although unlikely, outdoor C/I workers were also assumed to be exposed to surface water. The potential routes of exposure for adult C/I workers are incidental ingestion and direct skin contact of surface soils, inhalation of re-suspended particulates from soil and inhalation of volatilized COPCs, if present, from soil. A future outdoor C/I worker may be potentially exposed to COPCs in surface water via inhalation of VOCs emitted from the pond or by direct skin contact with surface water.

Since the outdoor C/I is more likely to have a greater exposure to surface soil than the indoor C/I, risks associated with direct contact with surface soil are presented only for the outdoor worker.

Future on-site construction workers may be exposed to chemicals in on-site soils by incidental ingestion, skin contact and inhalation of outdoor air. If the potential exists that construction workers working in a trench may encounter groundwater, then the potential for direct skin contact with groundwater and possible inhalation of volatilized COPCs, if present, will be evaluated.

A construction worker is assumed to be exposed to COPCs in surface and subsurface soil. However, several soil samples were collected from depths greater than 10 feet bgs. For the purpose of assessing construction worker exposure and risk, contact with COPCs in soil to a depth of 10 feet bgs was considered. Direct contact with soils deeper than 10 feet bgs was considered unlikely to occur. In addition, the highest concentrations of COPCs occurred within the top 10 feet of soil.

Future on-site residents may be exposed to chemicals in on-site soils by incidental ingestion and direct skin contact of surface soils, inhalation of re-suspended particulates from soil and inhalation of volatilized COPCs, if present. Residents may also be exposed to chemicals in

groundwater via ingestion, dermal contact, and inhalation of volatilized COPCs. Future on-site residents may also inhale volatile COPCs in subsurface soil and groundwater that migrate into the indoor air of an overlying residence.

3.3 Quantification of Exposure

Exposures to COPCs in groundwater, soil, surface water, and sediment were assessed following the identification of potentially exposed individuals and the pathways by which they are exposed. In the exposure assessment the magnitude, frequency, and duration of exposure for the populations and potential pathways selected are quantified.

3.3.1 Determination of Exposure Point Concentrations

Exposure points are points of potential contact with the COPCs in various media through a particular route (e.g., ingestion of a chemical in surface soil). Exposure point concentrations (EPCs) are calculated for each environmental medium of concern at or potentially affected by the Site. The EPC is a conservative estimate of the arithmetic average concentration of a COPC in a particular environmental medium. This conservative average is a calculated concentration and is termed the 95% upper confidence limit (UCL) of the arithmetic mean.

EPCs were calculated from a data set with concentrations above the detection limit and undetected sample results. The USEPA program ProUCL version 4.00.02 (USEPA, 2007) was used to calculate the 95% UCL. The ProUCL program calculates the 95% UCL for normal, lognormal, gamma, and nonparametrically (non-normal) distributed concentrations of chemicals in soil, and sediment and recommends the most appropriate 95% UCL for use as an EPC. In many instances, the non-detected values outnumbered the detected values. Statistics computed based on small data sets or on data sets with only a few detected values (e.g. <4-6) are highly unstable. Therefore, in cases where the UCL was lower than the mean for a particular chemical, the mean of the detects was used as the EPC for that chemical. All UCLs are presented in Appendix B.

EPCs used to calculate exposures to COPCs in groundwater; soil, surface water, and sediment are summarized in Table 3.3.1a – 3.3.1d. ProUCL outputs are presented in Appendix B.

3.3.2 Estimation of COPC Intakes

Equations and assumptions used to calculate COPC intakes for the trespasser, indoor and outdoor C/I workers, construction worker, and resident (child and adult) are presented in Tables 3.3.2a – 3.3.2q.

Nearly all of the exposure assumptions are typical USEPA default assumptions. However, CTEH has conservatively assumed that the trespasser exposure to soil may occur over the course of 30 days.

Exposure to constituents in soil via inhalation of fugitive dust was considered for all potential receptors. Fugitive dusts may be generated from surface soils during construction activities, wind erosion, or vehicle traffic. Since the activity level at the Site can affect the level of dust in the air at a given time, a particulate emission factor for each exposure scenario was used to estimate COPC intake via inhalation of fugitive dust. The trespasser, C/I worker, resident receptors are not expected to be involved in soil-contact intense activities that would result in significant dust generation, therefore dust emission factor for these receptors was assumed to be 0.00071 mg/m^3 (Cowherd et al, 1974). For the construction worker, an emission factor of 0.5 mg/m^3 takes into consideration emission rates during the period of active construction, including some days with no activity, some with moderate activity, and some with heavy earth-moving equipment and considerable truck traffic (Cowherd et al, 1974). The equation and exposure factors used in calculating hazards and risks due to inhalation of fugitive dusts are presented in Tables 3.3.2a – 3.3.2q.

For noncarcinogens, estimates of daily intake are expressed as average daily intakes (ADIs). ADIs are calculated over the assumed period of exposure and are used to assess noncancer risks. ADIs for ingested chemicals of potential concern are expressed as intakes. Dermal contact with COPCs in soil, surface water, and sediment are calculated as an absorbed dose. For the inhalation route, exposure concentrations are time-weighted average concentrations derived from measured or modeled chemical concentrations in air at a site. Calculated ADIs and inhalation exposure concentrations for human exposures to COPCs are presented in Tables 3.3.2r – 3.3.2cc.

For potential carcinogens, estimates of daily intake are expressed as lifetime (a lifetime is assumed to be 70 years) average daily intakes (LADIs) or lifetime time-weighted air exposure

concentrations. Calculated LADIs and lifetime average air exposure concentrations for COPCs are presented in Tables 3.3.2r – 3.3.2cc.

ADIs were not calculated for lead. The USEPA uses the Integrated Exposure Uptake-Biokinetic (IEUBK) model to assess lead exposure and the resulting blood lead concentration resulting from exposure to lead in dust, soil, food, drinking water, and air in children. The IEUBK model compares estimated blood lead levels for children 7 years of age and under with the target blood lead level of 10 ug/dL recommended by the USEPA and the Center for Disease Control. The IEUBK model was used for the on-site child resident resulting from exposures to on-site groundwater. For older residential children and adults, risks from lead exposure should not exceed the younger child's risk.

Risks associated with exposures to lead in soil and groundwater are discussed in Section 5 of this report.

Exposures and risks resulting from inhalation of VOCs in indoor air resulting from intrusion of vapors from groundwater were calculated using USEPA models. The USEPA online calculator was used to calculate risks from vapor intrusion from VOCs in groundwater (http://www.epa.gov/athens/learn2model/part-two/onsite/JnE_lite.html). The USEPA "Screening Level Implementation of the Johnson and Ettinger Vapor Intrusion Model" (USEPA, 2011) was used with the following assumptions and site-specific inputs:

-type of building (assumed slab-on-grade construction)
-depth to groundwater (8 feet)
-groundwater temperature (67 degrees)
-soil type beneath building (sand)

For residential receptors, all other model parameters were set to default assumptions. For the C/I worker, the indoor air exchange rate was assumed to be 1 hr^{-1} (CalEPA, 2005). Printouts of model runs from the USEPA online calculator for each volatile COPC in groundwater are presented in Appendix A.

Exposure and risks from inhalation of VOCs in indoor air resulting from subsurface soils were calculated using the USEPA spreadsheet model "SL-ADV", Version 3.1, 02/04"

(http://www.epa.gov/oswer/riskassessment/airmodel/johnson_ettinger.htm). With the exception of the following parameters, the spreadsheet model was run with default inputs:

-soil type beneath building (sand)
-indoor air exchange rate for C/I worker (1 hr^{-1})

Printouts of model runs using the USEPA vapor intrusion spreadsheet model are presented in Appendix A.

Note that for the C/I exposure scenario, the USEPA online groundwater vapor intrusion and USEPA spreadsheet soil vapor intrusion models have no input that allows exposure to be reduced based on the number of hours of exposure per day. These models inherently assume that exposures occur 24 hours per day. To account for the fact that exposures and risks are only 1/3 (i.e., 8 hours out of a total of 24 hours per day) those calculated by the models, C/I noncancer and lifetime cancer risks were multiplied by one-third (i.e., 0.33) to account for the fact that workers are exposed only 8 hours per day.

4.0 TOXICITY EVALUATION

4.1 Toxicity Assessment for Noncancer Effects

The noncancer effects of COPCs were assessed using the USEPA hazard quotient approach. Briefly, this approach compares the average daily intake of each chemical to a published acceptable intake for chronic or subchronic exposure (i.e., chronic and subchronic RfD). The USEPA definitions of the RfD and RfC, respectively, are presented below (USEPA, 2010b).

> An estimate (with uncertainty spanning perhaps an order of magnitude) of a daily oral exposure to the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious effects during a lifetime. It can be derived from a NOAEL, LOAEL, or benchmark dose, with uncertainty factors generally applied to reflect limitations of the data used. Generally used in EPA's noncancer health assessments.

> An estimate (with uncertainty spanning perhaps an order of magnitude) of a continuous inhalation exposure to the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious effects during a lifetime. It can be derived from a NOAEL, LOAEL, or benchmark concentration, with uncertainty factors generally

applied to reflect limitations of the data used. Generally used in EPA's noncancer health assessments.

RfDs and RfCs used to assess noncancer risks are presented in Tables 4.1a and 4.1b, respectively.

For any particular chemical, an intake that exceeds the RfD or RfC for that chemical indicates that an adverse health effect may be observed. The intake/RfD or the air concentration/RfC is defined by the USEPA to be the hazard quotient (HQ) for a chemical. As a general rule, when the HQ < 1, it is unlikely that an adverse health effect will occur. The chance of observing an effect increases as the HQ increasingly exceeds unity. The USEPA directs that the HQ for each chemical and each route of exposure be summed to calculate a hazard index (HI). This process conservatively assumes that simultaneous exposure to multiple chemicals at intakes below the RfD or RfC may produce an adverse health effect if the HI exceeds one. When calculated according to USEPA methods, the HI assumes that the effects of each chemical are additive. The HI is used as a screening method to determine whether or not the effects of intake of multiple chemicals may be of concern. If the HI is less than one, there is little reason to expect that any adverse effect will result from concurrent exposure to all of the COPCs.

The USEPA does not publish dermal RfDs. The oral RfD was adjusted and used to assess the risks from dermal absorption. Oral RfDs were adjusted in accordance with USEPA guidance (2004) for chemicals with gastrointestinal absorption rates less than fifty percent.

The toxicity of petroleum hydrocarbon mixtures (gasoline, diesel fuel, oils) is evaluated using analytical data for 12 specific hydrocarbon fractions of a particular carbon range. The data to characterize the specific petroleum hydrocarbon fractions present in Site soil and water samples were not available. The uncertainties associated with the evaluation of risks associated with petroleum mixtures in the environment relate to the analytical characterization of petroleum mixtures, the relative lack of toxicological information concerning the toxicity of whole petroleum mixtures, and the effect of weathering on petroleum mixtures in the environment.

ADEQ-derived generic residential screening levels for GRO, DRO, and ORO in soil and water were used to evaluate petroleum hydrocarbons as chemicals of potential concern. There are no ADEQ screening levels for GRO, DRO, or ORO for the C/I worker, construction worker, or trespasser. Because the analytical data necessary to characterize the risks petroleum

hydrocarbons is unavailable, exposure and risk from typical petroleum hydrocarbon indicator chemicals (i.e., benzene, ethylbenzene, toluene, xylenes, MTBE, polycyclic aromatic hydrocarbons, and selected metals) were evaluated (personal communication between Alan Nye, CTEH and Jay Rich, ADEQ, March 31, 2011). Exposure and risk from TPH as GRO, DRO, and ORO is uncertain due to lack of information regarding the exact chemical composition of these mixtures. For this reason, risks were not calculated for GRO, DRO, and ORO. This risk assessment uncertainty is discussed in Section 5.3.2 of the report.

4.2 Toxicity Assessment for Carcinogenic Effects

The following data were compiled for potential/probable carcinogenic COPCs:

- Current inhalation unit risk values (IURs) and oral slope factors (SF);
- USEPA weight of evidence classification;
- Target organ(s)

The slope factor and inhalation unit risk value are quantitative estimates defined as the risk per unit dose $(mg/kg/day)^{-1}$ and risk per microgram of chemical per cubic meter of air $(ug/m^3)^{-1}$, respectively. The weight-of-evidence classification indicates the extent to which available data indicate the substance is a human carcinogen. This information is available from USEPA in IRIS.

The USEPA does not derive dermal slope factors for constituents. However, since dermal exposure may add to overall intake of a constituent and possibly cause an adverse effect, the oral slope factor (if available) was adjusted in accordance with USEPA guidance (2004) and used to calculate cancer risk from dermal exposure to potential/probable carcinogens.

The oral/dermal slope factors and inhalation unit risk values, USEPA weight-of-evidence classification, target organs for the carcinogenic effects of the COPCs are presented in Tables 4.2a and 4.2b.

Due to the increased susceptibility to cancer in infants and children, the USEPA indicates that cancer risks for mutagenic carcinogens such as benzo(a)pyrene, benzo(b)fluoranthene, and

benzo(k)fluoranthene should be adjusted upward by multiplying calculated risks by an age-dependent adjustment factor (ADAF). The USEPA derived ADAFs are presented below.

Age Interval (years)	Age-dependent Adjustment Factor
0-2	10
2 - <16	3
>16	1

For example, the calculated cancer risk for a 1 year old child ingesting benzo(a)pyrene in soil is multiplied by a factor of 10 to account for the increased susceptibility of a young child to developing cancer.

5.0 RISK CHARACTERIZATION

The methods described in Chapter 8 of the Human Health Evaluation Manual (USEPA, 1989) and other appropriate USEPA guidance were used to calculate hazard quotients for noncarcinogens and excess theoretical cancer risks for carcinogens. Risk estimates were obtained by calculating the average daily intake (ADI) for noncancer risk assessment and lifetime average daily intakes (LADI) for cancer risk assessment. These intake values were then divided or multiplied by the appropriate toxicity factor (Reference Dose or Slope Factor) to obtain a quantitative estimate of risk. Noncancer and cancer risks are calculated for COPCs in groundwater, soil, surface water, and sediment.

Inhalation exposures were calculated according to methods described in USEPA Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part F, Supplemental Guidance for Inhalation Risk Assessment) (USEPA, 2009).

<u>Assessment of Noncancer Hazards</u>

Noncancer effects are expressed as the ratio of average daily intake divided by the RfD or exposure concentration divided by the RfC derived for a similar exposure period. This ratio called a hazard quotient (HQ) is calculated as follows:

Hazard Quotient = ADI/RfD

Or

Hazard Quotient = EC/RfC

where:

ADI = average daily intake (mg/kg/day) for a subchronic (less than seven years) or chronic (7years or longer) exposure period

RfD = reference dose (mg/kg/day); for periods of exposure less than 7 years, the subchronic RfD is used; the chronic RfD is used to evaluate noncancer risks for exposure periods of 7 years and longer.

EC = exposure concentration in air (mg/m^3)

RfC = reference concentration (mg/m^3); for periods of exposure less than 7 years, the subchronic RfC is used; the chronic RfC is used to evaluate noncancer risks for exposure periods of 7 years and longer.

HQs for each COPC and each exposure pathway are added together to derive the HI. The HI is the sum of more than one HQ for multiple substances and/or multiple exposure pathways. The HI is calculated separately for chronic and subchronic exposures. If the HI is less than 1, the chemicals are unlikely to pose a risk to human health. If the HI is greater than 1, the chemicals are segregated according to target organ toxicity. Separate hazard indices are calculated for each toxicological effect. Finally, if the HI is still greater than 1, exposure to these chemicals may be a concern for potential noncancer effects. Hazard quotients and hazard indices are presented in Tables 5.0a – 5.0o for each receptor and exposure pathway of concern.

Subchronic RfDs or RfCs were used when available.

Assessment of Theoretical Carcinogenic Risks

Theoretical cancer risks associated with exposure to COPCs were calculated as follows:

$$\text{Risk} = \text{LADI} \times \text{SF}$$

Or

$$\text{Risk} = \text{EC} \times \text{IUR}$$

where:

Risk = a unitless probability (e.g. 2E-5) of an individual developing cancer over a 70 year lifetime

LADI = lifetime average daily intake averaged over 70 years (mg/kg/day)

SF = inhalation, oral, and dermal slope factor for arsenic, expressed in $(\text{mg/kg/day})^{-1}$

EC = exposure concentration in air (ug/m^3)

IUR = Inhalation Unit Risk $(\text{ug/m}^3)^{-1}$

The resulting cancer risks are expressed in scientific notation (e.g., 1E-04 to 1E-06) and refer to additional lifetime cancer risks of one cancer in 10,000 persons to one cancer in 1,000,000 persons. For example, a calculated theoretical lifetime cancer risk of 1E-05 (or 1 in 100,000) indicates that if 100,000 people were exposed to a potentially carcinogenic chemical throughout their 70 year lifetimes, one of the 100,000 individuals would theoretically contract cancer from the lifetime of exposure.

This assessment used the USEPA-derived cancer slope factors and inhalation unit risk values discussed above and presented in Tables 4.2a and 4.2b to quantitatively assess carcinogenic risks. Tables 5.0a – 5.0o summarizes the theoretical lifetime cancer risks calculated for the adolescent trespasser, indoor and outdoor C/I worker, future construction worker, and future residents.

5.1 Risks from Current Exposures to COPCs in Surface Soil and Surface Water

Currently, the Site is inactive and much of the property is covered with dense vegetation. Due to its close proximity to a residential neighborhood and public school, the trespasser was considered the most likely current receptor. An adolescent trespasser exposure to surface soil and surface water was used for conservatism.

Risks from current exposure to COPCs in surface soil were assessed for the on-site older child trespasser. A preliminary evaluation indicated that the higher concentrations of chemicals in surface soil occur primarily in one sample (SS-19-0.5). To account for this uneven distribution of soil contamination, the site was divided into a hotspot area and a non-hotspot area. Separate exposure and risk calculations were calculated for the hotspot area and the non-hotspot area. Noncarcinogenic and carcinogenic risks were calculated separately for each COPC for each completed exposure pathway identified for the current trespasser and visitor. Risks for each COPC were then summed resulting in a risk for each pathway. The summed risk for each route of exposure was then summed for all COPCs to give an overall noncarcinogenic risk and a carcinogenic risk for the receptor. Noncancer risks and theoretical lifetime cancer risks for current receptors in the non-hot spot area and hot spot area are discussed below.

The only chemical retained as a COPC for surface water is TPH-DRO. Due to the lack toxicity of values for this mixture, risks could not be evaluated.

5.1.1 Risks from Current Exposures to Hotspot Area Surface Soil

On-Site Trespasser

Risks for the current on-site trespasser's exposure to hotspot area soils are presented in Table 5.0a. The hazard index for exposure to hotspot area soils could not be determined due to lack of noncancer toxicity values. The uncertainty associated with the lack of toxicity values is discussed in Section 5.5.

The theoretical lifetime cancer risks for the current on-site adolescent trespasser are presented in Table 5.0a. The cumulative theoretical lifetime cancer risk from contact with hotspot soils is 1E-05, largely as a result of exposure to benzo(a)pyrene via the incidental ingestion pathway.

5.1.2 Risks from Current Exposures to Non-Hotspot Area Surface Soil

On-Site Trespasser

Risks for the current on-site trespasser's exposure to non-hotspot area soils are presented in Table 5.0b. For the non-hotspot area, the hazard index is 1E-04. The cumulative theoretical lifetime cancer risk for exposure to COPCs in surface soil in the non-hotspot areas is 2E-08. The hazard index is below 1 and the calculated cumulative theoretical lifetime cancer risk is below the range of values considered acceptable by the USEPA of 1E-06 to 1E-04 for excess lifetime cancer risk.

5.2 Risks from Future Exposures to COPCs in Groundwater, Soil, and Surface Water

Risks were evaluated for individuals representing three future exposure scenarios: the on-site C/I worker, construction worker, and on-site residents exposed to COPCs in groundwater, soil, and surface water. Although on-site receptors are unlikely to have direct contact with on-site groundwater, risks from exposures to groundwater were evaluated for future on-site C/I workers and residents hypothetically exposed to COPCs in shallow groundwater via direct contact (i.e. ingestion, dermal, inhalation). Risks were also evaluated for indirect contact with groundwater due to VOC vapor intrusion into on-site buildings. For reasons already discussed, separate exposure and risk calculations for exposure to COPCs in soil were calculated for the hotspot area and the non-hotspot area. Noncarcinogenic and carcinogenic risks were calculated separately for each COPC for each completed exposure pathway identified. Risks for each COPC were then summed resulting in a risk for each pathway. The summed risk for each route of exposure was then summed for all COPCs to give an overall noncarcinogenic risk and a carcinogenic risk for the receptor. Noncancer risks and theoretical lifetime cancer risks for current receptors in the non-hot spot area and hot spot area are discussed below.

5.2.1 Risks from Future Exposure to Groundwater

Future On-Site C/I Worker

Risks for the future indoor C/I worker's exposure to groundwater via ingestion and inhalation (vapor intrusion) are presented in Table 5.0c. The hazard index for exposure to groundwater is 2E-01. The hazard index is below one, indicating that combined exposures to chemicals present in groundwater would not result in adverse health risks to future commercial/industrial workers.

The theoretical lifetime cancer risks for the future indoor C/I worker are presented in Table 5.0c. The cumulative theoretical lifetime cancer risk from direct (ingestion) and indirect (vapor intrusion) exposure to groundwater is 1E-04, within the range of target lifetime cancer risks established by the USEPA (1E-06 – 1E-04). The majority of risk associated with the C/I worker's exposure to groundwater is the assumed consumption of groundwater containing chromium.

Future On-Site Resident

The risks for the future on-site resident exposed to shallow groundwater are presented in Tables 5.0i-5.0k. The hazard index for residential exposure to shallow groundwater as a result of direct contact is 9E+01 and 5e+01for the child and adult resident, respectively. The calculated hazard index is largely due to assumed dermal contact with chromium during bathing. The hazard index for residential exposure to shallow groundwater via vapor intrusion is 3E+00. The calculated hazard index is largely due to the presence of 1,2,4-trimethylbenzene.

The theoretical lifetime cancer risks for the future on-site resident exposed to shallow groundwater are presented in Tables 5.0i-5.0k. The cumulative theoretical lifetime cancer risk from direct contact exposure to COPCs in shallow groundwater is 1E-03 for both the child and adult resident. The cumulative theoretical lifetime cancer risk for the on-site resident exposure to groundwater via vapor intrusion is 1E-05. The cumulative theoretical lifetime cancer risk from indirect (vapor intrusion) exposure to groundwater is within the range of target lifetime cancer risks established by the USEPA (1E-06 – 1E-04).

5.2.2 Risks from Future Exposure to Lead in Groundwater

Exposure to lead in groundwater for the child resident was evaluated by assuming the child could consume on-site shallow groundwater containing an average concentration of 29.7 ug lead/L. The results of the lead exposure modeling are presented below.

Predicted Blood Lead (PbB) Concentrations for the Future On-Site Child Resident Exposed to 29.7 ug/L Lead in Drinking Water

Age of Child (years)	Calculated Geometric Mean PbB Concentration (ug/dL)	Probability of exceeding target blood lead concentration of 10 ug/dL
0.5 – 1	2.5	0.170
1 – 2	3.6	1.41
2 – 3	3.5	1.25
3 – 4	3.3	0.991
4 – 5	3.2	0.746
5 – 6	3.1	0.592
6 - 7	2.9	0.419

The above calculations indicate that an on-site child resident would have a geometric mean blood lead concentration less than 10 ug/dL for each age range. The probability that a child will develop a blood lead concentration greater than the target range was less than 5% (the probability considered to be the acceptable limit by USEPA). These calculations indicate that an on-site child resident would be unlikely to experience a blood lead concentration that exceeds the 10 ug/dL target established by the USEPA if the resident consumes on-site groundwater. Outputs for the IEUBK model are presented in Appendix C.

5.2.3 Risks from Future Exposure to Surface Soil

5.2.3.1 Risks from Future Exposures to Hotspot Surface Soil

Future Outdoor On-Site C/I Worker

Risks for the future outdoor C/I worker are presented in Table 5.0d. The hazard index for exposure to hotspot area soils could not be determined due to lack of toxicity values.

The theoretical lifetime cancer risks for the future outdoor commercial/industrial worker are presented in Table 5.0d. The cumulative theoretical lifetime cancer risk from contact with hotspot surface soils is 3E-05, within the range of target lifetime cancer risk values established by the USEPA (1E-06 – 1E-04).

Future On-Site Resident

Risks for the future on-site resident are presented in Table 5.0l. The hazard index for exposure to hotspot area surface soils could not be calculated due to lack of toxicity values.

The USEPA suggests that cancer risks for mutagenic carcinogens, such as PAHs, be adjusted depending on USEPA derived age-dependent factors. Therefore, the risks are presented for each age range as established by USEPA for each mutagenic carcinogen. The cumulative theoretical lifetime cancer risk for the future resident is presented in Table 5.0l and represents the summed lifetime cancer risks calculated for the child and adult resident. The cumulative theoretical lifetime cancer risk from contact with hotspot soils is 4E-04. The majority of the cumulative theoretical lifetime cancer risk is associated with direct contact with benzo(a)pyrene at a surface soil concentration of 5.7 mg/kg.

5.2.3.2 Risks from Future Exposures to Non-Hotspot Surface Soil

Future Outdoor On-Site C/I Worker

Risks for the future C/I worker are presented in Table 5.0e. The hazard index for exposure to non-hotspot area soils is 6E-04. The hazard index is below one, indicating that combined exposures to COPCs present in non-hotspot area surface soils would not result in adverse health risks to future C/I workers.

Theoretical lifetime cancer risks for the future outdoor C/I worker are presented in Table 5.0e. The cumulative theoretical lifetime cancer risk from contact with non-hotspot surface soils is 3E-07, below the range of target lifetime cancer risk values established by the USEPA (1E-06 – 1E-04).

Future On-Site Resident

Risks for the future on-site resident are presented in Tables 5.0m – 5.0n. The hazard index for exposure to non-hotspot area soils is 7E-03 and 8E-04 for the child and adult resident, respectively. The hazard index is below one, indicating that combined exposures to COPCs present in non-hotspot area soils would not result in adverse health risks to future residents.

Lifetime cancer risks for the future resident are presented in Tables 5.0m – 5.0n. The cumulative theoretical lifetime cancer risks from contact with non-hotspot surface soils are 9E-

07 and 4E-07 for the child and adult resident, respectively. The cumulative theoretical lifetime cancer risks from contact with non-hotspot surface soils is below the range of target lifetime cancer risk values established by the USEPA (1E-06 – 1E-04).

5.2.4 Risks from Future Exposure to Soil

5.2.4.1 Risks from Future Exposure to Hotspot Soil

Future Construction Worker

Risks for the future construction worker are presented in Table 5.0g. The hazard index for exposure to hotspot area soils is 2E-05. The hazard index is below one, indicating that combined exposures to COPCs present in hotspot area soils would not result in adverse health risks to future construction workers.

Theoretical lifetime cancer risks for the future construction worker are presented in Table 5.0g. The cumulative theoretical lifetime cancer risk from contact with hotspot soils is 3E-06.

5.2.4.2 Risks from Future Exposure to Non-Hotspot Soil

Future Construction Worker

Risks for the future construction worker are presented in Table 5.0h. The hazard index for exposure to non-hotspot area soils is 2E+00. The hazard index is above one and is mainly due to the presence of 1,3,5-trimethylbenzene.

Theoretical lifetime cancer risks for the future construction worker are presented in Table 5.0h. The cumulative theoretical lifetime cancer risk from contact with non-hotspot soils is 7E-07.

5.2.5 Risks from Exposure to Lead in Soil

To assess lead exposure for the trespasser, C/I worker, construction worker, and resident, lead concentrations in surface and subsurface soil were compared to the USEPA RSL residential soil screening level of 400 mg/kg. Review of the data indicates that lead was detected at a concentration well below the USEPA RSL in the hotspot area (7.5 mg/kg) and only 1 out of 71 surface and subsurface soil samples exceeded the soil lead residential screening level (sample SS-1-0.5; lead concentration of 690 mg/kg) in the non-hotspot area. In addition, the average soil

lead concentrations for surface and subsurface soils are 30 mg/kg and 20 mg/kg, respectively. The average soil lead concentrations are well below any level of health concern in residential soil; therefore, exposures to lead in soil were not assessed in this HHRA.

Lead Concentrations in Soil

Surface Soil		**0 to 10 feet bgs Soil***	
Mean	Maximum	Mean	Maximum
30	690	20	690

5.3 Risks from Exposure to Surface Water

Due to the presence of on-site ponds, a future outdoor C/I worker may be potentially exposed to COPCs in surface water. Analysis of the data indicated that only TPH-DRO exceeded risk-based screening levels. However, due to the lack of toxicity values, risk to the C/I worker associated with contact with TPH-DRO in surface water could not be determined.

5.4 HHRA Uncertainties

Uncertainties are inherent to any risk assessment and a discussion of the uncertainties helps put into perspective the risks calculated for a site. Uncertainties may be associated with the environmental data used to assess exposure, the estimation of exposure, or the toxicity of the chemical of concern. Since risk characterization serves as a bridge between risk assessment and risk management, it is important that major assumptions, scientific judgments, and estimates of uncertainties be described in an uncertainty analysis. The USEPA has identified several categories of uncertainties associated with risk assessments (USEPA, 1989). These include analytical-, exposure-, and toxicity-related uncertainties.

Key assumptions and uncertainties that affect the level of confidence placed on the quantitative risk estimates derived for the HHRA are discussed below. The discussion of uncertainties focuses on: (1) uncertainty associated with the parameters and assumptions used to estimate exposures and (2) the uncertainties associated with evaluation of cancer risk. These uncertainties are discussed below.

5.3.1 Uncertainty Associated with the Parameters and Assumptions Used to Estimate Exposures

Most of the exposure assumptions used in this risk assessment are USEPA default exposure factors. Use of these factors to calculate exposures to chemicals in soil is deliberately intended to produce an estimate of the "reasonable maximum exposures" (RME). The RME is intended to be an estimate a conservative exposure case (i.e., well above the average case) that is still within the range of possible exposures.

Due to the lack of information regarding future construction activities, it was conservatively assumed that a construction worker would be exposed to the Site soils for 250 days out of the year.

The absorption of constituents in soil from the digestive tract has been the subject of considerable study in recent years. In the calculation of EPCs for direct contact exposure scenarios, the regulatory default is to assume that ingestion of a constituent in soil is absorbed to the same extent as the constituent in food or water.

Soil was also assumed to remain on the skin of workers for 24 hours. This is unlikely, given that most people wash their hands and bathe regularly. A more typical exposure might be 8 to 10 hours. The assumption that soil remains on the skin for 24 hours is likely to overestimate exposure to COPCs.

Professional judgment was used to derive exposure frequencies for the trespasser. The exposure frequency to soil was assumed to be 30. This level of contact represents exposures to soil on-site for 8% of days from mid-February through mid-December.

Possible future exposure to groundwater is a particularly uncertain and highly unlikely exposure pathway. According to the ADEQ SPL Site Summary (ADEQ, 2010), the municipal drinking water supply for the Norphlet area is derived from two groundwater wells located to the northwest of the Site and up gradient from the general regional direction of the Site. Nonetheless, exposures associated with consumption of shallow groundwater and bathing in shallow groundwater were evaluated. Thus, groundwater exposures for a future on-site worker and resident using shallow groundwater as a potable water supply are highly uncertain and will overestimate potential risks.

With the exception of the body weight parameter, which is neutral, exposure assumptions used in the risk assessment probably overestimate the amount of risk associated with exposure to COPCs in groundwater, soil, surface water, and sediment.

5.3.2 Uncertainty Associated with the Evaluation of Human Health Risks

Uncertainties are associated with the toxicity values for the COPCs and the manner in which lifetime cancer risks are estimated. Oral slope factors and inhalation units risk values were not available for all COPCs. As such, risks from ingestion, dermal contact, and/or inhalation of COPCs without an available toxicity value could not be quantified. This lack of toxicity factors may result in the underestimation of risks associated with certain COPCs.

The risks calculated from vapor intrusion into indoor air from subsurface soils should be considered very uncertain. In particular, there are several assumptions inherent to the model used to calculate indoor air concentrations and risks (for example, that soil contamination is underneath the structure is homogenous, there is no degradation of the contaminant in soil or soil vapor, etc.) that render the modeling results uncertain and likely to overestimate the amount of VOCs in indoor air. It is noteworthy that the USEPA has not published screening levels for VOCs in soil based on possible vapor intrusion but has published vapor intrusion-based screening levels for VOCs in groundwater and soil vapor (USEPA, 2002) and that groundwater and soil vapor results are more routinely used to evaluate vapor intrusion concerns by the USEPA (USEPA, 2002). Soil vapor concentrations near or underneath a building are a more direct indicator of the potential impact of subsurface soil and groundwater contamination on indoor air.

The assessment of human health risks from TPH in Site soil, groundwater, sediment, and surface water is uncertain. TPH analysis provides insufficient information to characterize human health exposure and risk to petroleum hydrocarbons and more specific petroleum hydrocarbon fraction analysis of soil, groundwater, surface water, and sediment samples is lacking. Even when more specific petroleum hydrocarbon fraction data is available, toxicological data for specific petroleum hydrocarbon fractions is lacking and risk assessors must rely on toxicity data for a surrogate chemical or chemical mixture.

The ADEQ has derived generic screening levels for TPH (as gasoline, diesel, kerosene, jet fuel, and bunker C oil) for residential land use and drinking water. The ADEQ screening levels for these petroleum hydrocarbon mixtures are based on State of Washington-derived toxicity factors for 7 aliphatic hydrocarbon fractions and 5 aromatic hydrocarbon fractions containing petroleum hydrocarbons composed of 5 to 32 carbon atoms. The 12 petroleum hydrocarbon fractions have not undergone toxicity testing in animals. Instead, the State of Washington assigned each fraction a surrogate chemical or chemical mixture which could be used to represent the toxicity of a fraction. As such, the State of Washington approach to evaluating the toxicity of petroleum hydrocarbon fractions is somewhat uncertain.

To fully use the State of Washington method for evaluating risk from petroleum hydrocarbon mixtures, it is necessary to analyze environmental samples for 7 aliphatic and 5 aromatic hydrocarbon fractions as well as individual petroleum hydrocarbon constituents. Although individual constituents of petroleum were analyzed (for example, benzene, ethylbenzene, toluene, and xylenes), analyses of the 12 petroleum hydrocarbon fractions were not performed on Site soil, groundwater, sediment, or surface water samples. Instead, TPH concentrations for GRO, DRO, and ORO were compared to ADEQ screening levels derived for residential exposure. The ADEQ has not derived screening levels for TPH mixtures for commercial/industrial land use or for other potentially exposed receptors (construction workers, trespassers).

The ADEQ made assumptions regarding the petroleum hydrocarbon composition of gasoline, diesel fuel, and oil in soil and drinking water when it derived its residential screening levels for these mixtures. The extent to which these screening levels represent these mixtures in the environment is uncertain. After petroleum hydrocarbons are released into the environment, the composition of the mixture changes over time as some portion of the mixture volatilizes to the air, dissolves in water, or degrades. The change a petroleum mixture undergoes in the environment is termed “weathering”. In the absence of specific analyses to characterize the petroleum hydrocarbon mixture, information concerning whether the petroleum hydrocarbons in soil or water are similar to fresh gasoline, diesel fuel, or oil is not available. Thus, in addition to the toxicological uncertainties described above, the application of the ADEQ screening levels to Site petroleum mixtures is considered uncertain due to the effect of weathering.

Due to the lack of analyses of specific petroleum hydrocarbon fractions, the risks due to exposure to TPH as GRO, DRO, and ORO was not evaluated for the future resident, commercial/industrial worker, construction worker, and trespasser. Instead, the risk assessment evaluated representative petroleum hydrocarbons (such as benzene, ethylbenzene, toluene, xylenes, MTBE, and polycyclic aromatic hydrocarbons) to evaluate the potential risks of exposure to petroleum hydrocarbons in soil, groundwater, surface water, and sediment. Because the risk assessment does not evaluate the sum of the constituents of petroleum hydrocarbon mixtures present in Site environmental media, risks from potential exposure to future on-site residents, C/I workers, construction workers, and a trespasser may be underestimated.

And finally, perhaps the greatest uncertainty associated with the risk assessment process is the evaluation of carcinogenic risk due to chemical exposure. The fundamental principles underlying risk assessment for carcinogenic chemicals remain arguable, including the tenet that every potential carcinogen is associated with some degree of carcinogenic risk, no matter how small the dose. This policy is adopted by the EPA to ensure that human health is protected with a margin of safety.

6.0 SCREENING LEVEL ECOLOGICAL RISK ASSESSMENT (SLERA)

6.1 Introduction

The SLERA for the NCI site was conducted in accordance with guidance presented in the June 1997 Interim Final Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments (USEPA, 1997). This SLERA is based on a screening-level problem formulation (involving a site visit), toxicity evaluation, exposure estimation, and risk calculation. The functions of problem formulation and ecological effects analysis in more detailed ecological risk assessments are performed, but on a screening level.

6.2 Problem Formulation

The SLERA for the NCI site addresses the possible ecotoxicity of VOCs, PAHs, metals, PCBs, and TPH detected in soil, surface water, and sediment at the site.
The screening level problem formulation addresses the following:

(1) the environmental setting of the NCI site and the chemicals of potential concern (COPCs) in soil, surface water, and sediment
(2) the fate and transport of COPCs in soil, surface water, and sediment
(3) the ecotoxicity of the COPCs and the likely categories of ecological receptors that may be affected
(4) complete exposure pathways to COPCs in soil, surface water and sediment
(5) selection of endpoints to screen for ecological risk

6.3 Environmental Setting

The environmental checklist for the NCI site was completed in November 2010 following the site visit. The Site is located in a rural area of Norphlet at the end of Macmillan Road, off State Highway 335 and is bordered by a residential subdivision and Norphlet Public School on the west, Hayes Creek on the north and east, and Massey Creek and bottomlands associated with the creek to the southwest. The approximate area of the Site is 100 acres.

6.3.1 Ecological Habitat and Biological Characterization

The Site is an abandoned industrial property. The Site consists of open graveled areas and a mature hardwood forest (50% open area versus 50% forested). Three metal-framed buildings are located on the property but are not currently being used. Several large above ground tanks and a freshwater pond are also present on-site.

During the Site visit in November 2010, red-breasted robins and hawks were observed on-site. Portions of the Site also appear to offer suitable cover for small populations of deer and smaller herbivorous/omnivorous mammals and birds. Small pools of water/puddles were located on-site; however, no aquatic wildlife was observed.

During the Site visit, there was ample water in the on-site pond. No fish or other aquatic organisms were observed in the pond. No wildlife was observed in or near the pond during the Site visit. During certain times of the year, the pond may offer a habitat for aquatic organisms or may be a water source for wildlife.

6.3.2 Threatened and Endangered Species

CTEH contacted the Arkansas Natural Heritage Commission (ANHC) to review its files for records indicating the occurrence of rare plants and animals, outstanding natural communities, natural or scenic rivers, or other elements of special concern within or near the NCI site. The materials supplied by the ANHC describe occurrences of species within Union County and as well as species located within one-quarter mile of the NCI site. These materials are presented in Appendix D.

The ANHC indicates that no elements of special concern have been recorded within one mile of the Site.

6.4 Chemicals of Potential Concern for SLERA

Soil, surface water, and sediment samples collected at the NCI site by FTN were evaluated in the SLERA. All media were analyzed for VOCs, PAHs, metals, PCBs, and TPH.

Generally, if a detected substance is present at levels similar to background, it is eliminated as a COPC. In the case of soils, detected concentrations of chemicals were also compared to USEPA Ecological Soil Screening Levels (Eco SSLs)(2005), USEPA Region 4 Ecological Screening Levels (2001), and Preliminary Remediation Goals (PRGs) for Ecological Endpoints developed by Efroymson (1997). Eco SSLs are based on adverse effects on sensitive plants, soil invertebrates, mammals, and avian species. When multiple Eco SSLs were available, the lowest of the available Eco SSLs was used for screening COPCs in soil. Those chemicals that exceeded both the background soil concentration and the Eco SSL were considered COPCs for soil. Tables 2.0e – 2.0i presents the comparison of detected chemicals in Site soils to background concentrations and Eco SSLs.

Surface water samples were collected from the on-site pond. Surface water sample results are presented in Tables 2.0o – 2.0q. If a chemical was present in a surface water sample, it was also evaluated by comparing the detected concentration to a hierarchy of comparative values beginning with Arkansas Regulation 2 surface water quality standards, federal ambient water quality criteria for the protection of aquatic organisms (AWQC), USEPA Region 4 ecological screening levels for surface water and PRGs (Efroymson, 1997) were used for comparison. If Reg. 2 standards were unavailable, criteria and benchmarks in the above hierarchy were

consulted for comparison.

Sediment data are available from the on-site pond. Surface water samples collected by FTN are presented in Tables 2.0u – 2.0u. Detected concentrations of chemicals in sediment were compared to USEPA Region 4 Ecological Screening Levels (2001), USEPA Region 5 Ecological Screening Levels (2003) and Preliminary Remediation Goals for Ecological Endpoints (Efroymson et al., 1997) based on sediment criteria.

6.4.1 COPCs for Soils

Based on a comparison of maximum detected concentrations to Eco-SSLs determined by USEPA and ecological PRGs determined by Efroymson, benzo(a)pyrene, chromium, ethylbenzene, fluoranthene, lead, naphthalene, PCB 1260, phenanthrene, pyrene, toluene, trichloroethene, and total xylenes were retained as COPCs for soils.

6.4.2 COPCs for Surface Water

Only lead was detected in surface water samples above ecological screening levels and retained as COPC for surface water.

6.4.3 COPCs for Sediment

Based on a comparison to ecological screening levels for sediment, acetone, fluoranthene, lead, phenanthrene, and pyrene were identified as COPCs for evaluation in the SLERA. However, acetone is a common laboratory contaminant and it is not considered to be a risk to ecological receptors. In addition, although acetone is highly water soluble it, was not detected in surface water, indicating that acetone is unlikely to be a COPC in sediment. For this reason, fluoranthene, lead, phenanthrene, and pyrene were retained as a COPC for sediment.

6.5 Fate and Transport of COPCs

The fate and transport of COPCs detected in soil, surface water and sediment are affected by numerous environmental and chemical-specific conditions. These include soil and water pH, sorption to clays, the amount of organic matter present in soil, the presence of iron oxide and

other soil/surface water constituents, oxidation/reduction conditions, and the chemical form of the metal. For each constituent discussed below, the exact chemical species present in soil and surface water at the NCI site is not known. The following information for each chemical was obtained from the Hazardous Substances Data Bank (HSDB, 2011).

Acetone

Based on a vapor pressure of 231 mm Hg at 25 deg C, acetone is expected to exist solely as a vapor in the ambient atmosphere. Vapor-phase acetone is degraded in the atmosphere by reaction with photochemically-produced hydroxyl radicals with an estimated atmospheric half-life of about 79 days. Acetone also undergoes photodecomposition by sunlight with an estimated half-life of about 80 days. Acetone is expected to have very high mobility in soils based upon an estimated Koc value of 1. Volatilization from dry soil surfaces is expected based upon the vapor pressure of this compound. Volatilization from moist soil surfaces is also expected based upon the measured Henry's Law constant of 3.97×10^{-5} atm-cu m/mol. This compound is expected to biodegrade under aerobic and anaerobic conditions based upon the results of numerous screening tests. If released into water, acetone is not expected to adsorb to suspended solids or sediment based upon its estimated Koc value. Volatilization from water surfaces is expected to be an important environmental fate process given its Henry's Law constant. The volatilization half-life of acetone applied to the surface of a shallow stream was in the range of 8-18 hours. Acetone is not expected to undergo hydrolysis in the environment due to the lack of functional groups that hydrolyze under environmental conditions.

An estimated BCF of 3 suggests the potential for bioconcentration in aquatic organisms is low.

Benzo(a)pyrene

If released to air, benzo(a)pyrene will exist solely in the particulate phase in the atmosphere. Particulate-phase benzo(a)pyrene will be removed from the atmosphere by wet or dry deposition. If released to soil, benzo(a)pyrene is expected to have very low to no mobility based upon measured soil Koc values of 930 to 6,300. Volatilization from moist soil surfaces is not expected to be an important fate process based upon a Henry's Law constant of 4.57×10^{-7} atm-cu m/mole. The persistence of benzo(a)pyrene in soil is expected to vary depending upon the nature of compounds accompanying it and the nature and previous history of the soil. If released into water, benzo(a)pyrene is expected to adsorb to suspended solids and sediment based upon the measured Koc values. Biodegradation of benzo(a)pyrene is expected to occur

in aquatic systems. Volatilization from water surfaces is not expected to be an important fate process based upon this compound's Henry's Law constant.

Measured BCF values ranging from 8.7 to $1x10^5$ suggest bioconcentration in aquatic organisms can be low to very high. Hydrolysis is not expected to be an important environmental fate process since this compound lacks functional groups that hydrolyze under environmental conditions.

Chromium

If released to air, chromium compounds will exist solely in the particulate phase in the ambient atmosphere. Particulate-phase chromium compounds will be removed from the atmosphere by wet and dry deposition. If released to soil, the fate of chromium is greatly dependent upon the speciation of chromium, which is a function of redox potential and the pH of the soil. In most soils, chromium will be present predominantly in the chromium(III) state. This form has very low solubility and low reactivity resulting in low mobility in the environment. Under oxidizing conditions chromium(VI) may be present in soil as chromate and HCrO4- ion. In this form, chromium is relatively soluble and mobile. In contrast to Cr(III), the adsorption of Cr(VI) decreases as pH increases. If released into water, most chromium compounds will ultimately be deposited in sediments. The adsorption of Cr(III) and Cr(VI) on suspended solids and sediment is complicated by redox changes that can occur. Chromium(VI) predominates under highly oxidizing conditions; whereas chromium(III) predominates under reducing conditions. Chromium(III) occurs mostly as suspended solids adsorbed onto clay materials, organics, or iron oxide (eg, Fe2O3) present in water. In natural groundwater, the pH is typically 6 to 8, and chromate (eg, CrO4-2) is the predominant species of Cr(VI), while Cr(OH)2+ ion will be the dominant species of Cr(III). Chromium compounds are expected to exist as ions in the environment and therefore volatilization from moist soil and water surfaces is not expected to be an important fate process because ions are not expected to volatilize.

A BCF for chromium(VI) in rainbow trout of one suggests the potential for bioconcentration in aquatic organisms is low. There is no indication of biomagnification of chromium along the terrestrial food chain (soil-plant-animal).

Ethylbenzene

If released to soil, ethylbenzene is expected to have moderate mobility based upon an

estimated Koc of 520. Volatilization from moist soil surfaces is expected to be an important fate process based upon a Henry's Law constant of 7.88X10-3 atm-cu m/mole. Ethylbenzene may volatilize from dry soil surfaces based upon its vapor pressure. If released into water, ethylbenzene may adsorb to suspended solids and sediment in water based upon the estimated Koc.

Measured BCFs of 0.67 to 15 suggest the potential for bioconcentration in aquatic organisms is low.

Fluoranthene

If released to air, a vapor pressure of 9.22×10^{-6} mm Hg at 25 deg C indicates fluoranthene will exist in both the vapor and particulate phases in the ambient atmosphere. Vapor-phase fluoranthene will be degraded in the atmosphere by reaction with photochemically-produced hydroxyl radicals; the half-life for this reaction in air is estimated to be 8 hours. Particulate-phase fluoranthene will be physically removed from the atmosphere by wet and dry deposition. The atmospheric lifetime of vapor-phase fluoranthene due to reaction with nitrate radicals has been calculated as approximately 85 days. If released to soil, fluoranthene is expected to have no mobility based upon a Koc range of 29,500-295,000. Volatilization from moist soil surfaces is not expected to be an important fate process based upon a Henry's Law constant of 9.45×10^{-6} atm-cu m/mole. Volatilization from dry soil surfaces should not be important given the vapor pressure of this compound. If released into water, fluoranthene is expected to adsorb to suspended solids and sediment in water based on the Koc. Volatilization from water surfaces is not expected to be an important fate process based on its Henry's Law constant. The Koc of 29,500-295,000 suggests that volatilization could be greatly attenuated by adsorption to suspended solids and sediments in water.

A BCF of 2,640-6,110 in sunfish, 380 in rainbow trout and 3,981 in fathead minnows suggests bioconcentration in aquatic organisms is high to very high. Hydrolysis is not expected to occur due to the lack of hydrolyzable functional groups.

Lead

Lead in soil is relatively immobile and persistent whether added to the soil as halides, hydroxides, oxides, carbonates, or sulfates. When released to soil, lead is normally converted from soluble lead compounds to relatively insoluble sulfate or phosphate derivatives. It also

forms complexes with organic matter and clay minerals which limits its mobility. The efficient fixation of lead in soils limits the transfer of lead to aquatic systems. However, leaching of lead can be relatively rapid from some soils, especially at highly contaminated sites or landfills. Lead is most available from acidic sandy soils which contain little material capable of binding lead. Concentrations of lead in soil solution reach a minimum between pH 5 and 6 because metalorganic complexes form in this pH range. Only a small fraction of lead in lead-affected soil appears to be in water soluble form (0.2-1%). The uptake of lead by plants also depends on other factors including cation exchange capacity, soil composition (e.g., organic matter content, calcium content), metal concentrations, precipitation, light, and temperature. Lead uptake by plants is favored at lower pH values and in soils with low organic carbon content.

The chemistry of lead in surface water is highly complex because lead can be found in multiple forms. Lead has a tendency to form compounds of low solubility with the major anions found in natural waters. The amount of lead dissolved in surface waters is dependent on the pH and the dissolved salt content of the water. The maximum solubility of lead in hard water is about 30 µg/L at pH>5.4 and the maximum solubility of lead in soft water is approximately 500 µg/L at pH>5.4. In the environment, the divalent form (Pb2+) is the stable ionic species of lead. Hydroxide, carbonate, sulfide, and, more rarely, sulfate may act as solubility controls in precipitating lead from water. At pH<5.4, the formation of lead sulfate limits the concentration of soluble lead in water, while at pH>5.4, the formation of lead carbonates limits the amount of soluble lead.

<u>Naphthalene</u>

If released to air, a vapor pressure of 0.085 mm Hg at 25 deg C indicates naphthalene will exist primarily as a vapor in the ambient atmosphere. Vapor-phase naphthalene will be degraded in the atmosphere by reaction with photochemically-produced hydroxyl radicals and nitrate radicals; the half-life for these reactions in air are estimated to be 18 and 60 hours, respectively. Naphthalene also absorbs light in the environmental UV spectrum and is subject to direct photolysis. If released to soil, naphthalene is expected to have moderate to low mobility based on Koc values of 440-1300, measured in soil and sediment. Volatilization from moist soil surfaces is expected to be an important fate process based upon a Henry's Law constant of 4.4×10^{-4} atm-cu m/mole. Biodegradation is expected to be an important fate process based upon soil degradation half-lives of 2-18 days. If released into water, naphthalene is expected to adsorb to suspended solids and sediment based upon the Koc data. Naphthalene has been

shown to biodegrade in water with half-lives ranging from about 0.8 to 43 days. Photolysis in sunlit surface waters may be an important fate process based upon an aqueous photolysis half-life of 71 hours. Hydrolysis is not expected to be an important environmental fate process since this compound lacks functional groups that hydrolyze under environmental conditions. Volatilization from water surfaces is expected to be an important fate process based upon this compound's Henry's Law constant.

BCF values of 23-168 in fish suggest bioconcentration in aquatic organisms is low to high.

PCBs

PCBs, particularly the highly chlorinated congeners contained in PCB-1260, adsorb strongly to sediment and soil where they tend to persist with half-lives on the order of months to years. There is no abiotic process known that significantly degrades PCBs in soil and sediment. Biodegradation has been shown to occur under both aerobic and anaerobic conditions and is a major degradation process for PCBs in soil and sediment. Due to their lack of water solubility, movement of PCBs in the environment is likely to occur as the soil- or sediment-bound form.

Phenanthrene

If released to air, a vapor pressure of 1.21×10^{-4} mm Hg at 25 deg C indicates phenanthrene will exist in both the vapor and particulate phases in the atmosphere. Vapor-phase phenanthrene will be degraded in the atmosphere by reaction with photochemically-produced hydroxyl radicals; the half-life for this reaction in air is estimated to be 36-1570 hrs. Particulate-phase phenanthrene will be removed from the atmosphere by wet or dry deposition. If released to soil, phenanthrene is expected to be immobile based upon Koc values of 9,180-25,300. Volatilization from moist soil surfaces is expected to be an important fate process based upon a Henry's Law constant of 4.23×10^{-5} atm-cu m/mole. However, adsorption to soil is expected to attenuate volatilization. Biodegradation of phenanthrene in soil is expected. If released into water, phenanthrene is expected to adsorb to suspended solids and sediment based upon the Koc values. Phenanthrene has biodegradation half-lives ranging from 19 days (SC water incubated at 27 deg C) to 11,000 days (RI water incubated at 2 deg C). Volatilization from water surfaces is expected to be an important fate process based upon this compound's Henry's Law constant. However, volatilization from water surfaces is expected to be attenuated by adsorption to suspended solids and sediment in the water column. The estimated volatilization half-life from a model pond is 26-70 months if adsorption is considered.

BCF values of 700 to 1,623 suggest bioconcentration in aquatic organisms is high to very high. Phenanthrene had direct aquatic photolysis half-lives of 6.3 hrs and 100 midday hrs.

Pyrene

If released to air, a vapor pressure of 4.5×10^{-6} mm Hg at 25 deg C indicates pyrene will exist in both the vapor and particulate phases in the atmosphere. Vapor-phase pyrene will be degraded in the atmosphere by reaction with photochemically-produced hydroxyl radicals; the half-life for this reaction in air is estimated to be 8 hours. The atmospheric lifetime of pyrene due to reaction with nitrate radicals has been estimated as about 30 days. Particulate-phase pyrene will be removed from the atmosphere by wet or dry deposition. If released to soil, pyrene is expected to have no mobility based upon Koc values of 61,936-90,000. Volatilization from moist soil surfaces is expected to be an important fate process based upon a Henry's Law constant of 1.19×10^{-5} atm-cu m/mole. However, adsorption to soil is expected to attenuate volatilization. Direct photolysis by natural sunlight is also expected to be an important environmental fate process. Biodegradation is expected to occur slowly, with estimated half-lives ranging from several weeks to years. If released into water, pyrene is expected to adsorb to suspended solids and sediment based upon the Koc values. Volatilization from water surfaces is expected to be an important fate process based upon this compound's Henry's Law constant. However, volatilization from water surfaces is expected to be attenuated by adsorption to suspended solids and sediment in the water column.

BCFs of 72-970 in trout suggest bioconcentration in aquatic organisms is moderate to high. Hydrolysis is not expected to be an important environmental fate process since this compound lacks functional groups that hydrolyze under environmental conditions.

Toluene

If released to air, a vapor pressure of 28.4 mm Hg at 25 deg C indicates toluene will exist solely as a vapor in the ambient atmosphere. Vapor-phase toluene will be degraded in the atmosphere by reaction with photochemically-produced hydroxyl radicals; the half-life for this reaction in air is estimated to be 3 days. Toluene may also be degraded in the atmosphere by reaction with nitrate radicals and ozone molecules, but these reactions are too slow to be environmentally important. If released to soil, toluene is expected to have high to moderate mobility based upon Koc values in the range of 37-178. Volatilization from moist soil surfaces is expected to be an important fate process based upon a Henry's Law constant of 6.64×10^{-3} atm-cu m/mole.

Toluene may volatilize from dry soil surfaces based upon its vapor pressure. Biodegradation is expected to occur rapidly in soil surfaces, with half-lives in the range of several hours to 71 days. If released into water, toluene is not expected to adsorb to suspended solids and sediment based upon a Koc of 166 measured in lake sediment. Biodegradation is expected to occur rapidly in water, with reported half-lives of 4 and 56 days in aerobic and anaerobic water, respectively. Volatilization from water surfaces is expected to be an important fate process based upon this compound's Henry's Law constant. Estimated volatilization half-lives for a model river and model lake are 1 hour and 4 days, respectively.
Measured BCF values of 13 and 90 in fish suggest bioconcentration in aquatic organisms is low to moderate. Hydrolysis is not expected to be an important environmental fate process for toluene due to lack of hydrolyzable functional groups.

Trichloroethene

If released to soil, trichloroethylene is expected to have high mobility based upon an average Koc of 101, measured in 32 soils. Volatilization from moist soil surfaces is expected to be an important fate process based upon a Henry's Law constant of 9.85X10-3 atm-cu m/mole. Trichloroethylene is expected to volatilize from dry soil surfaces based upon its vapor pressure. If released into water, trichloroethylene is not expected to adsorb to suspended solids and sediment based on an average Koc value of 101. Volatilization from water surfaces will be an important fate process based upon this compound's Henry's Law constant.

BCF values in fish ranging from 4 to 39 suggest bioconcentration in aquatic organisms is moderate to low.

Xylenes

If released to soil, xylenes are expected to have very high to moderate mobility based upon Koc values ranging from 39-365 for the individual isomers. Volatilization from moist soil surfaces is expected to be an important fate process based upon Henry's Law constant values ranging from 5.18×10^{-3} to 7.18×10^{-3} atm-cu m/mole for the individual isomers. Xylenes may volatilize from dry soil surfaces based upon the range of vapor pressure values. If released into water, xylenes are not expected to adsorb to suspended solids and sediment based upon the range of Koc values. Volatilization from water surfaces is expected to be an important fate process based upon the range of Henry's Law constant values.

BCF values ranging from 6-23.4 for the individual isomers suggest the potential for bioconcentration in aquatic organisms is low.

6.6 Potential Ecological Receptors and Exposure Pathways Assessment

No animal species of special interest is known to exist within one mile of the NCI site. Red-breasted robins and hawks were observed during the NCI site by CTEH during the November 2010 site visit. It is possible that tree-covered portions of the Site may serve as a typical forest habitat. On-site soils and ponds represent possible ecological habitats where receptors may be exposed to COPCs in soil, surface water, and sediment.

Habitats may be characterized by the types of food webs that are present in them. Food webs are interlocking patterns of food chains, which are the straightline transfer of energy from a food source (e.g., plants) to a series of organisms feeding on the source or on other organisms feeding on the food source. While energy and, therefore, transfer of a COPC in a food chain, is not always linear, COPCs may be transferred to a higher trophic level. The importance of a food chain as an exposure pathway primarily depends on receptor dietary habits, the receptors in the food chain, and other factors including bioavailability, bioconcentration, bioaccumulation, and the ability of the organism to eliminate the absorbed COPC. For bioaccumulative COPCs (such as PCBs), body burdens and risks to higher trophic level organisms may increase as they consume lower trophic level organisms that have absorbed the COPC.

Terrestrial animals may be directly exposed to chemicals in soil primarily via uptake through the skin and consumption of soil. Generally, metals are not taken up through the skin in appreciable amounts and consumption in soil is likely to be the predominant direct exposure pathway. In addition, terrestrial animals may be indirectly exposed to chemicals in soil via consumption of plants or by ingestion of soil invertebrates (earthworms, etc.) that have taken up the COPCs in soil.

On-site ponds represent potential freshwater ecological habitat. However, there has been no systematic evaluation of the types of aquatic organisms that may be present in the ponds. It is reasonable to assume that the ponds may serve as a habitat for a variety of aquatic macroinvertebrates, amphibians, reptiles, passerine birds, piscivorous birds, and mammals.

Benthic organisms inhabit the sediment and directly absorb COPCs in interstitial water through dermal contact as well as through ingestion of contaminated food items. For other aquatic organisms including fish and water column invertebrates, direct contact with water is the primary exposure route for these organisms. Fish absorb COPCs through dermal exposure and through respiration. Fish may also be exposed to COCs through the ingestion of contaminated food items that have taken up COPCs from the water.

The primary exposure routes for herbivorous mammals are the ingestion of affected vegetation and water. Similarly, omnivorous mammals are primarily exposed through the ingestion of contaminated vegetation and water but also are exposed through the ingestion of potentially contaminated prey items. Carnivorous mammals may feed on fish, invertebrates, amphibian, reptiles, and other small mammals that utilize the aquatic habitat. Therefore, carnivorous mammals may be exposed to COPCs primarily through ingestion of contaminated food items. They may also be exposed to COPCs through ingestion of water, direct contact with water and sediment; however, dermal exposure to water is insignificant relative to the ingestion of contaminated food items and water.

It is possible that piscivorous birds, such as herons, could eat fish from the on-site pond ecosystem. Habitat for insectivorous shorebirds and other wading birds is absent.

Amphibians and reptiles may be exposed to contaminants through direct contact with water, direct contact and ingestion of contaminated food items.

6.7 Assessment and Measurement Endpoints

For the purpose of this screening-level ecological risk assessment, assessment endpoints are non-specific adverse effects on ecological receptors, where receptors are plant and animal populations that may be part of the forest or a freshwater food web. Exposure concentrations of the COPCs in non-hotspot soils serve as measures of ecological receptor exposure in the forest food web-type habitat. COPC concentrations in surface water and sediment serve as measures of ecological receptor exposure and therefore, measurement endpoints for the freshwater/wetland receptors.

6.8 Screening Level Ecological Effects Evaluation

The preliminary ecological effects evaluation establishes contaminant exposure levels that represent thresholds for adverse effects to plants and wildlife that may be exposed to COPCs in non-hotspot soils and aquatic organisms that may be exposed to COPCs in surface water. Physical stresses unrelated to site contaminants are not addressed in this SLERA. By design, the SLERA is a conservative assessment that provides information to determine whether it is necessary to conduct a baseline ecological risk assessment. The SLERA is not intended to provide a definitive estimate of actual ecological risk.

Several alkylbenzene (ethylbenzene, toluene, xylenes), polycyclic aromatic hydrocarbons (benzo(a)pyrene, fluoranthene, naphthalene, phenanthrene, and pyrene), and trichloroethene exceeded USEPA Region 4 ecological soil screening levels (ESSLs). In addition, chromium and lead also exceeded USEPA Region 4 ESSLs in one of 40 surface soil samples. Lastly, PCB 1260 was detected in one shallow subsurface soil sample (0.023 mg/kg at 2 feet below ground surface) barely above its USEPA Region 4 ESSL of 0.02 mg/kg.

The source of USEPA Region 4 ESSLs for alkylbenzenes and PAHs is the report of Beyer (1990). Beyer states that the values selected by USEPA Region 4 for ESSLs “refer to background concentrations in soil or detection limits.” Thus, the USEPA Region 4 ESSLs are not based on ecotoxicity but instead on “background” or “detection limits”. For this reason, these criteria cannot be used to predict whether or not the alkylbenzenes or PAHs in soil are associated with ecotoxicity. The USEPA Region 4 ESSL for trichloroethene (0.001 mg/kg) is also set below the typical soil detection limit and has no basis in ecotoxicity.

In the case of chromium, one sample (41 mg/kg) out of 40 surface soil samples exceeded the USEPA (headquarters) Ecological Screening Level for Soil of 26 mg/kg. Based on this low frequency of exceedence of the screening level, chromium in soil is unlikely to pose an ecological risk.

Similarly, lead was detected in one of 40 surface soil samples above the USEPA Region 4 ESSL of 200 mg/kg. Based on this low incidence of occurrence in soil at concentrations above the screening level, it is unlikely that lead poses a risk to ecological receptors exposed to soil.

PCBs (as PCB 1260) were detected in a single shallow subsurface soil sample (0.023 mg/kg at 2 feet below ground surface). Because this sample is in subsurface soil and is essentially at the USEPA Region 4 ESSL (0.02 mg/kg), it is unlikely that PCBs in soil pose a risk to ecological receptors.

6.9 Summary of Findings from the Screening Level Ecological Risk Assessment

In summary, alkylbenzenes, PAHs, chromium, lead, and PCBs were detected in surface soil or shallow subsurface soil. However, because the ecological screening levels for alkylbenzenes and PAHs are not based on ecotoxic endpoints, the relative ecological impact of relatively low concentrations of these chemicals in soil cannot be determined with any certainty. Exceedence of the USEPA Region 4 ESSLs may be interpreted from the standpoint that these chemicals exceed “background” or “detection limits” that serves as the bases for the USEPA Region 4 ESSLs. Chromium and lead concentrations in soil exceed protective ecological soil screening levels in less than three percent of samples analyzed. For this reason, these metals are unlikely to pose an ecological risk to receptors exposed to Site soils. PCBs were barely detected in subsurface soil at a concentration similar to the ecological screening level. Based on the depth of the sample (2 feet bgs), it is unlikely that ecological receptors would be exposed to PCBs in soil.

The ANHC indicates that there are no occurrences of plant or animal species of interest recorded within one mile of the NCI site. Detected concentrations of organic and inorganic chemicals in Site soils are unlikely to pose a significant ecological risk. However, the detection of relatively high concentrations of TPH in soil may impact soil ecological receptors. Because of the industrial character of the former operational portion of the Site, it is unlikely to be an important terrestrial habitat. The uncertainties associated with possible toxicity of TPH in soil are discussed below.

6.10 Uncertainty Associated with the Evaluation of Ecological Risks

As described by Suter (1997), TPH analysis provides little information necessary to characterize the composition and ecological toxicity of petroleum hydrocarbon mixtures. Although there are established methods for assessing the human health risks of petroleum hydrocarbon fractions of varying composition, there is no similar method available for ecological receptors. As with the

human health risk assessment performed for the Site, the SLERA may underestimate the ecological risk for petroleum hydrocarbons since only certain petroleum indicator chemicals (i.e., benzene, ethylbenzene, toluene, xylenes, polycyclic aromatic hydrocarbons) are evaluated.

7.0 SUMMARY

The objective of the human health risk assessment (HHRA) for the future NCI site was to assess potential human health risks that may result from exposure to chemicals in on-site groundwater, soil, surface water, and sediment. Sampling of the site indicated that media concentrations of some VOCs, PAHs, and metals exceeded typical background levels or appropriate residential soil screening levels.

Risks from Current Land Use and Exposure to COPCs in Surface Soil

The NCI site is an inactive site with and there is no current use of the property. A pond used for former facility processes is located on-site. Based on current site conditions, the trespasser was considered the most representative current on-site receptor for possible exposure to chemicals present in surface soil.

The calculated hazard index (HI) and cumulative theoretical lifetime cancer risks (LCR) for the trespasser are presented below.

Trespasser*:*

Exposure to COPCs in hotspot surface soils:	HI = NA	LCR = 1E-05
Exposure to COPCs in non-hotspot surface soils:	HI = 1E-04	LCR = 2E-08

The noncancer hazard for exposure to hotspot surface soils could not be calculated for the trespasser because noncancer toxicity values are not available for the retained COPCs. The noncancer hazard for exposure to non-hotspot surfaces soils is 1E-04. The cumulative theoretical lifetime cancer risks for potential exposure to hotspot and non-hotspot surface soils are 1E-05 and 2-08, respectively. The risks are within or below the range of USEPA acceptable cancer risk values.

Risks from Future Land Use and Exposure to COPCs in Groundwater, Surface Soil, Subsurface Soil, and Sediment

The future use of the former NCI site is unknown. However, because the surrounding properties are zoned residential and commercial use, C/I workers, construction workers, and on-site residents are considered future receptors at the Site.

The calculated HIs and LCRs for the indoor C/I worker, outdoor C/I worker, construction worker, and resident (child and adult) are presented below.

Indoor C/I Worker:

Exposure to COPCs in groundwater (vapor intrusion):	HI = 2E-01	LCR = 6E-07
Exposure to COPCs in groundwater (direct contact):	HI = 4E-02	LCR = 1E-04
Exposure to COPCs in subsurface soil (vapor intrusion):	HI = 1E+01	LCR = 3E-05

The noncancer hazard for the indoor C/I worker's potential exposure to groundwater via direct contact and vapor intrusion is 2E-01 and 4E-02, respectively. The noncancer hazards for direct and indirect contact with groundwater are below 1. The noncancer hazard for exposure to COPCs in subsurface soil via vapor intrusion is 1E+01. The main risk driver for this pathway is the presence of 1,2,4-trimethylbenzene in subsurface soil. Cumulative theoretical lifetime cancer risks are below or within the range of USEPA acceptable excess cancer risks.

Outdoor C/I Worker:

Exposure to COPCs in hotspot surface soil:	HI = NA	LCR = 3E-05
Exposure to COPCs in non-hotspot surface soil:	HI = 6E-04	LCR = 3E-07

The noncancer hazard could not be calculated for the outdoor C/I worker's potential exposure to hotspot surface soils due to the lack of noncancer toxicity values. The noncancer hazard associated with the outdoor C/I worker's potential exposure to non-hotspot surface soils is 6E-04. Cumulative theoretical lifetime cancer risks for exposure to hotspot and non-hotspot surface soils are 3E-05 and 3E-07, respectively. The theoretical cancer risks are below or within the range of USEPA acceptable excess cancer risks.

Construction Worker:

Exposure to COPCs in hotspot subsurface soil:	HI = 2E-05	LCR = 3E-06
Exposure to COPCs in non-hotspot subsurface soil:	HI = 2E+00	LCR = 7E-07

The noncancer hazard associated with the construction worker's exposure to hotspot and non-hotspot subsurface soils are 2E-05 and 2E+00. The risk driver for the non-hotspot subsurface soil is the construction worker's potential exposure to 1,3,5-trimethylbenzene via the inhalation pathway. The cumulative theoretical lifetime cancer risks associated with potential exposure to hotspot and non-hotspot subsurface soils are 3E-06 and 7E-07, respectively. The theoretical cancer risks are below or within the USEPA acceptable cancer risks.

On-Site Resident:

Exposure to COPCs in groundwater (direct contact):		
Child:	HI = 9E+01	
Adult:	HI = 5E+01	
	Summed LCR = 2E-03	
Exposure to COPCs in groundwater (vapor intrusion):	HI = 3E+00	LCR = 1E-05
Exposure to COPCs in hotspot surface soils:	HI = NA	LCR = 4E-04
Exposure to COPCs in non-hotspot surface soils:		
Child:	HI = 7E-03	
Adult:	HI = 8E-04	
	Summed LCR = 1E-06	
Exposure to COPCs in subsurface soil (vapor intrusion):	HI = 2E+02	LCR = 6E-04

The noncancer hazard associated with the child and adult resident's potential exposures to groundwater via direct contact are 9E+01 and 5E+01. The noncancer hazard can be attributed

to potential inhalation exposure to 1,2,4-trimethylbenzene and naphthalene and dermal exposure to chromium. The summed cumulative theoretical lifetime cancer risks for direct contact with groundwater for the resident is 2E-03. Potential exposure to chromium and naphthalene also resulted in theoretical lifetime cancer risks above the USEPA acceptable cancer risks. A hazard index of 3E+00 for the resident's indirect exposure to groundwater via vapor intrusion is primarily due to the presence of 1,2,4-trimethylbenzene.

The noncancer hazard associated with the child and adult resident's potential exposures to hotspot surface soils via direct contact could not be calculated due to the unavailability of noncancer toxicity values. The noncancer hazards associated with the child and adult resident's potential exposures to non-hotspot surface soils via direct contact are 7E-03 and 8E-04. Hazard indices less than one indicate that individuals coming in contact with non-hotspot surface soils would unlikely experience noncancer adverse health effects. The cumulative theoretical lifetime cancer risks for direct contact with hotspot surface soils for the resident is 4E-04 due to the presence PAHs. The summed cumulative theoretical lifetime cancer risks for direct contact with non-hotspot surface soils is 1E-06 for the future resident.

The noncancer hazards associated with the resident's potential exposures to COPCs in subsurface soils via vapor intrusion is 2E+02. The noncancer hazard for the vapor intrusion pathway is above the USEPA's acceptable target risks for noncancer health effects. The cumulative theoretical lifetime cancer risk for potential exposures to COPCs in subsurface soils via vapor intrusion is 6E-04. The cumulative theoretical lifetime cancer risks for the vapor intrusion pathway is above the USEPA the range of acceptable cancer risk values.

In conclusion, the calculated noncancer hazards and cumulative theoretical cancer risks associated with direct contact with soils are below the range of target hazards and risks considered acceptable by the USEPA for the C/I worker. For the construction worker, the noncancer hazard that exceeded the value of 1 is primarily due to the potential exposure to trimethylbenzene isomers in non-hotspot subsurface soils. However, it should be noted that the estimated air exposure concentration for total trimethylbenzenes for this receptor is 0.147 mg/m^3. Compared to the ACGIH TLV-TWA of 123 mg/m^3 for mixed trimethylbenzene isomers, the estimated air exposure concentration for the future on-site construction worker is 837 times lower than the air level considered acceptable for an 8-hour workshift. Therefore, it is likely that the estimated risk for the construction is overestimated. Although the noncancer hazards and

risks associated with the resident's direct contact with groundwater (i.e. ingestion, bathing, and other domestic purposes) were above the target risk values considered acceptable by the USEPA, groundwater is not used on-site and this pathway is unlikely to occur. Noncancer hazards and theoretical cancer risks were also elevated for the vapor intrusion pathway for groundwater and subsurface soil. As stated previously, risks calculated from vapor intrusion into indoor air from subsurface soils should be considered very uncertain. In addition, sand (most porous soil type) was used as the soil type in the model and is likely to result in an overestimation of risks.

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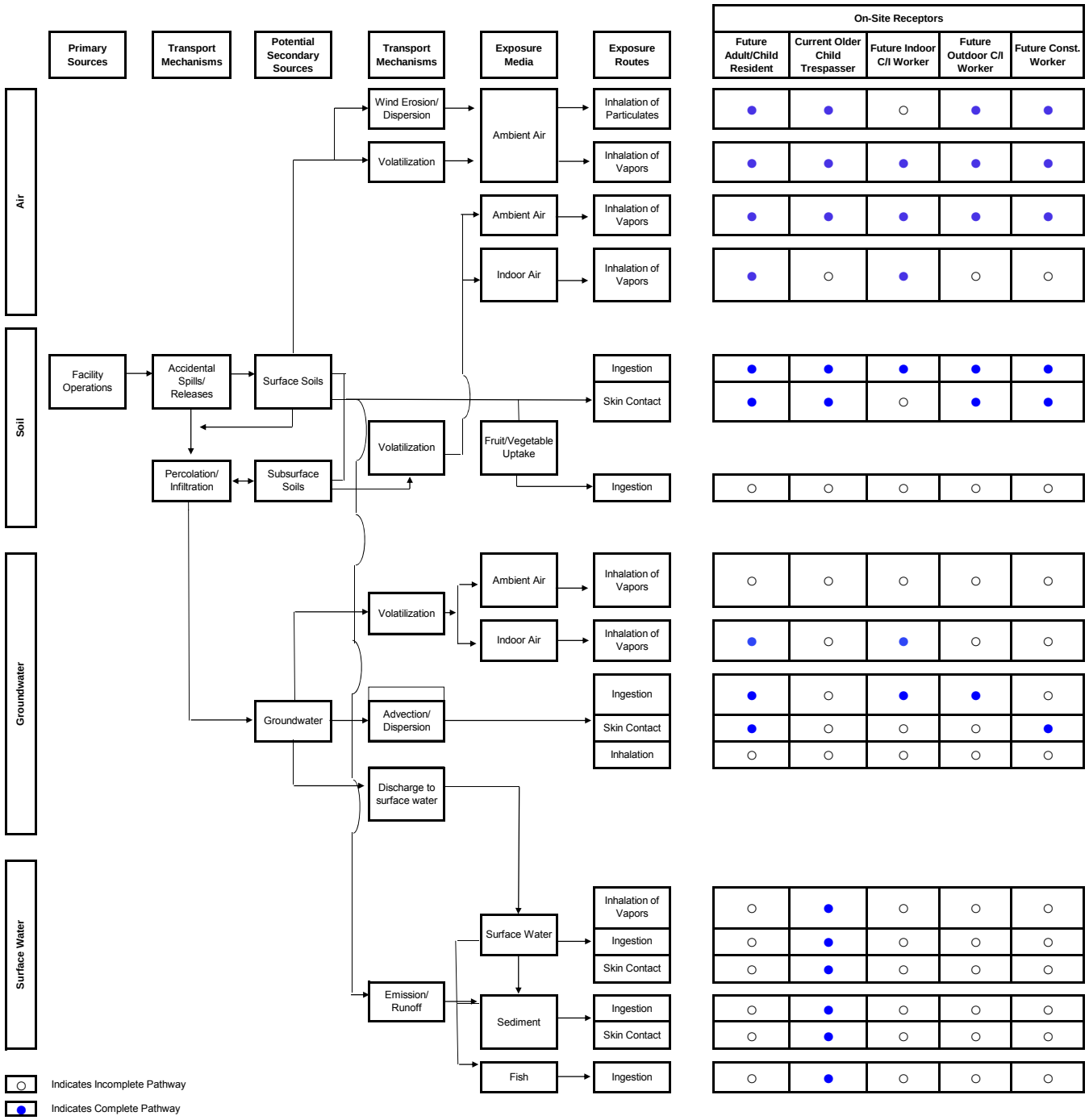
FIGURE

Figure 1 HHRA Site Conceptual Model for Norphlet Chemical Site



TABLES

Table 2.0a
Groundwater Data
Volatile Organic Compounds (VOCs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Units	Acetone	Acrolein	Acrylonitrile	Benzene	Bromobenzene	Bromodichloromethane
MW-1	2/22/2011	FTN	ug/L	<2500	<2500	<500	<50	<50	<50
MW-5	2/22/2011	FTN	ug/L	<50	<50	<10	<1.0	<1.0	<1.0
MW-7	3/1/2011	FTN	ug/L	<50	<50	<10	<1.0	<1.0	<1.0
MW-7-D	3/1/2011	FTN	ug/L	<50	<50	<10	<1.0	<1.0	<1.0
NCI-0	2/25/2011	FTN	ug/L	20	<50	<10	<1.0	<1.0	<1.0
NCI-1	2/22/2011	FTN	ug/L	<50	<50	<10	0.73	<1.0	<1.0
NCI-2	2/22/2011	FTN	ug/L	<50	<50	<10	0.63	<1.0	<1.0
NCI-3	2/22/2011	FTN	ug/L	30	<50	<10	4.2	<1.0	<1.0
NCI-4	2/22/2011	FTN	ug/L	<50	<50	<10	6.5	<1.0	<1.0
NCI-5	2/23/2011	FTN	ug/L	<50	<50	<10	0.39	<1.0	<1.0
NCI-6	2/23/2011	FTN	ug/L	19	<50	<10	<1.0	<1.0	<1.0
NCI-7	2/23/2011	FTN	ug/L	21	<50	<10	<1.0	<1.0	<1.0
NCI-7D	2/23/2011	FTN	ug/L	<50	<50	<10	<1.0	<1.0	<1.0
NCI-9	2/24/2011	FTN	ug/L	22	<50	<10	<1.0	<1.0	<1.0
NCI-10	2/24/2011	FTN	ug/L	<50	<50	<10	<1.0	<1.0	<1.0
NCI-11	2/24/2011	FTN	ug/L	<50	<50	<10	<1.0	<1.0	<1.0
NCI-12	2/25/2011	FTN	ug/L	20	<50	<10	0.38	<1.0	<1.0
NCI-13	3/1/2011	FTN	ug/L	34	<50	<10	<1.0	<1.0	<1.0
NCI-14	3/1/2011	FTN	ug/L	45	<50	<10	<1.0	<1.0	<1.0
NCI-15	3/1/2011	FTN	ug/L	<50	<50	<10	8	<1.0	<1.0
NCI-16	2/25/2011	FTN	ug/L	18	<50	<10	<1.0	<1.0	<1.0
NCI-17	2/25/2011	FTN	ug/L	<50	<50	<10	<1.0	<1.0	<1.0
NCI-18	2/25/2011	FTN	ug/L	<50	<50	<10	<1.0	<1.0	<1.0
NCI-18-D	2/25/2011	FTN	ug/L	<50	<50	<10	<1.0	<1.0	<1.0
NCI-19	2/23/2011	FTN	ug/L	18	<50	<10	<1.0	<1.0	<1.0
NCI-20	2/23/2011	FTN	ug/L	32	<50	<10	0.39	<1.0	<1.0
			Number of Detects	11	0	0	8	0	0
			Number of Analysis	26	26	26	26	26	26
			Minimum Detect	18	0	0	0.38	0	0
			Maximum Detect	45	0	0	8	0	0
			USEPA RSL Table - Tapwater (ug/L)	22000	0.042	0.045	0.41	88	0.12
			Maximum Contaminant Level (MCL) (ug/L)	na	na	na	5	na	80

Table 2.0a
Groundwater Data
Volatile Organic Compounds (VOCs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Units	Bromoform	Bromomethane	n-Butylbenzene	sec-Butylbenzene	tert-Butylbenzene	Carbon tetrachloride
MW-1	2/22/2011	FTN	ug/L	<50	<250	<50	<50	<50	<50
MW-5	2/22/2011	FTN	ug/L	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0
MW-7	3/1/2011	FTN	ug/L	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0
MW-7-D	3/1/2011	FTN	ug/L	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0
NCI-0	2/25/2011	FTN	ug/L	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0
NCI-1	2/22/2011	FTN	ug/L	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0
NCI-2	2/22/2011	FTN	ug/L	<1.0	<5.0	<1.0	2.2	0.67	<1.0
NCI-3	2/22/2011	FTN	ug/L	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0
NCI-4	2/22/2011	FTN	ug/L	<1.0	<5.0	<1.0	3	0.91	<1.0
NCI-5	2/23/2011	FTN	ug/L	<1.0	<5.0	3.8	8.8	2	<1.0
NCI-6	2/23/2011	FTN	ug/L	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0
NCI-7	2/23/2011	FTN	ug/L	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0
NCI-7D	2/23/2011	FTN	ug/L	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0
NCI-9	2/24/2011	FTN	ug/L	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0
NCI-10	2/24/2011	FTN	ug/L	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0
NCI-11	2/24/2011	FTN	ug/L	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0
NCI-12	2/25/2011	FTN	ug/L	<1.0	<5.0	<1.0	0.32	<1.0	<1.0
NCI-13	3/1/2011	FTN	ug/L	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0
NCI-14	3/1/2011	FTN	ug/L	<1.0	<5.0	1.6	3.6	0.97	<1.0
NCI-15	3/1/2011	FTN	ug/L	<1.0	<5.0	0.55	1.8	0.42	<1.0
NCI-16	2/25/2011	FTN	ug/L	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0
NCI-17	2/25/2011	FTN	ug/L	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0
NCI-18	2/25/2011	FTN	ug/L	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0
NCI-18-D	2/25/2011	FTN	ug/L	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0
NCI-19	2/23/2011	FTN	ug/L	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0
NCI-20	2/23/2011	FTN	ug/L	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0
			Number of Detects	0	0	3	6	5	0
			Number of Analysis	26	26	26	26	26	26
			Minimum Detect	0	0	0.55	0.32	0.42	0
			Maximum Detect	0	0	3.8	8.8	2	0
			USEPA RSL Table - Tapwater (ug/L)	8.5	8.7	na	na	na	0.44
			Maximum Contaminant Level (MCL) (ug/L)	80	na	na	na	na	5

Table 2.0a
Groundwater Data
Volatile Organic Compounds (VOCs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Units	Chlorobenzene	Chlorodibromomethane	Chloroethane	2-Chloroethyl vinyl ether	Chloroform	Chloromethane
MW-1	2/22/2011	FTN	ug/L	<50	<50	<250	<2500	<250	<130
MW-5	2/22/2011	FTN	ug/L	<1.0	<1.0	<5.0	<50	<5.0	<2.5
MW-7	3/1/2011	FTN	ug/L	<1.0	<1.0	<5.0	<50	<5.0	<2.5
MW-7-D	3/1/2011	FTN	ug/L	<1.0	<1.0	<5.0	<50	<5.0	<2.5
NCI-0	2/25/2011	FTN	ug/L	<1.0	<1.0	<5.0	<50	<5.0	<2.5
NCI-1	2/22/2011	FTN	ug/L	<1.0	<1.0	<5.0	<50	<5.0	<2.5
NCI-2	2/22/2011	FTN	ug/L	<1.0	<1.0	<5.0	<50	<5.0	<2.5
NCI-3	2/22/2011	FTN	ug/L	<1.0	<1.0	<5.0	<50	<5.0	<2.5
NCI-4	2/22/2011	FTN	ug/L	<1.0	<1.0	<5.0	<50	<5.0	<2.5
NCI-5	2/23/2011	FTN	ug/L	<1.0	<1.0	<5.0	<50	<5.0	<2.5
NCI-6	2/23/2011	FTN	ug/L	<1.0	<1.0	<5.0	<50	<5.0	<2.5
NCI-7	2/23/2011	FTN	ug/L	<1.0	<1.0	<5.0	<50	<5.0	<2.5
NCI-7D	2/23/2011	FTN	ug/L	<1.0	<1.0	<5.0	<50	<5.0	<2.5
NCI-9	2/24/2011	FTN	ug/L	<1.0	<1.0	<5.0	<50	<5.0	<2.5
NCI-10	2/24/2011	FTN	ug/L	<1.0	<1.0	<5.0	<50	<5.0	<2.5
NCI-11	2/24/2011	FTN	ug/L	<1.0	<1.0	<5.0	<50	<5.0	<2.5
NCI-12	2/25/2011	FTN	ug/L	<1.0	<1.0	<5.0	<50	<5.0	<2.5
NCI-13	3/1/2011	FTN	ug/L	<1.0	<1.0	<5.0	<50	<5.0	<2.5
NCI-14	3/1/2011	FTN	ug/L	<1.0	<1.0	<5.0	<50	<5.0	<2.5
NCI-15	3/1/2011	FTN	ug/L	<1.0	<1.0	<5.0	<50	<5.0	<2.5
NCI-16	2/25/2011	FTN	ug/L	<1.0	<1.0	<5.0	<50	<5.0	<2.5
NCI-17	2/25/2011	FTN	ug/L	<1.0	<1.0	<5.0	<50	<5.0	<2.5
NCI-18	2/25/2011	FTN	ug/L	<1.0	<1.0	<5.0	<50	<5.0	<2.5
NCI-18-D	2/25/2011	FTN	ug/L	<1.0	<1.0	<5.0	<50	<5.0	<2.5
NCI-19	2/23/2011	FTN	ug/L	<1.0	<1.0	<5.0	<50	<5.0	<2.5
NCI-20	2/23/2011	FTN	ug/L	<1.0	<1.0	<5.0	<50	<5.0	<2.5
			Number of Detects	0	0	0	0	0	0
			Number of Analysis	26	26	26	26	26	26
			Minimum Detect	0	0	0	0	0	0
			Maximum Detect	0	0	0	0	0	0
			USEPA RSL Table - Tapwater (ug/L)	91	0.15	21000	na	0.19	190
			Maximum Contaminant Level (MCL) (ug/L)	100	80	na	na	80	na

Table 2.0a
Groundwater Data
Volatile Organic Compounds (VOCs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Units	2-Chlorotoluene	4-Chlorotoluene	1,2-Dibromo-3-Chloropropane	1,2-Dibromoethane	Dibromomethane	1,2-Dichlorobenzene
MW-1	2/22/2011	FTN	ug/L	<50	<50	<250	<50	<50	<50
MW-5	2/22/2011	FTN	ug/L	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0
MW-7	3/1/2011	FTN	ug/L	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0
MW-7-D	3/1/2011	FTN	ug/L	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0
NCI-0	2/25/2011	FTN	ug/L	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0
NCI-1	2/22/2011	FTN	ug/L	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0
NCI-2	2/22/2011	FTN	ug/L	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0
NCI-3	2/22/2011	FTN	ug/L	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0
NCI-4	2/22/2011	FTN	ug/L	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0
NCI-5	2/23/2011	FTN	ug/L	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0
NCI-6	2/23/2011	FTN	ug/L	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0
NCI-7	2/23/2011	FTN	ug/L	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0
NCI-7D	2/23/2011	FTN	ug/L	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0
NCI-9	2/24/2011	FTN	ug/L	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0
NCI-10	2/24/2011	FTN	ug/L	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0
NCI-11	2/24/2011	FTN	ug/L	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0
NCI-12	2/25/2011	FTN	ug/L	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0
NCI-13	3/1/2011	FTN	ug/L	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0
NCI-14	3/1/2011	FTN	ug/L	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0
NCI-15	3/1/2011	FTN	ug/L	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0
NCI-16	2/25/2011	FTN	ug/L	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0
NCI-17	2/25/2011	FTN	ug/L	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0
NCI-18	2/25/2011	FTN	ug/L	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0
NCI-18-D	2/25/2011	FTN	ug/L	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0
NCI-19	2/23/2011	FTN	ug/L	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0
NCI-20	2/23/2011	FTN	ug/L	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0
			Number of Detects	0	0	0	0	0	0
			Number of Analysis	26	26	26	26	26	26
			Minimum Detect	0	0	0	0	0	0
			Maximum Detect	0	0	0	0	0	0
			USEPA RSL Table - Tapwater (ug/L)	180	2600	0.00032	0.0065	8.2	370
			Maximum Contaminant Level (MCL) (ug/L)	na	na	0.2	0.05	na	600

Table 2.0a
Groundwater Data
Volatile Organic Compounds (VOCs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Units	1,3-Dichlorobenzene	1,4-Dichlorobenzene	Dichlorodifluoromethane	1,1-Dichloroethane	1,2-Dichloroethane	1,1-Dichloroethene
MW-1	2/22/2011	FTN	ug/L	<50	<50	<250	<50	<50	<50
MW-5	2/22/2011	FTN	ug/L	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0
MW-7	3/1/2011	FTN	ug/L	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0
MW-7-D	3/1/2011	FTN	ug/L	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0
NCI-0	2/25/2011	FTN	ug/L	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0
NCI-1	2/22/2011	FTN	ug/L	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0
NCI-2	2/22/2011	FTN	ug/L	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0
NCI-3	2/22/2011	FTN	ug/L	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0
NCI-4	2/22/2011	FTN	ug/L	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0
NCI-5	2/23/2011	FTN	ug/L	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0
NCI-6	2/23/2011	FTN	ug/L	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0
NCI-7	2/23/2011	FTN	ug/L	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0
NCI-7D	2/23/2011	FTN	ug/L	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0
NCI-9	2/24/2011	FTN	ug/L	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0
NCI-10	2/24/2011	FTN	ug/L	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0
NCI-11	2/24/2011	FTN	ug/L	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0
NCI-12	2/25/2011	FTN	ug/L	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0
NCI-13	3/1/2011	FTN	ug/L	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0
NCI-14	3/1/2011	FTN	ug/L	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0
NCI-15	3/1/2011	FTN	ug/L	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0
NCI-16	2/25/2011	FTN	ug/L	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0
NCI-17	2/25/2011	FTN	ug/L	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0
NCI-18	2/25/2011	FTN	ug/L	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0
NCI-18-D	2/25/2011	FTN	ug/L	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0
NCI-19	2/23/2011	FTN	ug/L	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0
NCI-20	2/23/2011	FTN	ug/L	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0
			Number of Detects	0	0	0	0	0	0
			Number of Analysis	26	26	26	26	26	26
			Minimum Detect	0	0	0	0	0	0
			Maximum Detect	0	0	0	0	0	0
			USEPA RSL Table - Tapwater (ug/L)	na	0.43	390	2.4	0.15	340
			Maximum Contaminant Level (MCL) (ug/L)	na	75	na	na	5	7

Table 2.0a
Groundwater Data
Volatile Organic Compounds (VOCs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Units	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	1,2-Dichloropropane	1,1-Dichloropropene	1,3-Dichloropropane	cis-1,3-Dichloropropene
MW-1	2/22/2011	FTN	ug/L	<50	<50	<50	<50	<50	<50
MW-5	2/22/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MW-7	3/1/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MW-7-D	3/1/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-0	2/25/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-1	2/22/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-2	2/22/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-3	2/22/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-4	2/22/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-5	2/23/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-6	2/23/2011	FTN	ug/L	0.95	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-7	2/23/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-7D	2/23/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-9	2/24/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-10	2/24/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-11	2/24/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-12	2/25/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-13	3/1/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-14	3/1/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-15	3/1/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-16	2/25/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-17	2/25/2011	FTN	ug/L	1.5	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-18	2/25/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-18-D	2/25/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-19	2/23/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-20	2/23/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
			Number of Detects	2	0	0	0	0	0
			Number of Analysis	26	26	26	26	26	26
			Minimum Detect	0.95	0	0	0	0	0
			Maximum Detect	1.5	0	0	0	0	0
			USEPA RSL Table - Tapwater (ug/L)	73	110	0.39	na	730	na
			Maximum Contaminant Level (MCL) (ug/L)	70	100	5	na	na	na

Table 2.0a
Groundwater Data
Volatile Organic Compounds (VOCs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Units	trans-1,3-Dichloropropene	2,2-Dichloropropane	Di-isopropyl ether	Ethylbenzene	Hexachloro-1,3-butadiene	Isopropylbenzene
MW-1	2/22/2011	FTN	ug/L	<50	<50	<50	<50	<50	<50
MW-5	2/22/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MW-7	3/1/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MW-7-D	3/1/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-0	2/25/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-1	2/22/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-2	2/22/2011	FTN	ug/L	<1.0	<1.0	<1.0	7.1	<1.0	8.8
NCI-3	2/22/2011	FTN	ug/L	<1.0	<1.0	<1.0	0.51	<1.0	0.86
NCI-4	2/22/2011	FTN	ug/L	<1.0	<1.0	<1.0	2.6	<1.0	15
NCI-5	2/23/2011	FTN	ug/L	<1.0	<1.0	<1.0	16	<1.0	25
NCI-6	2/23/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-7	2/23/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-7D	2/23/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-9	2/24/2011	FTN	ug/L	<1.0	<1.0	<1.0	2.8	<1.0	<1.0
NCI-10	2/24/2011	FTN	ug/L	<1.0	<1.0	<1.0	0.33	<1.0	<1.0
NCI-11	2/24/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-12	2/25/2011	FTN	ug/L	<1.0	<1.0	<1.0	1.6	<1.0	0.78
NCI-13	3/1/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-14	3/1/2011	FTN	ug/L	<1.0	<1.0	<1.0	0.42	<1.0	15
NCI-15	3/1/2011	FTN	ug/L	<1.0	<1.0	<1.0	3.1	<1.0	5.2
NCI-16	2/25/2011	FTN	ug/L	<1.0	<1.0	<1.0	1.3	<1.0	0.93
NCI-17	2/25/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-18	2/25/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-18-D	2/25/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-19	2/23/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-20	2/23/2011	FTN	ug/L	<1.0	<1.0	<1.0	0.9	<1.0	<1.0
			Number of Detects	0	0	0	11	0	8
			Number of Analysis	26	26	26	26	26	26
			Minimum Detect	0	0	0	0.33	0	0.78
			Maximum Detect	0	0	0	16	0	25
			USEPA RSL Table - Tapwater (ug/L)	na	na	830	1.5	0.86	680
			Maximum Contaminant Level (MCL) (ug/L)	na	na	na	700	na	na

Table 2.0a
Groundwater Data
Volatile Organic Compounds (VOCs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Units	p-Isopropyltoluene	2-Butanone (MEK)	Methylene Chloride	4-Methyl-2-pentanone (MIBK)	Methyl tert-butyl ether	Naphthalene
MW-1	2/22/2011	FTN	ug/L	31	<500	<250	<500	<50	<250
MW-5	2/22/2011	FTN	ug/L	<1.0	<10	<5.0	<10	<1.0	2.2
MW-7	3/1/2011	FTN	ug/L	<1.0	<10	<5.0	<10	<1.0	<5.0
MW-7-D	3/1/2011	FTN	ug/L	<1.0	<10	<5.0	<10	<1.0	<5.0
NCI-0	2/25/2011	FTN	ug/L	<1.0	<10	2.9	<10	<1.0	<5.0
NCI-1	2/22/2011	FTN	ug/L	<1.0	<10	<5.0	<10	<1.0	2.6
NCI-2	2/22/2011	FTN	ug/L	0.8	<10	<5.0	<10	<1.0	2
NCI-3	2/22/2011	FTN	ug/L	<1.0	<10	<5.0	<10	<1.0	67
NCI-4	2/22/2011	FTN	ug/L	3.1	<10	<5.0	<10	<1.0	67
NCI-5	2/23/2011	FTN	ug/L	30	<10	<5.0	<10	<1.0	88
NCI-6	2/23/2011	FTN	ug/L	<1.0	<10	<5.0	<10	<1.0	<5.0
NCI-7	2/23/2011	FTN	ug/L	<1.0	<10	<5.0	<10	<1.0	<5.0
NCI-7D	2/23/2011	FTN	ug/L	<1.0	<10	<5.0	<10	<1.0	<5.0
NCI-9	2/24/2011	FTN	ug/L	<1.0	<10	<5.0	<10	<1.0	<5.0
NCI-10	2/24/2011	FTN	ug/L	<1.0	<10	<5.0	<10	<1.0	<5.0
NCI-11	2/24/2011	FTN	ug/L	<1.0	<10	<5.0	<10	<1.0	<5.0
NCI-12	2/25/2011	FTN	ug/L	1.3	25	2.8	<10	<1.0	2.8
NCI-13	3/1/2011	FTN	ug/L	<1.0	<10	<5.0	<10	<1.0	<5.0
NCI-14	3/1/2011	FTN	ug/L	<1.0	<10	<5.0	<10	<1.0	2.6
NCI-15	3/1/2011	FTN	ug/L	0.82	<10	<5.0	<10	<1.0	24
NCI-16	2/25/2011	FTN	ug/L	0.54	3.8	2.6	<10	<1.0	1.2
NCI-17	2/25/2011	FTN	ug/L	<1.0	<10	2.6	<10	<1.0	<5.0
NCI-18	2/25/2011	FTN	ug/L	<1.0	<10	2.9	<10	<1.0	<5.0
NCI-18-D	2/25/2011	FTN	ug/L	<1.0	<10	2.8	<10	<1.0	<5.0
NCI-19	2/23/2011	FTN	ug/L	<1.0	<10	<5.0	<10	<1.0	1.4
NCI-20	2/23/2011	FTN	ug/L	<1.0	5	<5.0	<10	<1.0	3.6
			Number of Detects	7	3	6	0	0	12
			Number of Analysis	26	26	26	26	26	26
			Minimum Detect	0.54	3.8	2.6	0	0	1.2
			Maximum Detect	31	25	2.9	0	0	88
			USEPA RSL Table - Tapwater (ug/L)	na	7100	4.8	2000	12	0.14
			Maximum Contaminant Level (MCL) (ug/L)	na	na	5	na	na	na

Table 2.0a
Groundwater Data
Volatile Organic Compounds (VOCs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Units	n-Propylbenzene	Styrene	1,1,1,2-Tetrachloroethane	1,1,2,2-Tetrachloroethane	1,1,2-Trichloro-1,2,2-trifluoroethane
MW-1	2/22/2011	FTN	ug/L	<50	<50	<50	<50	<50
MW-5	2/22/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
MW-7	3/1/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
MW-7-D	3/1/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-0	2/25/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-1	2/22/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-2	2/22/2011	FTN	ug/L	8.4	<1.0	<1.0	<1.0	<1.0
NCI-3	2/22/2011	FTN	ug/L	0.37	<1.0	<1.0	<1.0	<1.0
NCI-4	2/22/2011	FTN	ug/L	2.9	<1.0	<1.0	<1.0	<1.0
NCI-5	2/23/2011	FTN	ug/L	16	<1.0	<1.0	<1.0	<1.0
NCI-6	2/23/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-7	2/23/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-7D	2/23/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-9	2/24/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-10	2/24/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-11	2/24/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-12	2/25/2011	FTN	ug/L	0.52	<1.0	<1.0	<1.0	<1.0
NCI-13	3/1/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-14	3/1/2011	FTN	ug/L	7.6	<1.0	<1.0	<1.0	<1.0
NCI-15	3/1/2011	FTN	ug/L	1.7	<1.0	<1.0	<1.0	<1.0
NCI-16	2/25/2011	FTN	ug/L	0.96	<1.0	<1.0	<1.0	<1.0
NCI-17	2/25/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-18	2/25/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-18-D	2/25/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-19	2/23/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-20	2/23/2011	FTN	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0
			Number of Detects	8	0	0	0	0
			Number of Analysis	26	26	26	26	26
			Minimum Detect	0.37	0	0	0	0
			Maximum Detect	16	0	0	0	0
			USEPA RSL Table - Tapwater (ug/L)	1300	1600	0.52	0.067	59000
			Maximum Contaminant Level (MCL) (ug/L)	na	100	na	na	na

Table 2.0a
Groundwater Data
Volatile Organic Compounds (VOCs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Units	Tetrachloroethene	Toluene	1,2,3-Trichlorobenzene	1,2,4-Trichlorobenzene	1,1,1-Trichloroethane
MW-1	2/22/2011	FTN	ug/L	<50	<250	<50	<50	<50
MW-5	2/22/2011	FTN	ug/L	<1.0	<5.0	<1.0	<1.0	<1.0
MW-7	3/1/2011	FTN	ug/L	<1.0	<5.0	<1.0	<1.0	<1.0
MW-7-D	3/1/2011	FTN	ug/L	<1.0	<5.0	<1.0	<1.0	<1.0
NCI-0	2/25/2011	FTN	ug/L	<1.0	1.2	<1.0	<1.0	<1.0
NCI-1	2/22/2011	FTN	ug/L	<1.0	0.85	<1.0	<1.0	<1.0
NCI-2	2/22/2011	FTN	ug/L	<1.0	<5.0	<1.0	<1.0	<1.0
NCI-3	2/22/2011	FTN	ug/L	<1.0	0.32	<1.0	<1.0	<1.0
NCI-4	2/22/2011	FTN	ug/L	<1.0	<5.0	<1.0	<1.0	<1.0
NCI-5	2/23/2011	FTN	ug/L	<1.0	1.1	<1.0	<1.0	<1.0
NCI-6	2/23/2011	FTN	ug/L	<1.0	<5.0	<1.0	<1.0	<1.0
NCI-7	2/23/2011	FTN	ug/L	<1.0	<5.0	<1.0	<1.0	<1.0
NCI-7D	2/23/2011	FTN	ug/L	<1.0	<5.0	<1.0	<1.0	<1.0
NCI-9	2/24/2011	FTN	ug/L	<1.0	68	<1.0	<1.0	<1.0
NCI-10	2/24/2011	FTN	ug/L	<1.0	28	<1.0	<1.0	<1.0
NCI-11	2/24/2011	FTN	ug/L	<1.0	0.96	<1.0	<1.0	<1.0
NCI-12	2/25/2011	FTN	ug/L	<1.0	24	<1.0	<1.0	<1.0
NCI-13	3/1/2011	FTN	ug/L	<1.0	<5.0	<1.0	<1.0	<1.0
NCI-14	3/1/2011	FTN	ug/L	<1.0	0.35	<1.0	<1.0	<1.0
NCI-15	3/1/2011	FTN	ug/L	<1.0	6.7	<1.0	<1.0	<1.0
NCI-16	2/25/2011	FTN	ug/L	<1.0	0.42	<1.0	<1.0	<1.0
NCI-17	2/25/2011	FTN	ug/L	<1.0	0.66	<1.0	<1.0	<1.0
NCI-18	2/25/2011	FTN	ug/L	<1.0	<5.0	<1.0	<1.0	<1.0
NCI-18-D	2/25/2011	FTN	ug/L	<1.0	<5.0	<1.0	<1.0	<1.0
NCI-19	2/23/2011	FTN	ug/L	<1.0	<5.0	<1.0	<1.0	<1.0
NCI-20	2/23/2011	FTN	ug/L	<1.0	2.2	<1.0	<1.0	<1.0
			Number of Detects	0	13	0	0	0
			Number of Analysis	26	26	26	26	26
			Minimum Detect	0	0.32	0	0	0
			Maximum Detect	0	68	0	0	0
			USEPA RSL Table - Tapwater (ug/L)	0.11	2300	29	2.3	9100
			Maximum Contaminant Level (MCL) (ug/L)	5	1000	na	70	200

Table 2.0a
Groundwater Data
Volatile Organic Compounds (VOCs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Units	1,1,2-Trichloroethane	Trichloroethene	Trichlorofluoromethane	1,2,3-Trichloropropane	1,2,4-Trimethylbenzene
MW-1	2/22/2011	FTN	ug/L	<50	<50	<250	<130	<50
MW-5	2/22/2011	FTN	ug/L	<1.0	<1.0	<5.0	<2.5	<1.0
MW-7	3/1/2011	FTN	ug/L	<1.0	<1.0	<5.0	<2.5	<1.0
MW-7-D	3/1/2011	FTN	ug/L	<1.0	<1.0	<5.0	<2.5	<1.0
NCI-0	2/25/2011	FTN	ug/L	<1.0	<1.0	<5.0	<2.5	<1.0
NCI-1	2/22/2011	FTN	ug/L	<1.0	<1.0	<5.0	<2.5	0.57
NCI-2	2/22/2011	FTN	ug/L	<1.0	<1.0	<5.0	<2.5	1.5
NCI-3	2/22/2011	FTN	ug/L	<1.0	<1.0	<5.0	<2.5	0.65
NCI-4	2/22/2011	FTN	ug/L	<1.0	<1.0	<5.0	<2.5	20
NCI-5	2/23/2011	FTN	ug/L	<1.0	<1.0	<5.0	<2.5	290
NCI-6	2/23/2011	FTN	ug/L	<1.0	<1.0	<5.0	<2.5	<1.0
NCI-7	2/23/2011	FTN	ug/L	<1.0	<1.0	<5.0	<2.5	<1.0
NCI-7D	2/23/2011	FTN	ug/L	<1.0	<1.0	<5.0	<2.5	<1.0
NCI-9	2/24/2011	FTN	ug/L	<1.0	<1.0	<5.0	<2.5	0.8
NCI-10	2/24/2011	FTN	ug/L	<1.0	<1.0	<5.0	<2.5	<1.0
NCI-11	2/24/2011	FTN	ug/L	<1.0	<1.0	<5.0	<2.5	<1.0
NCI-12	2/25/2011	FTN	ug/L	<1.0	<1.0	<5.0	<2.5	7.6
NCI-13	3/1/2011	FTN	ug/L	<1.0	<1.0	<5.0	<2.5	<1.0
NCI-14	3/1/2011	FTN	ug/L	<1.0	<1.0	<5.0	<2.5	2.3
NCI-15	3/1/2011	FTN	ug/L	<1.0	<1.0	<5.0	<2.5	37
NCI-16	2/25/2011	FTN	ug/L	<1.0	<1.0	<5.0	<2.5	5.6
NCI-17	2/25/2011	FTN	ug/L	<1.0	3	<5.0	<2.5	0.56
NCI-18	2/25/2011	FTN	ug/L	<1.0	<1.0	<5.0	<2.5	<1.0
NCI-18-D	2/25/2011	FTN	ug/L	<1.0	<1.0	<5.0	<2.5	<1.0
NCI-19	2/23/2011	FTN	ug/L	<1.0	<1.0	<5.0	<2.5	0.72
NCI-20	2/23/2011	FTN	ug/L	<1.0	<1.0	<5.0	<2.5	0.34
			Number of Detects	0	1	0	0	13
			Number of Analysis	26	26	26	26	26
			Minimum Detect	0	3	0	0	0.34
			Maximum Detect	0	3	0	0	290
			USEPA RSL Table - Tapwater (ug/L)	0.24	2	1300	0.00072	15
			Maximum Contaminant Level (MCL) (ug/L)	5	5	na	na	na

Table 2.0a
Groundwater Data
Volatile Organic Compounds (VOCs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Units	1,2,3-Trimethylbenzene	1,3,5-Trimethylbenzene	Vinyl chloride	Xylenes, Total
MW-1	2/22/2011	FTN	ug/L	17	<50	<50	<150
MW-5	2/22/2011	FTN	ug/L	<1.0	<1.0	<1.0	<3.0
MW-7	3/1/2011	FTN	ug/L	<1.0	<1.0	<1.0	<3.0
MW-7-D	3/1/2011	FTN	ug/L	<1.0	<1.0	<1.0	<3.0
NCI-0	2/25/2011	FTN	ug/L	<1.0	<1.0	<1.0	<3.0
NCI-1	2/22/2011	FTN	ug/L	1.1	0.38	<1.0	<3.0
NCI-2	2/22/2011	FTN	ug/L	<1.0	2.1	<1.0	<3.0
NCI-3	2/22/2011	FTN	ug/L	0.73	1.8	<1.0	<3.0
NCI-4	2/22/2011	FTN	ug/L	36	22	<1.0	7.7
NCI-5	2/23/2011	FTN	ug/L	48	150	<1.0	220
NCI-6	2/23/2011	FTN	ug/L	<1.0	<1.0	<1.0	<3.0
NCI-7	2/23/2011	FTN	ug/L	<1.0	<1.0	<1.0	<3.0
NCI-7D	2/23/2011	FTN	ug/L	<1.0	<1.0	<1.0	<3.0
NCI-9	2/24/2011	FTN	ug/L	0.37	<1.0	<1.0	12
NCI-10	2/24/2011	FTN	ug/L	0.57	<1.0	<1.0	1.5
NCI-11	2/24/2011	FTN	ug/L	<1.0	<1.0	<1.0	<3.0
NCI-12	2/25/2011	FTN	ug/L	4.8	4.7	<1.0	11
NCI-13	3/1/2011	FTN	ug/L	<1.0	<1.0	<1.0	<3.0
NCI-14	3/1/2011	FTN	ug/L	0.42	<1.0	<1.0	<3.0
NCI-15	3/1/2011	FTN	ug/L	18	16	<1.0	14
NCI-16	2/25/2011	FTN	ug/L	2.7	1.4	<1.0	5.2
NCI-17	2/25/2011	FTN	ug/L	0.76	0.53	<1.0	<3.0
NCI-18	2/25/2011	FTN	ug/L	<1.0	<1.0	<1.0	<3.0
NCI-18-D	2/25/2011	FTN	ug/L	<1.0	<1.0	<1.0	<3.0
NCI-19	2/23/2011	FTN	ug/L	0.41	0.43	<1.0	<3.0
NCI-20	2/23/2011	FTN	ug/L	0.55	0.36	<1.0	1.1
			Number of Detects	14	11	0	8
			Number of Analysis	26	26	26	26
			Minimum Detect	0.37	0.36	0	1.1
			Maximum Detect	48	150	0	220
			USEPA RSL Table - Tapwater (ug/L)	na	370	0.016	200
			Maximum Contaminant Level (MCL) (ug/L)	na	na	2	10000

Table 2.0b
Groundwater Data
Polycyclic Aromatic Hydrocarbons (PAHs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Units	Anthracene	Acenaphthene	Acenaphthylene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene
MW-1	2/22/2011	FTN	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
MW-5	2/22/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
MW-7	3/1/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
MW-7-D	3/1/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
NCI-0	2/25/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
NCI-1	2/22/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
NCI-2	2/22/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
NCI-3	2/22/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
NCI-4	2/22/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
NCI-5	2/23/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
NCI-6	2/23/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
NCI-7	2/23/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
NCI-7-D	2/23/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
NCI-9	2/24/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
NCI-10	2/24/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
NCI-11	2/24/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
NCI-12	2/25/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
NCI-13	3/1/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
NCI-14	3/1/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
NCI-15	3/1/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
NCI-16	2/25/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
NCI-17	2/25/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
NCI-18	2/25/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
NCI-18-D	2/25/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
NCI-19	2/23/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
NCI-20	2/23/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
			Number of Detects	0	0	0	0	0	0
			Number of Analysis	26	26	26	26	26	26
			Minimum Detect	0	0	0	0	0	0
			Maximum Detect	0	0	0	0	0	0
			USEPA RSL Table - Tapwater (ug/L)	11000	2200	na	0.029	0.0029	0.029
			Maximum Contaminant Level (MCL) (ug/L)	na	na	na	na	0.2	na

Table 2.0b
Groundwater Data
Polycyclic Aromatic Hydrocarbons (PAHs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Units	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene
MW-1	2/22/2011	FTN	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
MW-5	2/22/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
MW-7	3/1/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
MW-7-D	3/1/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
NCI-0	2/25/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
NCI-1	2/22/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
NCI-2	2/22/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
NCI-3	2/22/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
NCI-4	2/22/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
NCI-5	2/23/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
NCI-6	2/23/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
NCI-7	2/23/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
NCI-7-D	2/23/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
NCI-9	2/24/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
NCI-10	2/24/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
NCI-11	2/24/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
NCI-12	2/25/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	1
NCI-13	3/1/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
NCI-14	3/1/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
NCI-15	3/1/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
NCI-16	2/25/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
NCI-17	2/25/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
NCI-18	2/25/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
NCI-18-D	2/25/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
NCI-19	2/23/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
NCI-20	2/23/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
			Number of Detects	0	0	0	0	0	1
			Number of Analysis	26	26	26	26	26	26
			Minimum Detect	0	0	0	0	0	1
			Maximum Detect	0	0	0	0	0	1
			USEPA RSL Table - Tapwater (ug/L)	na	0.29	2.9	0.0029	1500	1500
			Maximum Contaminant Level (MCL) (ug/L)	na	na	na	na	na	na

Table 2.0b
Groundwater Data
Polycyclic Aromatic Hydrocarbons (PAHs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Units	Indeno(1,2,3-cd)pyrene	1-Methylnaphthalene	2-Methylnaphthalene	Naphthalene	Phenanthrene	Pyrene
MW-1	2/22/2011	FTN	ug/L	<2.0	<20	<20	<20	<2.0	<2.0
MW-5	2/22/2011	FTN	ug/L	<0.10	<1.0	<1.0	<1.0	<0.10	<0.10
MW-7	3/1/2011	FTN	ug/L	<0.10	<1.0	<1.0	<1.0	<0.10	<0.10
MW-7-D	3/1/2011	FTN	ug/L	<0.10	<1.0	<1.0	<1.0	<0.10	<0.10
NCI-0	2/25/2011	FTN	ug/L	<0.10	<1.0	<1.0	<1.0	<0.10	<0.10
NCI-1	2/22/2011	FTN	ug/L	<0.10	0.026	0.027	0.29	<0.10	<0.10
NCI-2	2/22/2011	FTN	ug/L	<0.10	8.8	<1.0	<1.0	<0.10	<0.10
NCI-3	2/22/2011	FTN	ug/L	<0.10	2.5	2	<1.0	<0.10	<0.10
NCI-4	2/22/2011	FTN	ug/L	<0.10	7.5	6.7	<1.0	<0.10	<0.10
NCI-5	2/23/2011	FTN	ug/L	<0.10	<1.0	<1.0	<1.0	<0.10	<0.10
NCI-6	2/23/2011	FTN	ug/L	<0.10	<1.0	<1.0	<1.0	<0.10	<0.10
NCI-7	2/23/2011	FTN	ug/L	<0.10	<1.0	<1.0	<1.0	<0.10	<0.10
NCI-7-D	2/23/2011	FTN	ug/L	<0.10	<1.0	<1.0	<1.0	<0.10	<0.10
NCI-9	2/24/2011	FTN	ug/L	<0.10	<1.0	<1.0	<1.0	<0.10	0.12
NCI-10	2/24/2011	FTN	ug/L	<0.10	<1.0	<1.0	<1.0	<0.10	<0.10
NCI-11	2/24/2011	FTN	ug/L	<0.10	<1.0	<1.0	<1.0	<0.10	<0.10
NCI-12	2/25/2011	FTN	ug/L	<0.10	3.4	1.3	2.4	<0.10	<0.10
NCI-13	3/1/2011	FTN	ug/L	<0.10	<1.0	<1.0	<1.0	<0.10	<0.10
NCI-14	3/1/2011	FTN	ug/L	<0.10	5.5	1.9	2.5	<0.10	<0.10
NCI-15	3/1/2011	FTN	ug/L	<0.10	20	17	16	<0.10	<0.10
NCI-16	2/25/2011	FTN	ug/L	<0.10	0.58	0.57	1	<0.10	<0.10
NCI-17	2/25/2011	FTN	ug/L	<0.10	<1.0	<1.0	<1.0	<0.10	<0.10
NCI-18	2/25/2011	FTN	ug/L	<0.10	<1.0	<1.0	0.038	<0.10	<0.10
NCI-18-D	2/25/2011	FTN	ug/L	<0.10	<1.0	<1.0	0.008	<0.10	<0.10
NCI-19	2/23/2011	FTN	ug/L	<0.10	0.4	0.41	0.57	<0.10	<0.10
NCI-20	2/23/2011	FTN	ug/L	<0.10	<1.0	<1.0	<1.0	<0.10	<0.10
			Number of Detects	0	9	8	8	0	1
			Number of Analysis	26	26	26	26	26	26
			Minimum Detect	0	0.026	0.027	0.008	0	0.12
			Maximum Detect	0	20	17	16	0	0.12
			USEPA RSL Table - Tapwater (ug/L)	0.029	2.3	150	0.14	na	1100
			Maximum Contaminant Level (MCL) (ug/L)	na	na	na	na	na	na

Table 2.0c
Groundwater Data
Metals
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Units	Chromium	Chromium,Dissolved	Fluoride	Lead	Lead,Dissolved
MW-1	2/22/2011	FTN	ug/L	<10	<2.0	240	<45	210
MW-5	2/22/2011	FTN	ug/L	<10			<1.0	
MW-7	3/1/2011	FTN	ug/L	<10		<100	0.3	
MW-7-D	3/1/2011	FTN	ug/L	<10		<100	0.51	
NCI-0	2/25/2011	FTN	ug/L	14			4.8	
NCI-1	2/22/2011	FTN	ug/L	8.4			5.6	
NCI-2	2/22/2011	FTN	ug/L	<10			<1.0	
NCI-3	2/22/2011	FTN	ug/L	6			1.6	
NCI-4	2/22/2011	FTN	ug/L	2.9			10	
NCI-5	2/23/2011	FTN	ug/L	44	<10	460	21	<1.0
NCI-6	2/23/2011	FTN	ug/L	28	<10	39	22	<1.0
NCI-7	2/23/2011	FTN	ug/L	7.6		240	1.9	
NCI-7-D	2/23/2011	FTN	ug/L	7.4		220	2.6	
NCI-7D	2/23/2011	FTN	ug/L					
NCI-9	2/24/2011	FTN	ug/L	5.8			4.7	
NCI-10	2/24/2011	FTN	ug/L	86	<10		160	<1.0
NCI-11	2/24/2011	FTN	ug/L	<10			1.9	
NCI-12	2/25/2011	FTN	ug/L	110	<10		79	<1.0
NCI-13	3/1/2011	FTN	ug/L	22			12	
NCI-14	3/1/2011	FTN	ug/L	160	<2.0		200	<1.0
NCI-15	3/1/2011	FTN	ug/L	11			14	
NCI-16	2/25/2011	FTN	ug/L	14	<2.0		19	0.3
NCI-17	2/25/2011	FTN	ug/L	10			3.9	
NCI-18	2/25/2011	FTN	ug/L	<10			<1.0	
NCI-18-D	2/25/2011	FTN	ug/L	2.6			2	
NCI-19	2/23/2011	FTN	ug/L	<10			<1.0	
NCI-20	2/23/2011	FTN	ug/L	3.3			0.42	
			Number of Detects	18	0	5	21	2
			Number of Analysis	26	7	7	26	7
			Minimum Detect	2.6	0	39	0.3	0.3
			Maximum Detect	160	0	460	200	210
			USEPA RSL Table - Tapwater (ug/L)	na	na	1500	na	na
			Maximum Contaminant Level (MCL) (ug/L)	100	100	na	15	15

Table 2.0d
Groundwater Data
Total Petroleum Hydrocarbons (TPH)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Units	TPH Gasoline Range	C10-C28 Diesel Range	C28-C40 Oil Range
MW-1	2/22/2011	FTN	ug/L	24000	41000	3400
MW-5	2/22/2011	FTN	ug/L	<100	2100	190
MW-7	3/1/2011	FTN	ug/L	<100	120	<100
MW-7-D	3/1/2011	FTN	ug/L	<100	<100	<100
NCI-0	2/25/2011	FTN	ug/L	<100	150	<100
NCI-1	2/22/2011	FTN	ug/L	<100	470	<100
NCI-2	2/22/2011	FTN	ug/L	220	620	<100
NCI-3	2/22/2011	FTN	ug/L	<100	1900	<100
NCI-4	2/22/2011	FTN	ug/L	280	2300	<100
NCI-5	2/23/2011	FTN	ug/L	960	1100	<100
NCI-6	2/23/2011	FTN	ug/L	<100	110	<100
NCI-7	2/23/2011	FTN	ug/L	<100	520	<100
NCI-7-D	2/23/2011	FTN	ug/L	<100	470	<100
NCI-9	2/24/2011	FTN	ug/L	220	800	100
NCI-10	2/24/2011	FTN	ug/L	<100	1400	100
NCI-11	2/24/2011	FTN	ug/L	<100	1100	59
NCI-12	2/25/2011	FTN	ug/L	180	2300	110
NCI-13	3/1/2011	FTN	ug/L	<100	620	130
NCI-14	3/1/2011	FTN	ug/L	330	6600	1300
NCI-15	3/1/2011	FTN	ug/L	470	8900	290
NCI-16	2/25/2011	FTN	ug/L	96	640	61
NCI-17	2/25/2011	FTN	ug/L	<100	5700	270
NCI-18	2/25/2011	FTN	ug/L	<100	380	50
NCI-18-D	2/25/2011	FTN	ug/L	<100	390	54
NCI-19	2/23/2011	FTN	ug/L	<100	52	<100
NCI-20	2/23/2011	FTN	ug/L	<100	1100	53
			Number of Detects	9	25	14
			Number of Analysis	26	26	26
			Minimum Detect	96	52	50
			Maximum Detect	24000	41000	3400
			USEPA RSL Table - Tapwater (ug/L)	na	na	na
			Maximum Contaminant Level (MCL) (ug/L)	na	na	na
			ADEQ TPH SL (ug/L)	200	400	700

Table 2.0e
Surface Soil Data
Volatile Organic Compounds (VOCs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Depth (ft)	Units	Acetone	Acrylonitrile	Benzene	Bromobenzene	Bromodichloromethane	Bromoform
NCI-0-0.5	2/25/2011	FTN	0.5	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-1-0.5	2/21/2011	FTN	0.5	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-2-0.5	2/21/2011	FTN	0.5	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-3-0.5	2/21/2011	FTN	0.5	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-4-0.5	2/22/2011	FTN	0.5	mg/kg	0.055	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-4-0.5 D	2/22/2011	FTN	0.5	mg/kg	<25	<5.0	<0.50	<0.50	<0.50	<0.50
NCI-5-0.5	2/22/2011	FTN	0.5	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-6-0.5	2/23/2011	FTN	0.5	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-6-0.5 D	2/23/2011	FTN	0.5	mg/kg	0.084	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-7-0.5	2/23/2011	FTN	0.5	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-8-0.5	2/24/2011	FTN	0.5	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-8-0.5 D	2/24/2011	FTN	0.5	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-9-0.5	2/23/2011	FTN	0.5	mg/kg	0.061	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-10-0.5	2/23/2011	FTN	0.5	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-11-0.5	2/23/2011	FTN	0.5	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-12-0.5	2/24/2011	FTN	0.5	mg/kg	<2.5	<0.50	<0.050	<0.050	<0.050	<0.050
NCI-13-0.5	2/28/2011	FTN	0.5	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-19-0.5	2/22/2011	FTN	0.5	mg/kg	0.071	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-20-0.5	2/22/2011	FTN	0.5	mg/kg	0.092	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
SS-1 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
SS-2 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
SS-3 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
SS-4 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
SS-5 -0.5	2/22/2011	FTN	0.5	mg/kg	0.14	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
SS-5D -0.5	2/22/2011	FTN	0.5	mg/kg	0.14	<0.050	0.0058	<0.0050	<0.0050	<0.0050
SS-6 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.25	<0.050	0.0041	<0.0050	<0.0050	<0.0050
SS-7 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
SS-8 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
SS-9 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
SS-10 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
SS-11 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
SS-12 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
SS-13 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
SS-14 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
SS-15 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
SS-16 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
SS-16-D -0.5	2/22/2011	FTN	0.5	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
SS-17 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
SS-18 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
SS-19 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
				Number of Detects	7	0	2	0	0	0
				Number of Analysis	40	40	40	40	40	40
				Minimum Detect	0.055	0	0.0041	0	0	0
				Maximum Detect	0.14	0	0.0058	0	0	0
				Human Health Screening						
				USEPA RSL Table - Residential Soil (mg/kg)	61000	0.24	1.1	300	0.27	61
				Ecological Screening						
				USEPA Ecological SL - Soil	NA	NA	NA	NA	NA	NA
				USEPA Region 4 Ecological SL	NA	1000	0.05	NA	NA	NA
				PRG for Ecological Endpoints	NA	NA	NA	NA	NA	NA
				Endpoint						

Table 2.0e
Surface Soil Data
Volatile Organic Compounds (VOCs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Depth (ft)	Units	Bromomethane	n-Butylbenzene	sec-Butylbenzene	tert-Butylbenzene	Carbon tetrachloride	Chlorobenzene
NCI-0-0.5	2/25/2011	FTN	0.5	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-1-0.5	2/21/2011	FTN	0.5	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-2-0.5	2/21/2011	FTN	0.5	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-3-0.5	2/21/2011	FTN	0.5	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-4-0.5	2/22/2011	FTN	0.5	mg/kg	<0.025	<0.0050	0.032	0.014	<0.0050	<0.0050
NCI-4-0.5 D	2/22/2011	FTN	0.5	mg/kg	<2.5	<0.50	1	0.37	<0.50	<0.50
NCI-5-0.5	2/22/2011	FTN	0.5	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-6-0.5	2/23/2011	FTN	0.5	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-6-0.5 D	2/23/2011	FTN	0.5	mg/kg	<0.025	<0.0050	0.0019	<0.0050	<0.0050	<0.0050
NCI-7-0.5	2/23/2011	FTN	0.5	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-8-0.5	2/24/2011	FTN	0.5	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-8-0.5 D	2/24/2011	FTN	0.5	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-9-0.5	2/23/2011	FTN	0.5	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-10-0.5	2/23/2011	FTN	0.5	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-11-0.5	2/23/2011	FTN	0.5	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-12-0.5	2/24/2011	FTN	0.5	mg/kg	<0.25	0.96	0.23	0.072	<0.050	<0.050
NCI-13-0.5	2/28/2011	FTN	0.5	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-19-0.5	2/22/2011	FTN	0.5	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-20-0.5	2/22/2011	FTN	0.5	mg/kg	<0.025	<0.0050	0.0059	<0.0050	<0.0050	<0.0050
SS-1 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SS-2 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SS-3 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SS-4 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SS-5 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.025	<0.0050	<0.0050	0.0034	<0.0050	<0.0050
SS-5D -0.5	2/22/2011	FTN	0.5	mg/kg	<0.025	<0.0050	<0.0050	0.0028	<0.0050	<0.0050
SS-6 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.025	<0.0050	<0.0050	0.0026	<0.0050	<0.0050
SS-7 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SS-8 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SS-9 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SS-10 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SS-11 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SS-12 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SS-13 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SS-14 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SS-15 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SS-16 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SS-16-D -0.5	2/22/2011	FTN	0.5	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SS-17 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SS-18 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SS-19 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
				Number of Detects	0	1	5	6	0	0
				Number of Analysis	40	40	40	40	40	40
				Minimum Detect	0	0.96	0.0019	0.0026	0	0
				Maximum Detect	0	0.96	1	0.37	0	0
				Human Health Screening						
				USEPA RSL Table - Residential Soil (mg/kg)	7.3	na	na	na	0.61	290
				Ecological Screening						
				USEPA Ecological SL - Soil	NA	NA	NA	NA	NA	NA
				USEPA Region 4 Ecological SL	NA	NA	NA	NA	NA	NA
				PRG for Ecological Endpoints	NA	NA	NA	NA	NA	NA
				Endpoint						

Table 2.0e
Surface Soil Data
Volatile Organic Compounds (VOCs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Depth (ft)	Units	Chlorodibromomethane	Chloroethane	2-Chloroethyl vinyl ether	Chloroform	Chloromethane	2-Chlorotoluene
NCI-0-0.5	2/25/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
NCI-1-0.5	2/21/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
NCI-2-0.5	2/21/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
NCI-3-0.5	2/21/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
NCI-4-0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
NCI-4-0.5 D	2/22/2011	FTN	0.5	mg/kg	<0.50	<2.5	<25	<2.5	<1.3	<0.50
NCI-5-0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
NCI-6-0.5	2/23/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
NCI-6-0.5 D	2/23/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
NCI-7-0.5	2/23/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
NCI-8-0.5	2/24/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
NCI-8-0.5 D	2/24/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
NCI-9-0.5	2/23/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
NCI-10-0.5	2/23/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
NCI-11-0.5	2/23/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
NCI-12-0.5	2/24/2011	FTN	0.5	mg/kg	<0.050	<0.25	<2.5	<0.25	<0.13	<0.050
NCI-13-0.5	2/28/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
NCI-19-0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
NCI-20-0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
SS-1 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
SS-2 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
SS-3 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
SS-4 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
SS-5 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
SS-5D -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
SS-6 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
SS-7 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
SS-8 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
SS-9 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
SS-10 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
SS-11 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
SS-12 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
SS-13 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
SS-14 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
SS-15 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
SS-16 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
SS-16-D -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
SS-17 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
SS-18 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
SS-19 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
				Number of Detects	0	0	0	0	0	0
				Number of Analysis	40	40	40	40	40	40
				Minimum Detect	0	0	0	0	0	0
				Maximum Detect	0	0	0	0	0	0
				Human Health Screening						
				USEPA RSL Table - Residential Soil (mg/kg)	0.68	15000	na	0.29	120	1600
				Ecological Screening						
				USEPA Ecological SL - Soil	NA	NA	NA	NA	NA	NA
				USEPA Region 4 Ecological SL	NA	NA	NA	NA	NA	NA
				PRG for Ecological Endpoints	NA	NA	NA	NA	NA	NA
				Endpoint						

Table 2.0e
Surface Soil Data
Volatile Organic Compounds (VOCs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Depth (ft)	Units	4-Chlorotoluene	1,2-Dibromo-3-Chloropropane	1,2-Dibromoethane	Dibromomethane	1,2-Dichlorobenzene	1,3-Dichlorobenzene
NCI-0-0.5	2/25/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-1-0.5	2/21/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-2-0.5	2/21/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-3-0.5	2/21/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-4-0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-4-0.5 D	2/22/2011	FTN	0.5	mg/kg	<0.50	<2.5	<0.50	<0.50	<0.50	<0.50
NCI-5-0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-6-0.5	2/23/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-6-0.5 D	2/23/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-7-0.5	2/23/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-8-0.5	2/24/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-8-0.5 D	2/24/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-9-0.5	2/23/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-10-0.5	2/23/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-11-0.5	2/23/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-12-0.5	2/24/2011	FTN	0.5	mg/kg	<0.050	<0.25	<0.050	<0.050	<0.050	<0.050
NCI-13-0.5	2/28/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-19-0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-20-0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SS-1 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SS-2 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SS-3 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SS-4 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SS-5 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SS-5D -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SS-6 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SS-7 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SS-8 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SS-9 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SS-10 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SS-11 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SS-12 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SS-13 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SS-14 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SS-15 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SS-16 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SS-16-D -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SS-17 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SS-18 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SS-19 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
				Number of Detects	0	0	0	0	0	0
				Number of Analysis	40	40	40	40	40	40
				Minimum Detect	0	0	0	0	0	0
				Maximum Detect	0	0	0	0	0	0
				Human Health Screening						
				USEPA RSL Table - Residential Soil (mg/kg)	5500	0.0054	0.034	25	1900	na
				Ecological Screening						
				USEPA Ecological SL - Soil	NA	NA	NA	NA	NA	NA
				USEPA Region 4 Ecological SL	NA	NA	NA	NA	0.01	0.01
				PRG for Ecological Endpoints	NA	NA	NA	NA	NA	NA
				Endpoint						

Table 2.0e
Surface Soil Data
Volatile Organic Compounds (VOCs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Depth (ft)	Units	1,4-Dichlorobenzene	Dichlorodifluoromethane	1,1-Dichloroethane	1,2-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene
NCI-0-0.5	2/25/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-1-0.5	2/21/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-2-0.5	2/21/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-3-0.5	2/21/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-4-0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-4-0.5 D	2/22/2011	FTN	0.5	mg/kg	<0.50	<2.5	<0.50	<0.50	<0.50	<0.50
NCI-5-0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-6-0.5	2/23/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-6-0.5 D	2/23/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-7-0.5	2/23/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-8-0.5	2/24/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-8-0.5 D	2/24/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-9-0.5	2/23/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-10-0.5	2/23/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-11-0.5	2/23/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-12-0.5	2/24/2011	FTN	0.5	mg/kg	<0.050	<0.25	<0.050	<0.050	<0.050	<0.050
NCI-13-0.5	2/28/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-19-0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-20-0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SS-1 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SS-2 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SS-3 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SS-4 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SS-5 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SS-5D -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SS-6 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SS-7 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SS-8 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SS-9 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SS-10 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SS-11 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SS-12 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SS-13 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SS-14 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SS-15 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SS-16 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SS-16-D -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SS-17 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SS-18 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SS-19 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
				Number of Detects	0	0	0	0	0	0
				Number of Analysis	40	40	40	40	40	40
				Minimum Detect	0	0	0	0	0	0
				Maximum Detect	0	0	0	0	0	0
				Human Health Screening						
				USEPA RSL Table - Residential Soil (mg/kg)	2.4	180	3.3	0.43	240	160
				Ecological Screening						
				USEPA Ecological SL - Soil	NA	NA	NA	NA	NA	NA
				USEPA Region 4 Ecological SL	0.01	NA	NA	0.4	NA	NA
				PRG for Ecological Endpoints	20	NA	NA	NA	NA	NA
				Endpoint	earthworm					

Table 2.0e
Surface Soil Data
Volatile Organic Compounds (VOCs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Depth (ft)	Units	trans-1,2-Dichloroethene	1,2-Dichloropropane	1,1-Dichloropropene	1,3-Dichloropropane	cis-1,3-Dichloropropene	trans-1,3-Dichloropropene
NCI-0-0.5	2/25/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-1-0.5	2/21/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-2-0.5	2/21/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-3-0.5	2/21/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-4-0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-4-0.5 D	2/22/2011	FTN	0.5	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
NCI-5-0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-6-0.5	2/23/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-6-0.5 D	2/23/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-7-0.5	2/23/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-8-0.5	2/24/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-8-0.5 D	2/24/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-9-0.5	2/23/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-10-0.5	2/23/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-11-0.5	2/23/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-12-0.5	2/24/2011	FTN	0.5	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
NCI-13-0.5	2/28/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-19-0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-20-0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SS-1 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SS-2 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SS-3 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SS-4 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SS-5 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SS-5D -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SS-6 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SS-7 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SS-8 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SS-9 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SS-10 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SS-11 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SS-12 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SS-13 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SS-14 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SS-15 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SS-16 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SS-16-D -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SS-17 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SS-18 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SS-19 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
				Number of Detects	0	0	0	0	0	0
				Number of Analysis	40	40	40	40	40	40
				Minimum Detect	0	0	0	0	0	0
				Maximum Detect	0	0	0	0	0	0
				Human Health Screening						
				USEPA RSL Table - Residential Soil (mg/kg)	150	0.89	na	1600	na	na
				Ecological Screening						
				USEPA Ecological SL - Soil	NA	NA	NA	NA	NA	NA
				USEPA Region 4 Ecological SL	NA	700	NA	NA	NA	NA
				PRG for Ecological Endpoints	NA	NA	NA	NA	NA	NA
				Endpoint						

Table 2.0e
Surface Soil Data
Volatile Organic Compounds (VOCs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Depth (ft)	Units	2,2-Dichloropropane	Di-isopropyl ether	Ethylbenzene	Hexachloro-1,3-butadiene	Isopropylbenzene	p-Isopropyltoluene
NCI-0-0.5	2/25/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-1-0.5	2/21/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-2-0.5	2/21/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	0.0017	<0.0050	<0.0050	<0.0050
NCI-3-0.5	2/21/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-4-0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	0.033	<0.0050	0.076	0.22
NCI-4-0.5 D	2/22/2011	FTN	0.5	mg/kg	<0.50	<0.50	<0.50	<0.50	0.54	3.1
NCI-5-0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-6-0.5	2/23/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-6-0.5 D	2/23/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.011
NCI-7-0.5	2/23/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-8-0.5	2/24/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-8-0.5 D	2/24/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-9-0.5	2/23/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-10-0.5	2/23/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-11-0.5	2/23/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-12-0.5	2/24/2011	FTN	0.5	mg/kg	<0.050	<0.050	0.08	<0.050	0.17	0.88
NCI-13-0.5	2/28/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-19-0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	0.0066	<0.0050	<0.0050	0.0035
NCI-20-0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	0.015	<0.0050	0.005	0.021
SS-1 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SS-2 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SS-3 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SS-4 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SS-5 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	0.011	<0.0050	<0.0050	0.019
SS-5D -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	0.01	<0.0050	<0.0050	0.013
SS-6 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	0.02	<0.0050	0.0031	<0.0050
SS-7 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SS-8 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SS-9 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SS-10 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SS-11 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SS-12 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SS-13 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SS-14 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SS-15 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SS-16 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SS-16-D -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SS-17 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SS-18 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SS-19 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
				Number of Detects	0	0	8	0	5	8
				Number of Analysis	40	40	40	40	40	40
				Minimum Detect	0	0	0.0017	0	0.0031	0.0035
				Maximum Detect	0	0	0.08	0	0.54	3.1
				Human Health Screening						
				USEPA RSL Table - Residential Soil (mg/kg)	na	1400	5.4	6.2	2100	na
				Ecological Screening						
				USEPA Ecological SL - Soil	NA	NA	NA	NA	NA	NA
				USEPA Region 4 Ecological SL	NA	NA	0.04	NA	NA	NA
				PRG for Ecological Endpoints	NA	NA	NA	NA	NA	NA
				Endpoint						

Table 2.0e
Surface Soil Data
Volatile Organic Compounds (VOCs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Depth (ft)	Units	2-Butanone (MEK)	Methylene Chloride	4-Methyl-2-pentanone (MIBK)	Methyl tert-butyl ether	Naphthalene	n-Propylbenzene
NCI-0-0.5	2/25/2011	FTN	0.5	mg/kg	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
NCI-1-0.5	2/21/2011	FTN	0.5	mg/kg	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
NCI-2-0.5	2/21/2011	FTN	0.5	mg/kg	<0.050	0.0037	<0.050	<0.0050	0.016	<0.0050
NCI-3-0.5	2/21/2011	FTN	0.5	mg/kg	<0.050	0.0042	<0.050	<0.0050	<0.025	<0.0050
NCI-4-0.5	2/22/2011	FTN	0.5	mg/kg	<0.050	<0.025	<0.050	<0.0050	0.0075	0.038
NCI-4-0.5 D	2/22/2011	FTN	0.5	mg/kg	<5.0	<2.5	<5.0	<0.50	1.9	0.4
NCI-5-0.5	2/22/2011	FTN	0.5	mg/kg	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
NCI-6-0.5	2/23/2011	FTN	0.5	mg/kg	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
NCI-6-0.5 D	2/23/2011	FTN	0.5	mg/kg	<0.050	<0.025	<0.050	<0.0050	<0.025	0.002
NCI-7-0.5	2/23/2011	FTN	0.5	mg/kg	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
NCI-8-0.5	2/24/2011	FTN	0.5	mg/kg	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
NCI-8-0.5 D	2/24/2011	FTN	0.5	mg/kg	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
NCI-9-0.5	2/23/2011	FTN	0.5	mg/kg	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
NCI-10-0.5	2/23/2011	FTN	0.5	mg/kg	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
NCI-11-0.5	2/23/2011	FTN	0.5	mg/kg	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
NCI-12-0.5	2/24/2011	FTN	0.5	mg/kg	<0.50	0.085	<0.50	<0.050	0.9	0.16
NCI-13-0.5	2/28/2011	FTN	0.5	mg/kg	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
NCI-19-0.5	2/22/2011	FTN	0.5	mg/kg	<0.050	<0.025	<0.050	<0.0050	0.0026	<0.0050
NCI-20-0.5	2/22/2011	FTN	0.5	mg/kg	<0.050	<0.025	<0.050	<0.0050	0.053	0.0047
SS-1 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
SS-2 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
SS-3 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
SS-4 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
SS-5 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.050	<0.025	<0.050	<0.0050	<0.025	0.004
SS-5D -0.5	2/22/2011	FTN	0.5	mg/kg	<0.050	<0.025	<0.050	<0.0050	<0.025	0.0023
SS-6 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.050	<0.025	<0.050	<0.0050	<0.025	0.0033
SS-7 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
SS-8 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
SS-9 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
SS-10 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
SS-11 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
SS-12 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.050	0.0028	<0.050	<0.0050	<0.025	<0.0050
SS-13 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.050	0.0024	<0.050	<0.0050	<0.025	<0.0050
SS-14 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
SS-15 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.050	0.003	<0.050	<0.0050	<0.025	<0.0050
SS-16 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.050	0.0027	<0.050	<0.0050	<0.025	<0.0050
SS-16-D -0.5	2/22/2011	FTN	0.5	mg/kg	<0.050	0.0025	<0.050	<0.0050	<0.025	<0.0050
SS-17 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.050	0.0027	<0.050	<0.0050	<0.025	<0.0050
SS-18 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
SS-19 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.050	0.0033	<0.050	<0.0050	<0.025	<0.0050
				Number of Detects	0	10	0	0	6	8
				Number of Analysis	40	40	40	40	40	40
				Minimum Detect	0	0.0024	0	0	0.0026	0.002
				Maximum Detect	0	0.085	0	0	1.9	0.4
				Human Health Screening						
				USEPA RSL Table - Residential Soil (mg/kg)	28000	11	5300	43	3.6	3400
				Ecological Screening						
				USEPA Ecological SL - Soil	NA	NA	NA	NA	NA	NA
				USEPA Region 4 Ecological SL	NA	NA	NA	NA	0.1	NA
				PRG for Ecological Endpoints	NA	NA	NA	NA	NA	NA
				Endpoint						

Table 2.0e
Surface Soil Data
Volatile Organic Compounds (VOCs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Depth (ft)	Units	Styrene	1,1,1,2-Tetrachloroethane	1,1,2,2-Tetrachloroethane	1,1,2-Trichloro-1,2,2-trifluoroethane	Tetrachloroethene	Toluene
NCI-0-0.5	2/25/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-1-0.5	2/21/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-2-0.5	2/21/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-3-0.5	2/21/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-4-0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-4-0.5 D	2/22/2011	FTN	0.5	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	<2.5
NCI-5-0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-6-0.5	2/23/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-6-0.5 D	2/23/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-7-0.5	2/23/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-8-0.5	2/24/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-8-0.5 D	2/24/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-9-0.5	2/23/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-10-0.5	2/23/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-11-0.5	2/23/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-12-0.5	2/24/2011	FTN	0.5	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	0.049
NCI-13-0.5	2/28/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-19-0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.005
NCI-20-0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0045
SS-1 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
SS-2 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
SS-3 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
SS-4 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
SS-5 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.043
SS-5D -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.15
SS-6 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.11
SS-7 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
SS-8 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
SS-9 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
SS-10 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
SS-11 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
SS-12 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
SS-13 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
SS-14 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
SS-15 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
SS-16 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
SS-16-D -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
SS-17 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
SS-18 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
SS-19 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
				Number of Detects	0	0	0	0	0	6
				Number of Analysis	40	40	40	40	40	40
				Minimum Detect	0	0	0	0	0	0.0045
				Maximum Detect	0	0	0	0	0	0.15
				Human Health Screening						
				USEPA RSL Table - Residential Soil (mg/kg)	6300	1.9	0.56	43000	0.55	5000
				Ecological Screening						
				USEPA Ecological SL - Soil	NA	NA	NA	NA	NA	NA
				USEPA Region 4 Ecological SL	0.1	NA	NA	NA	0.01	0.05
				PRG for Ecological Endpoints	300	NA	NA	NA	NA	200
				Endpoint	plants					plants

Table 2.0e
Surface Soil Data
Volatile Organic Compounds (VOCs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Depth (ft)	Units	1,2,3-Trichlorobenzene	1,2,4-Trichlorobenzene	1,1,1-Trichloroethane	1,1,2-Trichloroethane	Trichloroethene	Trichlorofluoromethane
NCI-0-0.5	2/25/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-1-0.5	2/21/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-2-0.5	2/21/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-3-0.5	2/21/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-4-0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-4-0.5 D	2/22/2011	FTN	0.5	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	<2.5
NCI-5-0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-6-0.5	2/23/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-6-0.5 D	2/23/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-7-0.5	2/23/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-8-0.5	2/24/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-8-0.5 D	2/24/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-9-0.5	2/23/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-10-0.5	2/23/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-11-0.5	2/23/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-12-0.5	2/24/2011	FTN	0.5	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	<0.25
NCI-13-0.5	2/28/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-19-0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-20-0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
SS-1 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.1	<0.025
SS-2 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
SS-3 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
SS-4 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
SS-5 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
SS-5D -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
SS-6 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
SS-7 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
SS-8 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
SS-9 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
SS-10 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
SS-11 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
SS-12 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
SS-13 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.026	<0.025
SS-14 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
SS-15 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
SS-16 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0033	<0.025
SS-16-D -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
SS-17 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
SS-18 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
SS-19 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
				Number of Detects	0	0	0	0	3	0
				Number of Analysis	40	40	40	40	40	40
				Minimum Detect	0	0	0	0	0.0033	0
				Maximum Detect	0	0	0	0	0.1	0
				Human Health Screening						
				USEPA RSL Table - Residential Soil (mg/kg)	49	22	8700	1.1	2.8	790
				Ecological Screening						
				USEPA Ecological SL - Soil	NA	NA	NA	NA	NA	NA
				USEPA Region 4 Ecological SL	0.01	0.01	NA	NA	0.001	NA
				PRG for Ecological Endpoints	20	20	NA	NA	NA	NA
				Endpoint	earthworm	earthworm				

Table 2.0e
Surface Soil Data
Volatile Organic Compounds (VOCs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Depth (ft)	Units	1,2,3-Trichloropropane	1,2,4-Trimethylbenzene	1,2,3-Trimethylbenzene	1,3,5-Trimethylbenzene	Vinyl chloride	Xylenes, Total
NCI-0-0.5	2/25/2011	FTN	0.5	mg/kg	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-1-0.5	2/21/2011	FTN	0.5	mg/kg	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-2-0.5	2/21/2011	FTN	0.5	mg/kg	<0.013	0.0038	0.0024	0.0018	<0.0050	0.0036
NCI-3-0.5	2/21/2011	FTN	0.5	mg/kg	<0.013	0.002	<0.0050	<0.0050	<0.0050	0.0025
NCI-4-0.5	2/22/2011	FTN	0.5	mg/kg	<0.013	0.38	0.12	0.56	<0.0050	0.33
NCI-4-0.5 D	2/22/2011	FTN	0.5	mg/kg	<1.3	10	6	9.7	<0.50	1.3
NCI-5-0.5	2/22/2011	FTN	0.5	mg/kg	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-6-0.5	2/23/2011	FTN	0.5	mg/kg	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-6-0.5 D	2/23/2011	FTN	0.5	mg/kg	<0.013	0.0068	0.006	0.0054	<0.0050	0.0086
NCI-7-0.5	2/23/2011	FTN	0.5	mg/kg	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-8-0.5	2/24/2011	FTN	0.5	mg/kg	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-8-0.5 D	2/24/2011	FTN	0.5	mg/kg	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-9-0.5	2/23/2011	FTN	0.5	mg/kg	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-10-0.5	2/23/2011	FTN	0.5	mg/kg	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-11-0.5	2/23/2011	FTN	0.5	mg/kg	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-12-0.5	2/24/2011	FTN	0.5	mg/kg	<0.13	1.4	0.89	1.3	<0.050	0.64
NCI-13-0.5	2/28/2011	FTN	0.5	mg/kg	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-19-0.5	2/22/2011	FTN	0.5	mg/kg	<0.013	0.0029	0.0071	0.0023	<0.0050	0.011
NCI-20-0.5	2/22/2011	FTN	0.5	mg/kg	<0.013	0.032	0.066	0.023	<0.0050	0.022
SS-1 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
SS-2 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
SS-3 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
SS-4 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
SS-5 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.013	0.018	0.0041	0.0079	<0.0050	0.074
SS-5D -0.5	2/22/2011	FTN	0.5	mg/kg	<0.013	0.032	0.01	0.017	<0.0050	0.2
SS-6 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.013	0.0071	0.0027	0.0035	<0.0050	0.094
SS-7 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.013	<0.0050	0.0016	<0.0050	<0.0050	<0.015
SS-8 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
SS-9 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
SS-10 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
SS-11 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
SS-12 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
SS-13 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
SS-14 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
SS-15 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
SS-16 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
SS-16-D -0.5	2/22/2011	FTN	0.5	mg/kg	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
SS-17 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
SS-18 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
SS-19 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
				Number of Detects	0	11	11	10	0	11
				Number of Analysis	40	40	40	40	40	40
				Minimum Detect	0	0.002	0.0016	0.0018	0	0.0025
				Maximum Detect	0	10	6	9.7	0	1.3
				Human Health Screening						
				USEPA RSL Table - Residential Soil (mg/kg)	0.005	62	na	780	0.06	630
				Ecological Screening						
				USEPA Ecological SL - Soil	NA	NA	NA	NA	NA	NA
				USEPA Region 4 Ecological SL	NA	NA	NA	NA	0.01	0.05
				PRG for Ecological Endpoints	NA	NA	NA	NA	0.01	NA
				Endpoint						

Table 2.0f
Surface Soil Data
Polycyclic Aromatic Hydrocarbons (PAHs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Depth (ft)	Units	Anthracene	Acenaphthene	Acenaphthylene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene
NCI-0-0.5	2/25/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-1-0.5	2/21/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-2-0.5	2/21/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-3-0.5	2/21/2011	FTN	0.5	mg/kg	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
NCI-4-0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-4-0.5 D	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-5-0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-6-0.5	2/23/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-6-0.5 D	2/23/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-7-0.5	2/23/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-8-0.5	2/24/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-8-0.5 D	2/24/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-9-0.5	2/23/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-10-0.5	2/23/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-11-0.5	2/23/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-13-0.5	2/28/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-19-0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-20-0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-1 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-2 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-3 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-4 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-5 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	0.43	<0.020	<0.020	<0.020	<0.020
SS-5D -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	0.12	<0.020	<0.020	<0.020	<0.020
SS-6 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-7 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-8 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-9 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-10 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-11 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-12 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-13 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-14 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-15 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-16 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-16-D -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-17 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-18 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-19 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	5.7	2.6
				Number of Detects	0	2	0	0	1	1
				Number of Analysis	39	39	39	39	39	39
				Minimum Detect	0	0.12	0	0	5.7	2.6
				Maximum Detect	0	0.43	0	0	5.7	2.6
				Human Health Screening						
				USEPA RSL Table - Residential Soil (mg/kg)	17000	3400	na	0.15	0.015	0.15
				Ecological Screening						
				USEPA Ecological SL - Soil	NA	NA	NA	NA	NA	NA
				USEPA Region 4 Ecological SL	20	20	NA	NA	0.1	NA
				PRG for Ecological Endpoints	NA	20	NA	NA	NA	NA
				Endpoint		plants				

Table 2.0f
Surface Soil Data
Polycyclic Aromatic Hydrocarbons (PAHs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Depth (ft)	Units	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene
NCI-0-0.5	2/25/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-1-0.5	2/21/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-2-0.5	2/21/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-3-0.5	2/21/2011	FTN	0.5	mg/kg	<0.040	<0.040	<0.040	<0.040	0.43	<0.040
NCI-4-0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-4-0.5 D	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-5-0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-6-0.5	2/23/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-6-0.5 D	2/23/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-7-0.5	2/23/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-8-0.5	2/24/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-8-0.5 D	2/24/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-9-0.5	2/23/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-10-0.5	2/23/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-11-0.5	2/23/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-13-0.5	2/28/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-19-0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-20-0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-1 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-2 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-3 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-4 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-5 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	0.21
SS-5D -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	0.023
SS-6 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-7 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	0.22	<0.020
SS-8 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	0.062	<0.020
SS-9 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-10 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-11 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-12 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-13 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-14 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-15 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-16 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-16-D -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-17 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-18 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-19 -0.5	2/22/2011	FTN	0.5	mg/kg	19	5.4	<0.020	<0.020	<0.020	<0.020
				Number of Detects	1	1	0	0	3	2
				Number of Analysis	39	39	39	39	39	39
				Minimum Detect	19	5.4	0	0	0.062	0.023
				Maximum Detect	19	5.4	0	0	0.43	0.21
				Human Health Screening						
				USEPA RSL Table - Residential Soil (mg/kg)	na	1.5	15	0.015	2300	2300
				Ecological Screening						
				USEPA Ecological SL - Soil	NA	NA	NA	NA	NA	NA
				USEPA Region 4 Ecological SL	NA	NA	NA	NA	0.1	30
				PRG for Ecological Endpoints	NA	NA	NA	NA	NA	NA
				Endpoint						

Table 2.0f
Surface Soil Data
Polycyclic Aromatic Hydrocarbons (PAHs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Depth (ft)	Units	Indeno(1,2,3-cd)pyrene	1-Methylnaphthalene	2-Methylnaphthalene	Naphthalene	Phenanthrene	Pyrene
NCI-0-0.5	2/25/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-1-0.5	2/21/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-2-0.5	2/21/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-3-0.5	2/21/2011	FTN	0.5	mg/kg	<0.040	0.1	0.069	0.04	0.11	0.25
NCI-4-0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-4-0.5 D	2/22/2011	FTN	0.5	mg/kg	<0.020	1.1	0.81	0.87	<0.020	<0.020
NCI-5-0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-6-0.5	2/23/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-6-0.5 D	2/23/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-7-0.5	2/23/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-8-0.5	2/24/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-8-0.5 D	2/24/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-9-0.5	2/23/2011	FTN	0.5	mg/kg	<0.020	0.099	0.096	0.093	<0.020	<0.020
NCI-10-0.5	2/23/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-11-0.5	2/23/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-13-0.5	2/28/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	0.0097
NCI-19-0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	0.96	0.38	0.11	<0.020	<0.020
NCI-20-0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	0.29	0.02	<0.020	<0.020	<0.020
SS-1 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-2 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-3 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-4 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-5 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	0.32	0.19	<0.020	<0.020	<0.020
SS-5D -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	0.1	0.018	<0.020	<0.020	<0.020
SS-6 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-7 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	0.031	0.02	0.028	0.07	0.36
SS-8 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	0.096	0.16	0.2	0.09	0.045
SS-9 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-10 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-11 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-12 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-13 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-14 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-15 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-16 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-16-D -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-17 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-18 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SS-19 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
				Number of Detects	0	9	9	6	3	4
				Number of Analysis	39	39	39	39	39	39
				Minimum Detect	0	0.031	0.018	0.028	0.07	0.0097
				Maximum Detect	0	1.1	0.81	0.87	0.11	0.36
				Human Health Screening						
				USEPA RSL Table - Residential Soil (mg/kg)	0.15	22	310	3.6	na	1700
				Ecological Screening						
				USEPA Ecological SL - Soil	NA	NA	NA	NA	NA	NA
				USEPA Region 4 Ecological SL	NA	NA	NA	NA	0.1	0.1
				PRG for Ecological Endpoints	NA	NA	NA	NA	NA	0.1
				Endpoint						

Table 2.0g
Surface Soil Data
Metals
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Depth (ft)	Units	Chromium,Hexavalent	Chromium	Fluoride	Lead
NCI-0-0.5	2/25/2011	FTN	0.5	mg/kg		2.8		4.4
NCI-1-0.5	2/21/2011	FTN	0.5	mg/kg		4.2		11
NCI-2-0.5	2/21/2011	FTN	0.5	mg/kg		3.2		3.5
NCI-3-0.5	2/21/2011	FTN	0.5	mg/kg		5.7		4.5
NCI-4-0.5	2/22/2011	FTN	0.5	mg/kg		3.6		6.1
NCI-4-0.5 D	2/22/2011	FTN	0.5	mg/kg		5.3		10
NCI-5-0.5	2/22/2011	FTN	0.5	mg/kg		7.6	43	8.8
NCI-6-0.5	2/23/2011	FTN	0.5	mg/kg		6.6	4.3	6
NCI-6-0.5 D	2/23/2011	FTN	0.5	mg/kg		10	2.1	8
NCI-7-0.5	2/23/2011	FTN	0.5	mg/kg		5.4	2.6	4.9
NCI-8-0.5	2/24/2011	FTN	0.5	mg/kg	<2.0	8.2		8.3
NCI-8-0.5 D	2/24/2011	FTN	0.5	mg/kg	<2.0	19		6.5
NCI-9-0.5	2/23/2011	FTN	0.5	mg/kg	1.7	7.3		10
NCI-10-0.5	2/23/2011	FTN	0.5	mg/kg		3		8.8
NCI-11-0.5	2/23/2011	FTN	0.5	mg/kg		3.6		35
NCI-12-0.5	2/24/2011	FTN	0.5	mg/kg		9.7		15
NCI-13-0.5	2/28/2011	FTN	0.5	mg/kg		8		6.9
NCI-19-0.5	2/22/2011	FTN	0.5	mg/kg		24		5.9
NCI-20-0.5	2/22/2011	FTN	0.5	mg/kg		13		9
SS-1 -0.5	2/22/2011	FTN	0.5	mg/kg		41	500	690
SS-2 -0.5	2/22/2011	FTN	0.5	mg/kg		12	1400	15
SS-3 -0.5	2/22/2011	FTN	0.5	mg/kg		3.2		4.8
SS-4 -0.5	2/22/2011	FTN	0.5	mg/kg		4.5		17
SS-5 -0.5	2/22/2011	FTN	0.5	mg/kg		5.5		16
SS-5D -0.5	2/22/2011	FTN	0.5	mg/kg		3.5		13
SS-6 -0.5	2/22/2011	FTN	0.5	mg/kg		3.7		28
SS-7 -0.5	2/22/2011	FTN	0.5	mg/kg		1.5		7.5
SS-8 -0.5	2/22/2011	FTN	0.5	mg/kg		1.8		5.1
SS-9 -0.5	2/22/2011	FTN	0.5	mg/kg		4	12	4.7
SS-10 -0.5	2/22/2011	FTN	0.5	mg/kg		8.6	35	12
SS-11 -0.5	2/22/2011	FTN	0.5	mg/kg		8.2	37	10
SS-12 -0.5	2/22/2011	FTN	0.5	mg/kg		12	33	11
SS-13 -0.5	2/22/2011	FTN	0.5	mg/kg		7.5	750	6.3
SS-14 -0.5	2/22/2011	FTN	0.5	mg/kg		4.3	6.2	9.7
SS-15 -0.5	2/22/2011	FTN	0.5	mg/kg		3.7	16	3.9
SS-16 -0.5	2/22/2011	FTN	0.5	mg/kg		4.3	6.6	3.7
SS-16-D -	2/22/2011	FTN	0.5	mg/kg		3.7	6.9	3.8
SS-17 -0.5	2/22/2011	FTN	0.5	mg/kg		2.5	5.7	2.9
SS-18 -0.5	2/22/2011	FTN	0.5	mg/kg		9.9	2.2	6.7
SS-19 -0.5	2/22/2011	FTN	0.5	mg/kg		3.5	2.5	7.5
				Number of Detects	1	40	18	40
				Number of Analysis	3	40	18	40
				Minimum Detect	1.7	1.5	2.1	2.9
				Maximum Detect	1.7	41	1400	690
				Background Concentration (Shacklette and Boerngen, 1984)	10	10	na	10
				Human Health Screening				
				USEPA RSL Table - Residential Soil (mg/kg)	0.29	na	3100	400
				Ecological Screening				
				USEPA Ecological SL - Soil	81	26	na	NA
				USEPA Region 4 Ecological SL	0.4	0.4	na	200
				PRG for Ecological Endpoints	0.4	0.4	na	NA
				Endpoint	earthworm	earthworm	na	

Table 2.0h
Surface Soil Data
Polychlorinated Biphenyls (PCBs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Depth (ft)	Units	PCB 1016	PCB 1221	PCB 1232	PCB 1242	PCB 1248	PCB 1254	PCB 1260
T-1 -0.5 FT	2/22/2011	FTN	0.5	mg/kg	<0.085	<0.085	<0.085	<0.085	<0.085	<0.085	<0.085
T-2 -0.5 FT	2/22/2011	FTN	0.5	mg/kg	<0.085	<0.085	<0.085	<0.085	<0.085	<0.085	<0.085
				Number of Detects	0	0	0	0	0	0	0
				Number of Analysis	2	2	2	2	2	2	2
				Minimum Detect	0	0	0	0	0	0	0
				Maximum Detect	0	0	0	0	0	0	0
				Human Health Screening							
				USEPA RSL Table - Residential Soil (mg/kg)	3.9	0.14	0.14	0.22	0.22	0.22	0.22
				Ecological Screening							
				USEPA Ecological SL - Soil	NA	NA	NA	NA	NA	NA	NA
				USEPA Region 4 Ecological SL	0.02	0.02	0.02	0.02	0.02	0.02	0.02
				PRG for Ecological Endpoints	0.371	0.371	0.371	0.371	0.371	0.371	0.371
				Endpoint	piscivores birds	piscivores birds	piscivores birds	piscivores birds	piscivores birds	piscivores birds	piscivores birds

Table 2.0i
Surface Soil Data
Total Petroleum Hydrocarbons (TPH)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Depth (ft)	Units	TPH Gasoline Range	C10-C28 Diesel Range	C28-C40 Oil Range
NCI-0-0.5	2/25/2011	FTN	0.5	mg/kg	<0.50	<4.0	<4.0
NCI-1-0.5	2/21/2011	FTN	0.5	mg/kg	<0.50	84	55
NCI-2-0.5	2/21/2011	FTN	0.5	mg/kg	<0.50	<4.0	<4.0
NCI-3-0.5	2/21/2011	FTN	0.5	mg/kg	<0.50	360	<80
NCI-4-0.5	2/22/2011	FTN	0.5	mg/kg	7.5	11000	2800
NCI-4-0.5 D	2/22/2011	FTN	0.5	mg/kg	360	3600	780
NCI-5-0.5	2/22/2011	FTN	0.5	mg/kg	<0.50	1800	360
NCI-6-0.5	2/23/2011	FTN	0.5	mg/kg	<0.50	120	78
NCI-6-0.5 D	2/23/2011	FTN	0.5	mg/kg	<0.50	290	76
NCI-7-0.5	2/23/2011	FTN	0.5	mg/kg	<0.50	<20	<20
NCI-8-0.5	2/24/2011	FTN	0.5	mg/kg	<0.50	130	160
NCI-8-0.5 D	2/24/2011	FTN	0.5	mg/kg	<0.50	<4.0	<4.0
NCI-9-0.5	2/23/2011	FTN	0.5	mg/kg	<0.50	4800	540
NCI-10-0.5	2/23/2011	FTN	0.5	mg/kg	<0.50	20	10
NCI-11-0.5	2/23/2011	FTN	0.5	mg/kg	<0.50	70	71
NCI-12-0.5	2/24/2011	FTN	0.5	mg/kg	44	11000	790
NCI-13-0.5	2/28/2011	FTN	0.5	mg/kg	<0.50	340	130
NCI-19-0.5	2/22/2011	FTN	0.5	mg/kg	1.6	17000	2100
NCI-20-0.5	2/22/2011	FTN	0.5	mg/kg	3	22000	2500
SS-1 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.50	22	62
SS-2 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.50	96	52
SS-3 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.50	89	53
SS-4 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.50	130	140
SS-5 -0.5	2/22/2011	FTN	0.5	mg/kg	1.8	6600	2000
SS-5D -0.5	2/22/2011	FTN	0.5	mg/kg	4.7	3500	1600
SS-6 -0.5	2/22/2011	FTN	0.5	mg/kg	2.9	9200	1800
SS-7 -0.5	2/22/2011	FTN	0.5	mg/kg	1.5	6900	970
SS-8 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.50	160	160
SS-9 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.50	11	3.1
SS-10 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.50	19	12
SS-11 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.50	6.9	7.8
SS-12 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.50	260	65
SS-13 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.50	82	34
SS-14 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.50	110	55
SS-15 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.50	24	9.7
SS-16 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.50	130	48
SS-16-D -0.5	2/22/2011	FTN	0.5	mg/kg	<0.50	120	37
SS-17 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.50	14	7.9
SS-18 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.50	6.2	13
SS-19 -0.5	2/22/2011	FTN	0.5	mg/kg	<0.50	320	200
				Number of Detects	9	36	35
				Number of Analysis	40	40	40
				Minimum Detect	1.5	6.2	3.1
				Maximum Detect	360	22000	2800
				Human Health Screening			
				USEPA RSL Table - Residential Soil (mg/kg)	na	na	na
				ADEQ TPH SL (mg/kg)	440	2300	4500
				Ecological Screening			
				USEPA Ecological SL - Soil	na	na	na
				USEPA Region 4 Ecological SL	na	na	na
				PRG for Ecological Endpoints	na	na	na
				Endpoint			

Table 2.0j
Subsurface Soil Data
Volatile Organic Compounds (VOCs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Depth (ft)	Units	Acetone	Acrylonitrile	Benzene	Bromobenzene	Bromodichloromethane	Bromoform
NCI-0-10	2/25/2011	FTN	10	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-0-2	2/25/2011	FTN	2	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-0-23	2/25/2011	FTN	23	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-0-23D	2/25/2011	FTN	23	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-1-2	2/21/2011	FTN	2	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-1-15	2/21/2011	FTN	15	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-1-20-25	2/21/2011	FTN	20-25	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-2-14	2/21/2011	FTN	14	mg/kg	0.1	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-2-17	2/21/2011	FTN	17	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-2-2	2/21/2011	FTN	2	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-3-2	2/21/2011	FTN	2	mg/kg	0.13	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-3-10	2/21/2011	FTN	10	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-3-16.5	2/21/2011	FTN	16.5	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-4-2	2/22/2011	FTN	2	mg/kg	<25	<5.0	<0.50	<0.50	<0.50	<0.50
NCI-4-2 D	2/22/2011	FTN	2	mg/kg	<50	<10	<1.0	<1.0	<1.0	<1.0
NCI-4-14	2/22/2011	FTN	14	mg/kg	<25	<5.0	<0.50	<0.50	<0.50	<0.50
NCI-4-23	2/22/2011	FTN	23	mg/kg	<2.5	<0.50	<0.050	<0.050	<0.050	<0.050
NCI-5-2	2/22/2011	FTN	2	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-5-6	2/22/2011	FTN	6	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-5-29	2/22/2011	FTN	29	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-5-41	2/22/2011	FTN	41	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-6-2	2/23/2011	FTN	2	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-6-2 D	2/23/2011	FTN	2	mg/kg	0.24	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-6-15	2/23/2011	FTN	15	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-6-24	2/23/2011	FTN	24	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-7-2	2/23/2011	FTN	2	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-7-14	2/23/2011	FTN	14	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-7-23	2/23/2011	FTN	23	mg/kg	0.099	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-8-2	2/24/2011	FTN	2	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-8-2 D	2/24/2011	FTN	2	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-8-10	2/24/2011	FTN	10	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-8-34	2/24/2011	FTN	34	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-9-2	2/23/2011	FTN	2	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-9-10	2/23/2011	FTN	10	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-9-12	2/23/2011	FTN	12	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-10-2	2/23/2011	FTN	2	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-10-8	2/23/2011	FTN	8	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-10-9	2/23/2011	FTN	9	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-11-2	2/23/2011	FTN	2	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-11-4	2/23/2011	FTN	4	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-11-9	2/23/2011	FTN	9	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-12-2	2/24/2011	FTN	2	mg/kg	<2.5	<0.50	<0.050	<0.050	<0.050	<0.050
NCI-12-10	2/24/2011	FTN	10	mg/kg	<2.5	<0.50	<0.050	<0.050	<0.050	<0.050
NCI-12-14	2/24/2011	FTN	14	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-13-2	2/28/2011	FTN	2	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-13-10	2/28/2011	FTN	10	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-13-12	2/28/2011	FTN	12	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-19-2	2/22/2011	FTN	2	mg/kg	<2.5	<0.50	<0.050	<0.050	<0.050	<0.050
NCI-19-10	2/22/2011	FTN	10	mg/kg	<2.5	<0.50	0.042	<0.050	<0.050	<0.050
NCI-19-21	2/22/2011	FTN	21	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-20-2	2/22/2011	FTN	2	mg/kg	0.19	<0.050	0.0079	<0.0050	<0.0050	<0.0050
NCI-20-14	2/22/2011	FTN	14	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-20-20	2/22/2011	FTN	20	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
				Number of Detects	5	0	2	0	0	0
				Number of Analysis	53	53	53	53	53	53
				Minimum Detect	0.099	0	0.0079	0	0	0
				Maximum Detect	0.24	0	0.042	0	0	0
				Human Health Screening						
				USEPA RSL Table - Residential Soil (mg/kg)	61000	0.24	1.1	300	0.27	61
				USEPA RSL Table - Protection of Groundwater (mg/kg)	4.5	0.0000099	0.0026	0.059	0.022	0.021
				Ecological Screening						
				USEPA Ecological SL - Soil	NA	NA	NA	NA	NA	NA
				USEPA Region 4 Ecological SL	NA	1000	0.05	NA	NA	NA
				PRG for Ecological Endpoints	NA	NA	NA	NA	NA	NA
				Endpoint						

Table 2.0j
Subsurface Soil Data
Volatile Organic Compounds (VOCs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Depth (ft)	Units	Bromomethane	n-Butylbenzene	sec-Butylbenzene	tert-Butylbenzene	Carbon tetrachloride	Chlorobenzene
NCI-0-10	2/25/2011	FTN	10	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-0-2	2/25/2011	FTN	2	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-0-23	2/25/2011	FTN	23	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-0-23D	2/25/2011	FTN	23	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-1-2	2/21/2011	FTN	2	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-1-15	2/21/2011	FTN	15	mg/kg	<0.025	<0.0050	0.0025	0.0019	<0.0050	<0.0050
NCI-1-20-25	2/21/2011	FTN	20-25	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-2-14	2/21/2011	FTN	14	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-2-17	2/21/2011	FTN	17	mg/kg	<0.025	<0.0050	0.0043	0.0014	<0.0050	<0.0050
NCI-2-2	2/21/2011	FTN	2	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-3-2	2/21/2011	FTN	2	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-3-10	2/21/2011	FTN	10	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-3-16.5	2/21/2011	FTN	16.5	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-4-2	2/22/2011	FTN	2	mg/kg	<2.5	<0.50	1.4	<0.50	<0.50	<0.50
NCI-4-2 D	2/22/2011	FTN	2	mg/kg	<5.0	8.5	3.5	<1.0	<1.0	<1.0
NCI-4-14	2/22/2011	FTN	14	mg/kg	<2.5	<0.50	0.91	<0.50	<0.50	<0.50
NCI-4-23	2/22/2011	FTN	23	mg/kg	<0.25	<0.050	0.27	0.05	<0.050	<0.050
NCI-5-2	2/22/2011	FTN	2	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-5-6	2/22/2011	FTN	6	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-5-29	2/22/2011	FTN	29	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-5-41	2/22/2011	FTN	41	mg/kg	<0.025	<0.0050	0.015	0.0025	<0.0050	<0.0050
NCI-6-2	2/23/2011	FTN	2	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-6-2 D	2/23/2011	FTN	2	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-6-15	2/23/2011	FTN	15	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-6-24	2/23/2011	FTN	24	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-7-2	2/23/2011	FTN	2	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-7-14	2/23/2011	FTN	14	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-7-23	2/23/2011	FTN	23	mg/kg	<0.025	0.002	0.004	<0.0050	<0.0050	<0.0050
NCI-8-2	2/24/2011	FTN	2	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-8-2 D	2/24/2011	FTN	2	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-8-10	2/24/2011	FTN	10	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-8-34	2/24/2011	FTN	34	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-9-2	2/23/2011	FTN	2	mg/kg	<0.025	<0.0050	0.033	0.0075	<0.0050	<0.0050
NCI-9-10	2/23/2011	FTN	10	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-9-12	2/23/2011	FTN	12	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-10-2	2/23/2011	FTN	2	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-10-8	2/23/2011	FTN	8	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-10-9	2/23/2011	FTN	9	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-11-2	2/23/2011	FTN	2	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-11-4	2/23/2011	FTN	4	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-11-9	2/23/2011	FTN	9	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-12-2	2/24/2011	FTN	2	mg/kg	<0.25	<0.050	0.12	0.049	<0.050	<0.050
NCI-12-10	2/24/2011	FTN	10	mg/kg	<0.25	0.27	0.32	0.091	<0.050	<0.050
NCI-12-14	2/24/2011	FTN	14	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-13-2	2/28/2011	FTN	2	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-13-10	2/28/2011	FTN	10	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-13-12	2/28/2011	FTN	12	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-19-2	2/22/2011	FTN	2	mg/kg	<0.25	0.14	0.13	0.047	<0.050	<0.050
NCI-19-10	2/22/2011	FTN	10	mg/kg	<0.25	0.58	0.85	0.15	<0.050	<0.050
NCI-19-21	2/22/2011	FTN	21	mg/kg	<0.025	<0.0050	0.0026	<0.0050	<0.0050	<0.0050
NCI-20-2	2/22/2011	FTN	2	mg/kg	<0.025	0.02	0.014	0.0054	<0.0050	<0.0050
NCI-20-14	2/22/2011	FTN	14	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-20-20	2/22/2011	FTN	20	mg/kg	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
				Number of Detects	0	6	15	10	0	0
				Number of Analysis	53	53	53	53	53	53
				Minimum Detect	0	0.002	0.0025	0.0014	0	0
				Maximum Detect	0	8.5	3.5	0.15	0	0
				Human Health Screening						
				USEPA RSL Table - Residential Soil (mg/kg)	7.3	na	na	na	0.61	290
				USEPA RSL Table - Protection of Groundwater (mg/kg)	0.0022	na	na	na	0.0019	0.068
				Ecological Screening						
				USEPA Ecological SL - Soil	NA	NA	NA	NA	NA	NA
				USEPA Region 4 Ecological SL	NA	NA	NA	NA	NA	NA
				PRG for Ecological Endpoints	NA	NA	NA	NA	NA	NA
				Endpoint						

Table 2.0j
Subsurface Soil Data
Volatile Organic Compounds (VOCs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Depth (ft)	Units	Chlorodibromomethane	Chloroethane	2-Chloroethyl vinyl ether	Chloroform	Chloromethane	2-Chlorotoluene
NCI-0-10	2/25/2011	FTN	10	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
NCI-0-2	2/25/2011	FTN	2	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
NCI-0-23	2/25/2011	FTN	23	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
NCI-0-23D	2/25/2011	FTN	23	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
NCI-1-2	2/21/2011	FTN	2	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
NCI-1-15	2/21/2011	FTN	15	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
NCI-1-20-25	2/21/2011	FTN	20-25	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
NCI-2-14	2/21/2011	FTN	14	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
NCI-2-17	2/21/2011	FTN	17	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
NCI-2-2	2/21/2011	FTN	2	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
NCI-3-2	2/21/2011	FTN	2	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
NCI-3-10	2/21/2011	FTN	10	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
NCI-3-16.5	2/21/2011	FTN	16.5	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
NCI-4-2	2/22/2011	FTN	2	mg/kg	<0.50	<2.5	<25	<2.5	<1.3	<0.50
NCI-4-2 D	2/22/2011	FTN	2	mg/kg	<1.0	<5.0	<50	<5.0	<2.5	<1.0
NCI-4-14	2/22/2011	FTN	14	mg/kg	<0.50	<2.5	<25	<2.5	<1.3	<0.50
NCI-4-23	2/22/2011	FTN	23	mg/kg	<0.050	<0.25	<2.5	<0.25	<0.13	<0.050
NCI-5-2	2/22/2011	FTN	2	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
NCI-5-6	2/22/2011	FTN	6	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
NCI-5-29	2/22/2011	FTN	29	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
NCI-5-41	2/22/2011	FTN	41	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
NCI-6-2	2/23/2011	FTN	2	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
NCI-6-2 D	2/23/2011	FTN	2	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
NCI-6-15	2/23/2011	FTN	15	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
NCI-6-24	2/23/2011	FTN	24	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
NCI-7-2	2/23/2011	FTN	2	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
NCI-7-14	2/23/2011	FTN	14	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
NCI-7-23	2/23/2011	FTN	23	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
NCI-8-2	2/24/2011	FTN	2	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
NCI-8-2 D	2/24/2011	FTN	2	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
NCI-8-10	2/24/2011	FTN	10	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
NCI-8-34	2/24/2011	FTN	34	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
NCI-9-2	2/23/2011	FTN	2	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
NCI-9-10	2/23/2011	FTN	10	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
NCI-9-12	2/23/2011	FTN	12	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
NCI-10-2	2/23/2011	FTN	2	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
NCI-10-8	2/23/2011	FTN	8	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
NCI-10-9	2/23/2011	FTN	9	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
NCI-11-2	2/23/2011	FTN	2	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
NCI-11-4	2/23/2011	FTN	4	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
NCI-11-9	2/23/2011	FTN	9	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
NCI-12-2	2/24/2011	FTN	2	mg/kg	<0.050	<0.25	<2.5	<0.25	<0.13	<0.050
NCI-12-10	2/24/2011	FTN	10	mg/kg	<0.050	<0.25	<2.5	<0.25	<0.13	<0.050
NCI-12-14	2/24/2011	FTN	14	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
NCI-13-2	2/28/2011	FTN	2	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
NCI-13-10	2/28/2011	FTN	10	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
NCI-13-12	2/28/2011	FTN	12	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
NCI-19-2	2/22/2011	FTN	2	mg/kg	<0.050	<0.25	<2.5	<0.25	<0.13	<0.050
NCI-19-10	2/22/2011	FTN	10	mg/kg	<0.050	<0.25	<2.5	<0.25	<0.13	<0.050
NCI-19-21	2/22/2011	FTN	21	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
NCI-20-2	2/22/2011	FTN	2	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
NCI-20-14	2/22/2011	FTN	14	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
NCI-20-20	2/22/2011	FTN	20	mg/kg	<0.0050	<0.025	<0.25	<0.025	<0.013	<0.0050
				Number of Detects	0	0	0	0	0	0
				Number of Analysis	53	53	53	53	53	53
				Minimum Detect	0	0	0	0	0	0
				Maximum Detect	0	0	0	0	0	0
				Human Health Screening						
				USEPA RSL Table - Residential Soil (mg/kg)	0.68	15000	na	0.29	120	1600
				USEPA RSL Table - Protection of Groundwater (mg/kg)	0.021	5.9	na	0.022	0.049	0.71
				Ecological Screening						
				USEPA Ecological SL - Soil	NA	NA	NA	NA	NA	NA
				USEPA Region 4 Ecological SL	NA	NA	NA	NA	NA	NA
				PRG for Ecological Endpoints	NA	NA	NA	NA	NA	NA
				Endpoint						

Table 2.0j
Subsurface Soil Data
Volatile Organic Compounds (VOCs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Depth (ft)	Units	4-Chlorotoluene	1,2-Dibromo-3-Chloropropane	1,2-Dibromoethane	Dibromomethane	1,2-Dichlorobenzene	1,3-Dichlorobenzene
NCI-0-10	2/25/2011	FTN	10	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-0-2	2/25/2011	FTN	2	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-0-23	2/25/2011	FTN	23	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-0-23D	2/25/2011	FTN	23	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-1-2	2/21/2011	FTN	2	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-1-15	2/21/2011	FTN	15	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-1-20-25	2/21/2011	FTN	20-25	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-2-14	2/21/2011	FTN	14	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-2-17	2/21/2011	FTN	17	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-2-2	2/21/2011	FTN	2	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-3-2	2/21/2011	FTN	2	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-3-10	2/21/2011	FTN	10	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-3-16.5	2/21/2011	FTN	16.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-4-2	2/22/2011	FTN	2	mg/kg	<0.50	<2.5	<0.50	<0.50	<0.50	<0.50
NCI-4-2 D	2/22/2011	FTN	2	mg/kg	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0
NCI-4-14	2/22/2011	FTN	14	mg/kg	<0.50	<2.5	<0.50	<0.50	<0.50	<0.50
NCI-4-23	2/22/2011	FTN	23	mg/kg	<0.050	<0.25	<0.050	<0.050	<0.050	<0.050
NCI-5-2	2/22/2011	FTN	2	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-5-6	2/22/2011	FTN	6	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-5-29	2/22/2011	FTN	29	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-5-41	2/22/2011	FTN	41	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-6-2	2/23/2011	FTN	2	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-6-2 D	2/23/2011	FTN	2	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-6-15	2/23/2011	FTN	15	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-6-24	2/23/2011	FTN	24	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-7-2	2/23/2011	FTN	2	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-7-14	2/23/2011	FTN	14	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-7-23	2/23/2011	FTN	23	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-8-2	2/24/2011	FTN	2	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-8-2 D	2/24/2011	FTN	2	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-8-10	2/24/2011	FTN	10	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-8-34	2/24/2011	FTN	34	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-9-2	2/23/2011	FTN	2	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-9-10	2/23/2011	FTN	10	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-9-12	2/23/2011	FTN	12	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-10-2	2/23/2011	FTN	2	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-10-8	2/23/2011	FTN	8	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-10-9	2/23/2011	FTN	9	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-11-2	2/23/2011	FTN	2	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-11-4	2/23/2011	FTN	4	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-11-9	2/23/2011	FTN	9	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-12-2	2/24/2011	FTN	2	mg/kg	<0.050	<0.25	<0.050	<0.050	<0.050	<0.050
NCI-12-10	2/24/2011	FTN	10	mg/kg	<0.050	<0.25	<0.050	<0.050	<0.050	<0.050
NCI-12-14	2/24/2011	FTN	14	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-13-2	2/28/2011	FTN	2	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-13-10	2/28/2011	FTN	10	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-13-12	2/28/2011	FTN	12	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-19-2	2/22/2011	FTN	2	mg/kg	<0.050	<0.25	<0.050	<0.050	<0.050	<0.050
NCI-19-10	2/22/2011	FTN	10	mg/kg	<0.050	<0.25	<0.050	<0.050	<0.050	<0.050
NCI-19-21	2/22/2011	FTN	21	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-20-2	2/22/2011	FTN	2	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-20-14	2/22/2011	FTN	14	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-20-20	2/22/2011	FTN	20	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
				Number of Detects	0	0	0	0	0	0
				Number of Analysis	53	53	53	53	53	53
				Minimum Detect	0	0	0	0	0	0
				Maximum Detect	0	0	0	0	0	0
				Human Health Screening						
				USEPA RSL Table - Residential Soil (mg/kg)	5500	0.0054	0.034	25	1900	na
				USEPA RSL Table - Protection of Groundwater (mg/kg)	2.5	0.000086	0.000014	0.002	0.58	na
				Ecological Screening						
				USEPA Ecological SL - Soil	NA	NA	NA	NA	NA	NA
				USEPA Region 4 Ecological SL	NA	NA	NA	NA	0.01	0.01
				PRG for Ecological Endpoints	NA	NA	NA	NA	NA	NA
				Endpoint						

Table 2.0j
Subsurface Soil Data
Volatile Organic Compounds (VOCs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Depth (ft)	Units	1,4-Dichlorobenzene	Dichlorodifluoromethane	1,1-Dichloroethane	1,2-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene
NCI-0-10	2/25/2011	FTN	10	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-0-2	2/25/2011	FTN	2	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-0-23	2/25/2011	FTN	23	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-0-23D	2/25/2011	FTN	23	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-1-2	2/21/2011	FTN	2	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-1-15	2/21/2011	FTN	15	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-1-20-25	2/21/2011	FTN	20-25	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-2-14	2/21/2011	FTN	14	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-2-17	2/21/2011	FTN	17	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-2-2	2/21/2011	FTN	2	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-3-2	2/21/2011	FTN	2	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-3-10	2/21/2011	FTN	10	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-3-16.5	2/21/2011	FTN	16.5	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-4-2	2/22/2011	FTN	2	mg/kg	<0.50	<2.5	<0.50	<0.50	<0.50	<0.50
NCI-4-2 D	2/22/2011	FTN	2	mg/kg	<1.0	<5.0	<1.0	<1.0	<1.0	<1.0
NCI-4-14	2/22/2011	FTN	14	mg/kg	<0.50	<2.5	<0.50	<0.50	<0.50	<0.50
NCI-4-23	2/22/2011	FTN	23	mg/kg	<0.050	<0.25	<0.050	<0.050	<0.050	<0.050
NCI-5-2	2/22/2011	FTN	2	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-5-6	2/22/2011	FTN	6	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-5-29	2/22/2011	FTN	29	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-5-41	2/22/2011	FTN	41	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-6-2	2/23/2011	FTN	2	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-6-2 D	2/23/2011	FTN	2	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-6-15	2/23/2011	FTN	15	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-6-24	2/23/2011	FTN	24	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-7-2	2/23/2011	FTN	2	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-7-14	2/23/2011	FTN	14	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-7-23	2/23/2011	FTN	23	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-8-2	2/24/2011	FTN	2	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-8-2 D	2/24/2011	FTN	2	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-8-10	2/24/2011	FTN	10	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-8-34	2/24/2011	FTN	34	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-9-2	2/23/2011	FTN	2	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-9-10	2/23/2011	FTN	10	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-9-12	2/23/2011	FTN	12	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-10-2	2/23/2011	FTN	2	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-10-8	2/23/2011	FTN	8	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-10-9	2/23/2011	FTN	9	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-11-2	2/23/2011	FTN	2	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-11-4	2/23/2011	FTN	4	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-11-9	2/23/2011	FTN	9	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-12-2	2/24/2011	FTN	2	mg/kg	<0.050	<0.25	<0.050	<0.050	<0.050	<0.050
NCI-12-10	2/24/2011	FTN	10	mg/kg	<0.050	<0.25	<0.050	<0.050	<0.050	<0.050
NCI-12-14	2/24/2011	FTN	14	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-13-2	2/28/2011	FTN	2	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-13-10	2/28/2011	FTN	10	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-13-12	2/28/2011	FTN	12	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-19-2	2/22/2011	FTN	2	mg/kg	<0.050	<0.25	<0.050	<0.050	<0.050	<0.050
NCI-19-10	2/22/2011	FTN	10	mg/kg	<0.050	<0.25	<0.050	<0.050	<0.050	<0.050
NCI-19-21	2/22/2011	FTN	21	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-20-2	2/22/2011	FTN	2	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-20-14	2/22/2011	FTN	14	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
NCI-20-20	2/22/2011	FTN	20	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
				Number of Detects	0	0	0	0	0	0
				Number of Analysis	53	53	53	53	53	53
				Minimum Detect	0	0	0	0	0	0
				Maximum Detect	0	0	0	0	0	0
				Human Health Screening						
				USEPA RSL Table - Residential Soil (mg/kg)	2.4	180	3.3	0.43	240	160
				USEPA RSL Table - Protection of Groundwater (mg/kg)	0.072	0.61	0.00069	0.0014	0.0025	0.021
				Ecological Screening						
				USEPA Ecological SL - Soil	NA	NA	NA	NA	NA	NA
				USEPA Region 4 Ecological SL	0.01	NA	NA	0.4	NA	NA
				PRG for Ecological Endpoints	20	NA	NA	NA	NA	NA
				Endpoint	earthworm					

Table 2.0j
Subsurface Soil Data
Volatile Organic Compounds (VOCs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Depth (ft)	Units	trans-1,2-Dichloroethene	1,2-Dichloropropane	1,1-Dichloropropene	1,3-Dichloropropane	cis-1,3-Dichloropropene	trans-1,3-Dichloropropene
NCI-0-10	2/25/2011	FTN	10	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-0-2	2/25/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-0-23	2/25/2011	FTN	23	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-0-23D	2/25/2011	FTN	23	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-1-2	2/21/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-1-15	2/21/2011	FTN	15	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-1-20-25	2/21/2011	FTN	20-25	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-2-14	2/21/2011	FTN	14	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-2-17	2/21/2011	FTN	17	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-2-2	2/21/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-3-2	2/21/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-3-10	2/21/2011	FTN	10	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-3-16.5	2/21/2011	FTN	16.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-4-2	2/22/2011	FTN	2	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
NCI-4-2 D	2/22/2011	FTN	2	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
NCI-4-14	2/22/2011	FTN	14	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
NCI-4-23	2/22/2011	FTN	23	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
NCI-5-2	2/22/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-5-6	2/22/2011	FTN	6	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-5-29	2/22/2011	FTN	29	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-5-41	2/22/2011	FTN	41	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-6-2	2/23/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-6-2 D	2/23/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-6-15	2/23/2011	FTN	15	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-6-24	2/23/2011	FTN	24	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-7-2	2/23/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-7-14	2/23/2011	FTN	14	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-7-23	2/23/2011	FTN	23	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-8-2	2/24/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-8-2 D	2/24/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-8-10	2/24/2011	FTN	10	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-8-34	2/24/2011	FTN	34	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-9-2	2/23/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-9-10	2/23/2011	FTN	10	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-9-12	2/23/2011	FTN	12	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-10-2	2/23/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-10-8	2/23/2011	FTN	8	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-10-9	2/23/2011	FTN	9	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-11-2	2/23/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-11-4	2/23/2011	FTN	4	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-11-9	2/23/2011	FTN	9	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-12-2	2/24/2011	FTN	2	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
NCI-12-10	2/24/2011	FTN	10	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
NCI-12-14	2/24/2011	FTN	14	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-13-2	2/28/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-13-10	2/28/2011	FTN	10	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-13-12	2/28/2011	FTN	12	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-19-2	2/22/2011	FTN	2	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
NCI-19-10	2/22/2011	FTN	10	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
NCI-19-21	2/22/2011	FTN	21	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-20-2	2/22/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-20-14	2/22/2011	FTN	14	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-20-20	2/22/2011	FTN	20	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
				Number of Detects	0	0	0	0	0	0
				Number of Analysis	53	53	53	53	53	53
				Minimum Detect	0	0	0	0	0	0
				Maximum Detect	0	0	0	0	0	0
				Human Health Screening						
				USEPA RSL Table - Residential Soil (mg/kg)	150	0.89	na	1600	na	na
				USEPA RSL Table - Protection of Groundwater (mg/kg)	0.029	0.0017	na	0.25	na	na
				Ecological Screening						
				USEPA Ecological SL - Soil	NA	NA	NA	NA	NA	NA
				USEPA Region 4 Ecological SL	NA	700	NA	NA	NA	NA
				PRG for Ecological Endpoints	NA	NA	NA	NA	NA	NA
				Endpoint						

Table 2.0j
Subsurface Soil Data
Volatile Organic Compounds (VOCs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Depth (ft)	Units	2,2-Dichloropropane	Di-isopropyl ether	Ethylbenzene	Hexachloro-1,3-butadiene	Isopropylbenzene	p-Isopropyltoluene
NCI-0-10	2/25/2011	FTN	10	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-0-2	2/25/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-0-23	2/25/2011	FTN	23	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-0-23D	2/25/2011	FTN	23	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-1-2	2/21/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-1-15	2/21/2011	FTN	15	mg/kg	<0.0050	<0.0050	0.0046	<0.0050	0.0053	0.0078
NCI-1-20-25	2/21/2011	FTN	20-25	mg/kg	<0.0050	<0.0050	0.0017	<0.0050	<0.0050	<0.0050
NCI-2-14	2/21/2011	FTN	14	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-2-17	2/21/2011	FTN	17	mg/kg	<0.0050	<0.0050	0.0027	<0.0050	0.0045	0.0037
NCI-2-2	2/21/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-3-2	2/21/2011	FTN	2	mg/kg	<0.0050	<0.0050	0.0017	<0.0050	<0.0050	<0.0050
NCI-3-10	2/21/2011	FTN	10	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-3-16.5	2/21/2011	FTN	16.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-4-2	2/22/2011	FTN	2	mg/kg	<0.50	<0.50	0.32	<0.50	1.1	6.1
NCI-4-2 D	2/22/2011	FTN	2	mg/kg	<1.0	<1.0	0.47	<1.0	2.4	10
NCI-4-14	2/22/2011	FTN	14	mg/kg	<0.50	<0.50	0.19	<0.50	0.66	3.2
NCI-4-23	2/22/2011	FTN	23	mg/kg	<0.050	<0.050	0.073	<0.050	0.26	0.91
NCI-5-2	2/22/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-5-6	2/22/2011	FTN	6	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-5-29	2/22/2011	FTN	29	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-5-41	2/22/2011	FTN	41	mg/kg	<0.0050	<0.0050	0.0061	<0.0050	0.017	0.046
NCI-6-2	2/23/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-6-2 D	2/23/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0064
NCI-6-15	2/23/2011	FTN	15	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-6-24	2/23/2011	FTN	24	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-7-2	2/23/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-7-14	2/23/2011	FTN	14	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-7-23	2/23/2011	FTN	23	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0026	0.0091
NCI-8-2	2/24/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-8-2 D	2/24/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-8-10	2/24/2011	FTN	10	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-8-34	2/24/2011	FTN	34	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-9-2	2/23/2011	FTN	2	mg/kg	<0.0050	<0.0050	0.0072	<0.0050	0.029	0.17
NCI-9-10	2/23/2011	FTN	10	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-9-12	2/23/2011	FTN	12	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-10-2	2/23/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-10-8	2/23/2011	FTN	8	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-10-9	2/23/2011	FTN	9	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-11-2	2/23/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-11-4	2/23/2011	FTN	4	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-11-9	2/23/2011	FTN	9	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-12-2	2/24/2011	FTN	2	mg/kg	<0.050	<0.050	0.28	<0.050	0.096	0.51
NCI-12-10	2/24/2011	FTN	10	mg/kg	<0.050	<0.050	0.11	<0.050	0.27	0.97
NCI-12-14	2/24/2011	FTN	14	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-13-2	2/28/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-13-10	2/28/2011	FTN	10	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-13-12	2/28/2011	FTN	12	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-19-2	2/22/2011	FTN	2	mg/kg	<0.050	<0.050	0.64	<0.050	0.1	0.59
NCI-19-10	2/22/2011	FTN	10	mg/kg	<0.050	<0.050	0.32	<0.050	1	1.6
NCI-19-21	2/22/2011	FTN	21	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.002	0.0099
NCI-20-2	2/22/2011	FTN	2	mg/kg	<0.0050	<0.0050	0.2	<0.0050	0.019	0.04
NCI-20-14	2/22/2011	FTN	14	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
NCI-20-20	2/22/2011	FTN	20	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
				Number of Detects	0	0	15	0	15	16
				Number of Analysis	53	53	53	53	53	53
				Minimum Detect	0	0	0.0017	0	0.002	0.0037
				Maximum Detect	0	0	0.64	0	2.4	10
				Human Health Screening						
				USEPA RSL Table - Residential Soil (mg/kg)	na	1400	5.4	6.2	2100	na
				USEPA RSL Table - Protection of Groundwater (mg/kg)	na	0.21	0.78	0.0017	1.1	na
				Ecological Screening						
				USEPA Ecological SL - Soil	NA	NA	NA	NA	NA	NA
				USEPA Region 4 Ecological SL	NA	NA	0.04	NA	NA	NA
				PRG for Ecological Endpoints	NA	NA	NA	NA	NA	NA
				Endpoint						

Table 2.0j
Subsurface Soil Data
Volatile Organic Compounds (VOCs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Depth (ft)	Units	2-Butanone (MEK)	Methylene Chloride	4-Methyl-2-pentanone (MIBK)	Methyl tert-butyl ether	Naphthalene	n-Propylbenzene
NCI-0-10	2/25/2011	FTN	10	mg/kg	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
NCI-0-2	2/25/2011	FTN	2	mg/kg	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
NCI-0-23	2/25/2011	FTN	23	mg/kg	<0.050	<0.025	<0.050	<0.0050	0.0027	<0.0050
NCI-0-23D	2/25/2011	FTN	23	mg/kg	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
NCI-1-2	2/21/2011	FTN	2	mg/kg	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
NCI-1-15	2/21/2011	FTN	15	mg/kg	<0.050	<0.025	<0.050	<0.0050	0.14	0.0039
NCI-1-20-25	2/21/2011	FTN	20-25	mg/kg	<0.050	<0.025	<0.050	<0.0050	0.004	<0.0050
NCI-2-14	2/21/2011	FTN	14	mg/kg	<0.050	0.0046	<0.050	<0.0050	0.0025	<0.0050
NCI-2-17	2/21/2011	FTN	17	mg/kg	<0.050	0.0042	<0.050	<0.0050	<0.025	0.0052
NCI-2-2	2/21/2011	FTN	2	mg/kg	<0.050	0.0044	<0.050	<0.0050	0.0032	<0.0050
NCI-3-2	2/21/2011	FTN	2	mg/kg	<0.050	0.0034	<0.050	<0.0050	<0.025	<0.0050
NCI-3-10	2/21/2011	FTN	10	mg/kg	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
NCI-3-16.5	2/21/2011	FTN	16.5	mg/kg	<0.050	<0.025	<0.050	<0.0050	0.031	<0.0050
NCI-4-2	2/22/2011	FTN	2	mg/kg	<5.0	<2.5	<5.0	<0.50	2.4	0.96
NCI-4-2 D	2/22/2011	FTN	2	mg/kg	<10	<5.0	<10	<1.0	4.6	2.1
NCI-4-14	2/22/2011	FTN	14	mg/kg	<5.0	<2.5	<5.0	<0.50	3	0.6
NCI-4-23	2/22/2011	FTN	23	mg/kg	<0.50	<0.25	<0.50	<0.050	0.47	0.21
NCI-5-2	2/22/2011	FTN	2	mg/kg	<0.050	0.0032	<0.050	<0.0050	<0.025	<0.0050
NCI-5-6	2/22/2011	FTN	6	mg/kg	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
NCI-5-29	2/22/2011	FTN	29	mg/kg	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
NCI-5-41	2/22/2011	FTN	41	mg/kg	<0.050	<0.025	<0.050	<0.0050	0.082	0.014
NCI-6-2	2/23/2011	FTN	2	mg/kg	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
NCI-6-2 D	2/23/2011	FTN	2	mg/kg	0.049	<0.025	<0.050	<0.0050	0.0096	<0.0050
NCI-6-15	2/23/2011	FTN	15	mg/kg	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
NCI-6-24	2/23/2011	FTN	24	mg/kg	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
NCI-7-2	2/23/2011	FTN	2	mg/kg	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
NCI-7-14	2/23/2011	FTN	14	mg/kg	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
NCI-7-23	2/23/2011	FTN	23	mg/kg	<0.050	<0.025	<0.050	<0.0050	0.0047	0.002
NCI-8-2	2/24/2011	FTN	2	mg/kg	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
NCI-8-2 D	2/24/2011	FTN	2	mg/kg	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
NCI-8-10	2/24/2011	FTN	10	mg/kg	<0.050	0.0078	<0.050	<0.0050	<0.025	<0.0050
NCI-8-34	2/24/2011	FTN	34	mg/kg	<0.050	0.0072	<0.050	<0.0050	0.0019	<0.0050
NCI-9-2	2/23/2011	FTN	2	mg/kg	<0.050	<0.025	<0.050	<0.0050	0.11	0.022
NCI-9-10	2/23/2011	FTN	10	mg/kg	<0.050	<0.025	<0.050	<0.0050	0.003	<0.0050
NCI-9-12	2/23/2011	FTN	12	mg/kg	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
NCI-10-2	2/23/2011	FTN	2	mg/kg	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
NCI-10-8	2/23/2011	FTN	8	mg/kg	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
NCI-10-9	2/23/2011	FTN	9	mg/kg	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
NCI-11-2	2/23/2011	FTN	2	mg/kg	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
NCI-11-4	2/23/2011	FTN	4	mg/kg	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
NCI-11-9	2/23/2011	FTN	9	mg/kg	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
NCI-12-2	2/24/2011	FTN	2	mg/kg	<0.50	0.084	<0.50	<0.050	0.68	0.11
NCI-12-10	2/24/2011	FTN	10	mg/kg	<0.50	0.081	<0.50	<0.050	0.98	0.22
NCI-12-14	2/24/2011	FTN	14	mg/kg	<0.050	0.0082	<0.050	<0.0050	0.0096	<0.0050
NCI-13-2	2/28/2011	FTN	2	mg/kg	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
NCI-13-10	2/28/2011	FTN	10	mg/kg	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
NCI-13-12	2/28/2011	FTN	12	mg/kg	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
NCI-19-2	2/22/2011	FTN	2	mg/kg	<0.50	<0.25	<0.50	<0.050	0.4	0.16
NCI-19-10	2/22/2011	FTN	10	mg/kg	<0.50	<0.25	<0.50	<0.050	6.6	0.73
NCI-19-21	2/22/2011	FTN	21	mg/kg	<0.050	<0.025	<0.050	<0.0050	0.012	0.0017
NCI-20-2	2/22/2011	FTN	2	mg/kg	<0.050	<0.025	<0.050	<0.0050	0.064	0.028
NCI-20-14	2/22/2011	FTN	14	mg/kg	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
NCI-20-20	2/22/2011	FTN	20	mg/kg	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
				Number of Detects	1	10	0	0	23	15
				Number of Analysis	53	53	53	53	53	53
				Minimum Detect	0.049	0.0032	0	0	0.0019	0.0017
				Maximum Detect	0.049	0.084	0	0	6.6	2.1
				Human Health Screening						
				USEPA RSL Table - Residential Soil (mg/kg)	28000	11	5300	43	3.6	3400
				USEPA RSL Table - Protection of Groundwater (mg/kg)	1.5	0.0013	0.45	0.0028	0.00047	2.5
				Ecological Screening						
				USEPA Ecological SL - Soil	NA	NA	NA	NA	NA	NA
				USEPA Region 4 Ecological SL	NA	NA	NA	NA	0.1	NA
				PRG for Ecological Endpoints	NA	NA	NA	NA	NA	NA
				Endpoint						

Table 2.0j
Subsurface Soil Data
Volatile Organic Compounds (VOCs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Depth (ft)	Units	Styrene	1,1,1,2-Tetrachloroethane	1,1,2,2-Tetrachloroethane	1,1,2-Trichloro-1,2,2-trifluoroethane	Tetrachloroethene	Toluene
NCI-0-10	2/25/2011	FTN	10	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-0-2	2/25/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-0-23	2/25/2011	FTN	23	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-0-23D	2/25/2011	FTN	23	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-1-2	2/21/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-1-15	2/21/2011	FTN	15	mg/kg	0.0016	<0.0050	<0.0050	<0.0050	<0.0050	0.0053
NCI-1-20-25	2/21/2011	FTN	20-25	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0035
NCI-2-14	2/21/2011	FTN	14	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-2-17	2/21/2011	FTN	17	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-2-2	2/21/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-3-2	2/21/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0023
NCI-3-10	2/21/2011	FTN	10	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-3-16.5	2/21/2011	FTN	16.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-4-2	2/22/2011	FTN	2	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	<2.5
NCI-4-2 D	2/22/2011	FTN	2	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
NCI-4-14	2/22/2011	FTN	14	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	<2.5
NCI-4-23	2/22/2011	FTN	23	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	<0.25
NCI-5-2	2/22/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-5-6	2/22/2011	FTN	6	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-5-29	2/22/2011	FTN	29	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-5-41	2/22/2011	FTN	41	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-6-2	2/23/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-6-2 D	2/23/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0018
NCI-6-15	2/23/2011	FTN	15	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-6-24	2/23/2011	FTN	24	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-7-2	2/23/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-7-14	2/23/2011	FTN	14	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-7-23	2/23/2011	FTN	23	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-8-2	2/24/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-8-2 D	2/24/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-8-10	2/24/2011	FTN	10	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-8-34	2/24/2011	FTN	34	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-9-2	2/23/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0021
NCI-9-10	2/23/2011	FTN	10	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-9-12	2/23/2011	FTN	12	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-10-2	2/23/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-10-8	2/23/2011	FTN	8	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-10-9	2/23/2011	FTN	9	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-11-2	2/23/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-11-4	2/23/2011	FTN	4	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-11-9	2/23/2011	FTN	9	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-12-2	2/24/2011	FTN	2	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	0.13
NCI-12-10	2/24/2011	FTN	10	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	0.035
NCI-12-14	2/24/2011	FTN	14	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-13-2	2/28/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-13-10	2/28/2011	FTN	10	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-13-12	2/28/2011	FTN	12	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-19-2	2/22/2011	FTN	2	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	0.2
NCI-19-10	2/22/2011	FTN	10	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	0.029
NCI-19-21	2/22/2011	FTN	21	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-20-2	2/22/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.14
NCI-20-14	2/22/2011	FTN	14	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-20-20	2/22/2011	FTN	20	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
				Number of Detects	1	0	0	0	0	10
				Number of Analysis	53	53	53	53	53	53
				Minimum Detect	0.0016	0	0	0	0	0.0018
				Maximum Detect	0.0016	0	0	0	0	0.2
				Human Health Screening						
				USEPA RSL Table - Residential Soil (mg/kg)	6300	1.9	0.56	43000	0.55	5000
				USEPA RSL Table - Protection of Groundwater (mg/kg)	0.11	0.0002	0.000026	150	0.0023	0.69
				Ecological Screening						
				USEPA Ecological SL - Soil	NA	NA	NA	NA	NA	NA
				USEPA Region 4 Ecological SL	0.1	NA	NA	NA	0.01	0.05
				PRG for Ecological Endpoints	300	NA	NA	NA	NA	200
				Endpoint	plants					plants

Table 2.0j
Subsurface Soil Data
Volatile Organic Compounds (VOCs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Depth (ft)	Units	1,2,3-Trichlorobenzene	1,2,4-Trichlorobenzene	1,1,1-Trichloroethane	1,1,2-Trichloroethane	Trichloroethene	Trichlorofluoromethane
NCI-0-10	2/25/2011	FTN	10	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-0-2	2/25/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-0-23	2/25/2011	FTN	23	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-0-23D	2/25/2011	FTN	23	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-1-2	2/21/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-1-15	2/21/2011	FTN	15	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-1-20-25	2/21/2011	FTN	20-25	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-2-14	2/21/2011	FTN	14	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-2-17	2/21/2011	FTN	17	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-2-2	2/21/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-3-2	2/21/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-3-10	2/21/2011	FTN	10	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-3-16.5	2/21/2011	FTN	16.5	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-4-2	2/22/2011	FTN	2	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	<2.5
NCI-4-2 D	2/22/2011	FTN	2	mg/kg	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0
NCI-4-14	2/22/2011	FTN	14	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	<2.5
NCI-4-23	2/22/2011	FTN	23	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	<0.25
NCI-5-2	2/22/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-5-6	2/22/2011	FTN	6	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-5-29	2/22/2011	FTN	29	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-5-41	2/22/2011	FTN	41	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-6-2	2/23/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-6-2 D	2/23/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-6-15	2/23/2011	FTN	15	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-6-24	2/23/2011	FTN	24	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-7-2	2/23/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-7-14	2/23/2011	FTN	14	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-7-23	2/23/2011	FTN	23	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-8-2	2/24/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-8-2 D	2/24/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-8-10	2/24/2011	FTN	10	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-8-34	2/24/2011	FTN	34	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-9-2	2/23/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-9-10	2/23/2011	FTN	10	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-9-12	2/23/2011	FTN	12	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-10-2	2/23/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-10-8	2/23/2011	FTN	8	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-10-9	2/23/2011	FTN	9	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-11-2	2/23/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-11-4	2/23/2011	FTN	4	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-11-9	2/23/2011	FTN	9	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-12-2	2/24/2011	FTN	2	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	<0.25
NCI-12-10	2/24/2011	FTN	10	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	<0.25
NCI-12-14	2/24/2011	FTN	14	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-13-2	2/28/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-13-10	2/28/2011	FTN	10	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-13-12	2/28/2011	FTN	12	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-19-2	2/22/2011	FTN	2	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	<0.25
NCI-19-10	2/22/2011	FTN	10	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	<0.25
NCI-19-21	2/22/2011	FTN	21	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-20-2	2/22/2011	FTN	2	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-20-14	2/22/2011	FTN	14	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
NCI-20-20	2/22/2011	FTN	20	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
				Number of Detects	0	0	0	0	0	0
				Number of Analysis	53	53	53	53	53	53
				Minimum Detect	0	0	0	0	0	0
				Maximum Detect	0	0	0	0	0	0
				Human Health Screening						
				USEPA RSL Table - Residential Soil (mg/kg)	49	22	8700	1.1	2.8	790
				USEPA RSL Table - Protection of Groundwater (mg/kg)	0.087	0.2	0.07	0.0016	0.0018	0.83
				Ecological Screening						
				USEPA Ecological SL - Soil	NA	NA	NA	NA	NA	NA
				USEPA Region 4 Ecological SL	0.01	0.01	NA	NA	0.001	NA
				PRG for Ecological Endpoints	20	20	NA	NA	NA	NA
				Endpoint	earthworm	earthworm				

Table 2.0j
Subsurface Soil Data
Volatile Organic Compounds (VOCs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Depth (ft)	Units	1,2,3-Trichloropropane	1,2,4-Trimethylbenzene	1,2,3-Trimethylbenzene	1,3,5-Trimethylbenzene	Vinyl chloride	Xylenes, Total
NCI-0-10	2/25/2011	FTN	10	mg/kg	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-0-2	2/25/2011	FTN	2	mg/kg	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-0-23	2/25/2011	FTN	23	mg/kg	<0.013	0.0034	<0.0050	<0.0050	<0.0050	<0.015
NCI-0-23D	2/25/2011	FTN	23	mg/kg	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-1-2	2/21/2011	FTN	2	mg/kg	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-1-15	2/21/2011	FTN	15	mg/kg	<0.013	0.08	0.098	0.058	<0.0050	0.034
NCI-1-20-25	2/21/2011	FTN	20-25	mg/kg	<0.013	0.017	0.018	0.0097	<0.0050	0.0092
NCI-2-14	2/21/2011	FTN	14	mg/kg	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-2-17	2/21/2011	FTN	17	mg/kg	<0.013	0.0019	<0.0050	<0.0050	<0.0050	<0.015
NCI-2-2	2/21/2011	FTN	2	mg/kg	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	0.0024
NCI-3-2	2/21/2011	FTN	2	mg/kg	<0.013	0.0027	<0.0050	<0.0050	<0.0050	0.0052
NCI-3-10	2/21/2011	FTN	10	mg/kg	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	0.0027
NCI-3-16.5	2/21/2011	FTN	16.5	mg/kg	<0.013	0.0024	0.0019	0.0024	<0.0050	<0.015
NCI-4-2	2/22/2011	FTN	2	mg/kg	<1.3	14	5	13	<0.50	2
NCI-4-2 D	2/22/2011	FTN	2	mg/kg	<2.5	39	14	27	<1.0	4
NCI-4-14	2/22/2011	FTN	14	mg/kg	<1.3	9	3	6.7	<0.50	2.4
NCI-4-23	2/22/2011	FTN	23	mg/kg	<0.13	2.6	0.85	2	<0.050	1.4
NCI-5-2	2/22/2011	FTN	2	mg/kg	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-5-6	2/22/2011	FTN	6	mg/kg	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-5-29	2/22/2011	FTN	29	mg/kg	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-5-41	2/22/2011	FTN	41	mg/kg	<0.013	0.28	0.045	0.14	<0.0050	0.096
NCI-6-2	2/23/2011	FTN	2	mg/kg	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-6-2 D	2/23/2011	FTN	2	mg/kg	<0.013	0.0059	0.0039	0.0041	<0.0050	0.0082
NCI-6-15	2/23/2011	FTN	15	mg/kg	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-6-24	2/23/2011	FTN	24	mg/kg	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-7-2	2/23/2011	FTN	2	mg/kg	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-7-14	2/23/2011	FTN	14	mg/kg	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-7-23	2/23/2011	FTN	23	mg/kg	<0.013	0.01	0.0068	0.0059	<0.0050	0.0029
NCI-8-2	2/24/2011	FTN	2	mg/kg	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-8-2 D	2/24/2011	FTN	2	mg/kg	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-8-10	2/24/2011	FTN	10	mg/kg	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-8-34	2/24/2011	FTN	34	mg/kg	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-9-2	2/23/2011	FTN	2	mg/kg	<0.013	0.19	0.16	0.066	<0.0050	0.064
NCI-9-10	2/23/2011	FTN	10	mg/kg	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-9-12	2/23/2011	FTN	12	mg/kg	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-10-2	2/23/2011	FTN	2	mg/kg	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-10-8	2/23/2011	FTN	8	mg/kg	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-10-9	2/23/2011	FTN	9	mg/kg	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-11-2	2/23/2011	FTN	2	mg/kg	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-11-4	2/23/2011	FTN	4	mg/kg	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-11-9	2/23/2011	FTN	9	mg/kg	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-12-2	2/24/2011	FTN	2	mg/kg	<0.13	0.89	0.54	0.88	<0.050	0.59
NCI-12-10	2/24/2011	FTN	10	mg/kg	<0.13	2.8	1.3	2.2	<0.050	1.3
NCI-12-14	2/24/2011	FTN	14	mg/kg	<0.013	0.0025	0.002	0.0015	<0.0050	<0.015
NCI-13-2	2/28/2011	FTN	2	mg/kg	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-13-10	2/28/2011	FTN	10	mg/kg	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-13-12	2/28/2011	FTN	12	mg/kg	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-19-2	2/22/2011	FTN	2	mg/kg	<0.13	0.14	0.71	0.086	<0.050	0.56
NCI-19-10	2/22/2011	FTN	10	mg/kg	<0.13	2	0.52	0.68	<0.050	0.98
NCI-19-21	2/22/2011	FTN	21	mg/kg	<0.013	0.014	0.0056	0.0084	<0.0050	0.0026
NCI-20-2	2/22/2011	FTN	2	mg/kg	<0.013	0.0055	0.066	0.0021	<0.0050	0.1
NCI-20-14	2/22/2011	FTN	14	mg/kg	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
NCI-20-20	2/22/2011	FTN	20	mg/kg	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
				Number of Detects	0	21	18	18	0	19
				Number of Analysis	53	53	53	53	53	53
				Minimum Detect	0	0.0019	0.0019	0.0015	0	0.0024
				Maximum Detect	0	39	14	27	0	4
				Human Health Screening						
				USEPA RSL Table - Residential Soil (mg/kg)	0.005	62	na	780	0.06	630
				USEPA RSL Table - Protection of Groundwater (mg/kg)	0.00000031	0.021	na	0.52	0.00069	9.8
				Ecological Screening						
				USEPA Ecological SL - Soil	NA	NA	NA	NA	NA	NA
				USEPA Region 4 Ecological SL	NA	NA	NA	NA	0.01	0.05
				PRG for Ecological Endpoints	NA	NA	NA	NA	0.01	NA
				Endpoint						

Table 2.0k
Subsurface Soil Data
Polycyclic Aromatic Hydrocarbons (PAHs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Depth (ft)	Units	Anthracene	Acenaphthene	Acenaphthylene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene
NCI-0-10	2/25/2011	FTN	10	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-0-2	2/25/2011	FTN	2	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-0-23	2/25/2011	FTN	23	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-0-23D	2/25/2011	FTN	23	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-1-2	2/21/2011	FTN	2	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-1-15	2/21/2011	FTN	15	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-1-20-25	2/21/2011	FTN	20-25	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-2-14	2/21/2011	FTN	14	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-2-17	2/21/2011	FTN	17	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-2-2	2/21/2011	FTN	2	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-3-2	2/21/2011	FTN	2	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-3-10	2/21/2011	FTN	10	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-3-16.5	2/21/2011	FTN	16.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-4-2	2/22/2011	FTN	2	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-4-2 D	2/22/2011	FTN	2	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-4-14	2/22/2011	FTN	14	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-4-23	2/22/2011	FTN	23	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-5-2	2/22/2011	FTN	2	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-5-6	2/22/2011	FTN	6	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-5-29	2/22/2011	FTN	29	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-5-41	2/22/2011	FTN	41	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-6-2	2/23/2011	FTN	2	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-6-2 D	2/23/2011	FTN	2	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-6-15	2/23/2011	FTN	15	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-6-24	2/23/2011	FTN	24	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-7-2	2/23/2011	FTN	2	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-7-14	2/23/2011	FTN	14	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-7-23	2/23/2011	FTN	23	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-8-2	2/24/2011	FTN	2	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-8-2 D	2/24/2011	FTN	2	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-9-2	2/24/2011	FTN	2	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-9-10	2/24/2011	FTN	10	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-9-12	2/23/2011	FTN	12	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-10-2	2/23/2011	FTN	2	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-10-8	2/23/2011	FTN	8	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-10-9	2/23/2011	FTN	9	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-11-2	2/23/2011	FTN	2	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-11-4	2/23/2011	FTN	4	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-11-9	2/23/2011	FTN	9	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-13-2	2/23/2011	FTN	2	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-13-10	2/28/2011	FTN	10	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-13-12	2/28/2011	FTN	12	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-19-2	2/22/2011	FTN	2	mg/kg	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
NCI-19-10	2/22/2011	FTN	10	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-19-21	2/22/2011	FTN	21	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-20-2	2/22/2011	FTN	2	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-20-14	2/22/2011	FTN	14	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-20-20	2/22/2011	FTN	20	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
				Number of Detects	0	0	0	0	0	0
				Number of Analysis	48	48	48	48	48	48
				Minimum Detect	0	0	0	0	0	0
				Maximum Detect	0	0	0	0	0	0
				Human Health Screening						
				USEPA RSL Table - Residential Soil (mg/kg)	17000	3400	na	0.15	0.015	0.15
				USEPA RSL Table - Protection of Groundwater (mg/kg)	360	22	na	0.01	0.24	0.035
				Ecological Screening						
				USEPA Ecological SL - Soil	NA	NA	NA	NA	NA	NA
				USEPA Region 4 Ecological SL	20	20	NA	NA	0.1	NA
				PRG for Ecological Endpoints	NA	20	NA	NA	NA	NA
				Endpoint		plants				

Table 2.0k
Subsurface Soil Data
Polycyclic Aromatic Hydrocarbons (PAHs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Depth (ft)	Units	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene
NCI-0-10	2/25/2011	FTN	10	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-0-2	2/25/2011	FTN	2	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-0-23	2/25/2011	FTN	23	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-0-23D	2/25/2011	FTN	23	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-1-2	2/21/2011	FTN	2	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-1-15	2/21/2011	FTN	15	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-1-20-25	2/21/2011	FTN	20-25	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-2-14	2/21/2011	FTN	14	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-2-17	2/21/2011	FTN	17	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-2-2	2/21/2011	FTN	2	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-3-2	2/21/2011	FTN	2	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-3-10	2/21/2011	FTN	10	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-3-16.5	2/21/2011	FTN	16.5	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-4-2	2/22/2011	FTN	2	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-4-2 D	2/22/2011	FTN	2	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-4-14	2/22/2011	FTN	14	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-4-23	2/22/2011	FTN	23	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-5-2	2/22/2011	FTN	2	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-5-6	2/22/2011	FTN	6	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-5-29	2/22/2011	FTN	29	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-5-41	2/22/2011	FTN	41	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-6-2	2/23/2011	FTN	2	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-6-2 D	2/23/2011	FTN	2	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-6-15	2/23/2011	FTN	15	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-6-24	2/23/2011	FTN	24	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-7-2	2/23/2011	FTN	2	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-7-14	2/23/2011	FTN	14	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-7-23	2/23/2011	FTN	23	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-8-2	2/24/2011	FTN	2	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-8-2 D	2/24/2011	FTN	2	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-9-2	2/24/2011	FTN	2	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-9-10	2/24/2011	FTN	10	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-9-12	2/23/2011	FTN	12	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-10-2	2/23/2011	FTN	2	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-10-8	2/23/2011	FTN	8	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-10-9	2/23/2011	FTN	9	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-11-2	2/23/2011	FTN	2	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-11-4	2/23/2011	FTN	4	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-11-9	2/23/2011	FTN	9	mg/kg	<0.020	<0.020	<0.020	<0.020	0.0094	<0.020
NCI-13-2	2/23/2011	FTN	2	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-13-10	2/28/2011	FTN	10	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-13-12	2/28/2011	FTN	12	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-19-2	2/22/2011	FTN	2	mg/kg	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
NCI-19-10	2/22/2011	FTN	10	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-19-21	2/22/2011	FTN	21	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-20-2	2/22/2011	FTN	2	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-20-14	2/22/2011	FTN	14	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-20-20	2/22/2011	FTN	20	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
				Number of Detects	0	0	0	0	1	0
				Number of Analysis	48	48	48	48	48	48
				Minimum Detect	0	0	0	0	0.0094	0
				Maximum Detect	0	0	0	0	0.0094	0
				Human Health Screening						
				USEPA RSL Table - Residential Soil (mg/kg)	na	1.5	15	0.015	2300	2300
				USEPA RSL Table - Protection of Groundwater (mg/kg)	na	0.35	1.1	0.011	160	27
				Ecological Screening						
				USEPA Ecological SL - Soil	NA	NA	NA	NA	NA	NA
				USEPA Region 4 Ecological SL	NA	NA	NA	NA	0.1	30
				PRG for Ecological Endpoints	NA	NA	NA	NA	NA	NA
				Endpoint						

Table 2.0k
Subsurface Soil Data
Polycyclic Aromatic Hydrocarbons (PAHs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Depth (ft)	Units	Indeno(1,2,3-cd)pyrene	1-Methylnaphthalene	2-Methylnaphthalene	Naphthalene	Phenanthrene	Pyrene
NCI-0-10	2/25/2011	FTN	10	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-0-2	2/25/2011	FTN	2	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-0-23	2/25/2011	FTN	23	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-0-23D	2/25/2011	FTN	23	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-1-2	2/21/2011	FTN	2	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-1-15	2/21/2011	FTN	15	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-1-20-25	2/21/2011	FTN	20-25	mg/kg	<0.020	0.0087	0.0088	0.023	<0.020	<0.020
NCI-2-14	2/21/2011	FTN	14	mg/kg	<0.020	0.0076	0.0068	<0.020	<0.020	<0.020
NCI-2-17	2/21/2011	FTN	17	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-2-2	2/21/2011	FTN	2	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-3-2	2/21/2011	FTN	2	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-3-10	2/21/2011	FTN	10	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-3-16.5	2/21/2011	FTN	16.5	mg/kg	<0.020	0.018	0.016	0.015	<0.020	<0.020
NCI-4-2	2/22/2011	FTN	2	mg/kg	<0.020	0.28	0.62	0.54	<0.020	<0.020
NCI-4-2 D	2/22/2011	FTN	2	mg/kg	<0.020	4.8	6.6	4	<0.020	<0.020
NCI-4-14	2/22/2011	FTN	14	mg/kg	<0.020	9.9	13	7.5	<0.020	<0.020
NCI-4-23	2/22/2011	FTN	23	mg/kg	<0.020	<0.020	<0.020	0.069	<0.020	<0.020
NCI-5-2	2/22/2011	FTN	2	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-5-6	2/22/2011	FTN	6	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-5-29	2/22/2011	FTN	29	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-5-41	2/22/2011	FTN	41	mg/kg	<0.020	0.25	0.26	0.21	<0.020	<0.020
NCI-6-2	2/23/2011	FTN	2	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-6-2 D	2/23/2011	FTN	2	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-6-15	2/23/2011	FTN	15	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-6-24	2/23/2011	FTN	24	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-7-2	2/23/2011	FTN	2	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-7-14	2/23/2011	FTN	14	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-7-23	2/23/2011	FTN	23	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-8-2	2/24/2011	FTN	2	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-8-2 D	2/24/2011	FTN	2	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-9-2	2/24/2011	FTN	2	mg/kg	<0.020	0.4	0.35	0.48	<0.020	<0.020
NCI-9-10	2/24/2011	FTN	10	mg/kg	<0.020	0.017	0.0083	<0.020	<0.020	<0.020
NCI-9-12	2/23/2011	FTN	12	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-10-2	2/23/2011	FTN	2	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-10-8	2/23/2011	FTN	8	mg/kg	<0.020	0.14	0.056	<0.020	<0.020	<0.020
NCI-10-9	2/23/2011	FTN	9	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	0.014
NCI-11-2	2/23/2011	FTN	2	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-11-4	2/23/2011	FTN	4	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-11-9	2/23/2011	FTN	9	mg/kg	<0.020	0.087	0.052	0.049	<0.020	0.13
NCI-13-2	2/23/2011	FTN	2	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-13-10	2/28/2011	FTN	10	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-13-12	2/28/2011	FTN	12	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-19-2	2/22/2011	FTN	2	mg/kg	<0.040	1.7	0.78	0.36	<0.040	<0.040
NCI-19-10	2/22/2011	FTN	10	mg/kg	<0.020	4.5	5	4.2	<0.020	<0.020
NCI-19-21	2/22/2011	FTN	21	mg/kg	<0.020	0.0079	0.0072	0.0079	<0.020	<0.020
NCI-20-2	2/22/2011	FTN	2	mg/kg	<0.020	0.28	0.094	0.16	<0.020	<0.020
NCI-20-14	2/22/2011	FTN	14	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
NCI-20-20	2/22/2011	FTN	20	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
				Number of Detects	0	15	15	13	0	2
				Number of Analysis	48	48	48	48	48	48
				Minimum Detect	0	0.0076	0.0068	0.0079	0	0.014
				Maximum Detect	0	9.9	13	7.5	0	0.13
				Human Health Screening						
				USEPA RSL Table - Residential Soil (mg/kg)	0.15	22	310	3.6	na	1700
				USEPA RSL Table - Protection of Groundwater (mg/kg)	0.12	0.012	0.75	0.00047	na	120
				Ecological Screening						
				USEPA Ecological SL - Soil	NA	NA	NA	NA	NA	NA
				USEPA Region 4 Ecological SL	NA	NA	NA	NA	0.1	0.1
				PRG for Ecological Endpoints	NA	NA	NA	NA	NA	0.1
				Endpoint						

Table 2.0l
Subsurface Soil Data
Metals
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Depth (ft)	Units	Chromium,Hexavalent	Chromium	Fluoride	Lead
NCI-0-10 FT	2/25/2011	FTN	10	mg/kg		18		9.1
NCI-0-2 FT	2/25/2011	FTN	2	mg/kg		2.8		3.7
NCI-0-23 FT	2/25/2011	FTN	23	mg/kg		4.2		4.3
NCI-0-23D	2/25/2011	FTN	23	mg/kg		2		3.9
NCI-1-2 FT	2/21/2011	FTN	2	mg/kg		0.58		1.7
NCI-1-15 FT	2/21/2011	FTN	15	mg/kg		6		6.6
NCI-1-20-25 FT	2/21/2011	FTN	20-25	mg/kg		2.2		2.3
NCI-2-14 FT	2/21/2011	FTN	14	mg/kg		4.6		3.2
NCI-2-17 FT	2/21/2011	FTN	17	mg/kg		2.2		2
NCI-2-2 FT	2/21/2011	FTN	2	mg/kg		5.3		5
NCI-3-2 FT	2/21/2011	FTN	2	mg/kg		3.7		5.8
NCI-3-10 FT	2/21/2011	FTN	10	mg/kg		5.9		4.1
NCI-3-16.5 FT	2/21/2011	FTN	16.5	mg/kg		2.3		3.4
NCI-4-2 FT	2/22/2011	FTN	2	mg/kg		9.7		12
NCI-4-2 FT D	2/22/2011	FTN	2	mg/kg		4.1		18
NCI-4-14 FT	2/22/2011	FTN	14	mg/kg		4.8		5.1
NCI-4-23 FT	2/22/2011	FTN	23	mg/kg		3.1		3
NCI-5-2 FT	2/22/2011	FTN	2	mg/kg		5.1	43	6.7
NCI-5-6 FT	2/22/2011	FTN	6	mg/kg		6.4	2.2	4.5
NCI-5-29 FT	2/22/2011	FTN	29	mg/kg		5.4	3.8	3
NCI-5-41 FT	2/22/2011	FTN	41	mg/kg		11	2.3	3.6
NCI-6-2 FT	2/23/2011	FTN	2	mg/kg		10	2	5.5
NCI-6-2 FT D	2/23/2011	FTN	2	mg/kg		12	1.9	5.5
NCI-6-15 FT	2/23/2011	FTN	15	mg/kg		3.8	2	6.6
NCI-6-24 FT	2/23/2011	FTN	24	mg/kg		4.2	2.1	2.1
NCI-7-2 FT	2/23/2011	FTN	2	mg/kg		4.7	2.2	5.4
NCI-7-14 FT	2/23/2011	FTN	14	mg/kg		1.8	3.2	2.9
NCI-7-23 FT	2/23/2011	FTN	23	mg/kg		3.2	2.1	3.3
NCI-8-2 FT	2/24/2011	FTN	2	mg/kg	<2.0	14		7.2
NCI-8-2 FT D	2/24/2011	FTN	2	mg/kg	<2.0	10		7.6
NCI-8-10	2/24/2011	FTN	10	mg/kg	1.9	8.6		5.5
NCI-8-34	2/24/2011	FTN	34	mg/kg	0.62	12		11
NCI-9-2 FT	2/23/2011	FTN	2	mg/kg	<2.0	6.4		16
NCI-9-10 FT	2/23/2011	FTN	10	mg/kg	<2.0	1.7		3
NCI-9-12 FT	2/23/2011	FTN	12	mg/kg	<2.0	2.4		3.1
NCI-10-2 FT	2/23/2011	FTN	2	mg/kg		5.6		5.1
NCI-10-8 FT	2/23/2011	FTN	8	mg/kg		4.4		10
NCI-10-9 FT	2/23/2011	FTN	9	mg/kg		12		8.8
NCI-11-2 FT	2/23/2011	FTN	2	mg/kg		3.1		4.1
NCI-11-4 FT	2/23/2011	FTN	4	mg/kg		4.6		4.7
NCI-11-9 FT	2/23/2011	FTN	9	mg/kg		2.4		2.9
NCI-12-2	2/24/2011	FTN	2	mg/kg		13		21
NCI-12-10	2/24/2011	FTN	10	mg/kg		8		10
NCI-12-14	2/24/2011	FTN	14	mg/kg		1.4		2.5
NCI-13-2	2/28/2011	FTN	2	mg/kg		3.2		5
NCI-13-10	2/28/2011	FTN	10	mg/kg		5.7		3
NCI-13-12	2/28/2011	FTN	12	mg/kg		5.5		3.3
NCI-19-2 FT	2/22/2011	FTN	2	mg/kg		21		5.6
NCI-19-10 FT	2/22/2011	FTN	10	mg/kg		4.6		4.1
NCI-19-21 FT	2/22/2011	FTN	21	mg/kg		3.3		1.4
NCI-20-2 FT	2/22/2011	FTN	2	mg/kg		21		38
NCI-20-14 FT	2/22/2011	FTN	14	mg/kg		2.7		2.1
NCI-20-20 FT	2/22/2011	FTN	20	mg/kg		6		2.9
				Number of Detects	2	53	11	53
				Number of Analysis	7	53	11	53
				Minimum Detect	0.62	0.58	1.9	1.4
				Maximum Detect	1.9	21	43	38
				Background Concentration (Shacklette and Boerngen, 1984)	10	10	na	10
				Human Health Screening				
				USEPA RSL Table - Residential Soil (mg/kg)	0.29	na	3100	400
				USEPA RSL Table - Protection of Groundwater (mg/kg)	0.00083	180000	na	14
				Ecological Screening				
				USEPA Ecological SL - Soil	81	26	na	NA
				USEPA Region 4 Ecological SL	0.4	0.4	na	200
				PRG for Ecological Endpoints	0.4	0.4	na	NA
				Endpoint	earthworm	earthworm	na	

Table 2.0m
Subsurface Soil Data
Polychlorinated Biphenyls (PCBs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Depth (ft)	Units	PCB 1016	PCB 1221	PCB 1232	PCB 1242	PCB 1248	PCB 1254	PCB 1260
T-1-2	2/28/2011	FTN	2	mg/kg	<0.017	<0.017	<0.017	<0.017	<0.017	<0.017	<0.017
T-2-2	2/28/2011	FTN	2	mg/kg	<0.017	<0.017	<0.017	<0.017	<0.017	<0.017	0.023
				Number of Detects	0	0	0	0	0	0	1
				Number of Analysis	2	2	2	2	2	2	2
				Minimum Detect	0	0	0	0	0	0	0.023
				Maximum Detect	0	0	0	0	0	0	0.023
				Human Health Screening							
				USEPA RSL Table - Residential Soil (mg/kg)	3.9	0.14	0.14	0.22	0.22	0.22	0.22
				USEPA RSL Table - Protection of Groundwater (mg/kg)	0.092	0.00012	0.00012	0.0053	0.0052	0.0088	0.024
				Ecological Screening							
				USEPA Ecological SL - Soil	NA	NA	NA	NA	NA	NA	NA
				USEPA Region 4 Ecological SL	0.02	0.02	0.02	0.02	0.02	0.02	0.02
				PRG for Ecological Endpoints	0.371	0.371	0.371	0.371	0.371	0.371	0.371
				Endpoint	piscivores birds	piscivores birds	piscivores birds	piscivores birds	piscivores birds	piscivores birds	piscivores birds

Table 2.0n
Subsurface Soil Data
Total Petroleum Hydrocarbons (TPH)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Depth (ft)	Units	TPH Gasoline Range	C10-C28 Diesel Range	C28-C40 Oil Range
NCI-0-10	2/25/2011	FTN	10	mg/kg	<0.50	<4.0	<4.0
NCI-0-2	2/25/2011	FTN	2	mg/kg	<0.50	<4.0	<4.0
NCI-0-23	2/25/2011	FTN	23	mg/kg	<0.50	<4.0	<4.0
NCI-0-23D	2/25/2011	FTN	23	mg/kg	<0.50	<4.0	<4.0
NCI-1-2	2/21/2011	FTN	2	mg/kg	<0.50	69	31
NCI-1-15	2/21/2011	FTN	15	mg/kg	0.96	82	<40
NCI-1-20-25	2/21/2011	FTN	20-25	mg/kg	1.7	<4.0	<4.0
NCI-2-14	2/21/2011	FTN	14	mg/kg	<0.50	12	2.2
NCI-2-17	2/21/2011	FTN	17	mg/kg	0.37	<4.0	<4.0
NCI-2-2	2/21/2011	FTN	2	mg/kg	<0.50	<4.0	<4.0
NCI-3-2	2/21/2011	FTN	2	mg/kg	<0.50	750	250
NCI-3-10	2/21/2011	FTN	10	mg/kg	<0.50	5.7	2
NCI-3-16.5	2/21/2011	FTN	16.5	mg/kg	<0.50	690	73
NCI-4-2	2/22/2011	FTN	2	mg/kg	920	3700	1700
NCI-4-2 D	2/22/2011	FTN	2	mg/kg	1500	7800	1600
NCI-4-14	2/22/2011	FTN	14	mg/kg	440	2600	970
NCI-4-23	2/22/2011	FTN	23	mg/kg	130	360	150
NCI-5-2	2/22/2011	FTN	2	mg/kg	<0.50	650	190
NCI-5-6	2/22/2011	FTN	6	mg/kg	<0.50	<4.0	<4.0
NCI-5-29	2/22/2011	FTN	29	mg/kg	<0.50	<4.0	<4.0
NCI-5-41	2/22/2011	FTN	41	mg/kg	9	1200	160
NCI-6-2	2/23/2011	FTN	2	mg/kg	<0.50	<4.0	<4.0
NCI-6-2 D	2/23/2011	FTN	2	mg/kg	<0.50	<4.0	<4.0
NCI-6-15	2/23/2011	FTN	15	mg/kg	<0.50	<4.0	<4.0
NCI-6-24	2/23/2011	FTN	24	mg/kg	<0.50	<4.0	<4.0
NCI-7-2	2/23/2011	FTN	2	mg/kg	<0.50	2.2	4.1
NCI-7-14	2/23/2011	FTN	14	mg/kg	<0.50	<4.0	<4.0
NCI-7-23	2/23/2011	FTN	23	mg/kg	<0.50	<4.0	<4.0
NCI-8-2	2/24/2011	FTN	2	mg/kg	<0.50	66	35
NCI-8-2 D	2/24/2011	FTN	2	mg/kg	<0.50	78	45
NCI-8-10	2/24/2011	FTN	10	mg/kg	<0.50	<4.0	11
NCI-8-34	2/24/2011	FTN	34	mg/kg	<0.50	7.9	29
NCI-9-2	2/23/2011	FTN	2	mg/kg	4	5200	980
NCI-9-10	2/23/2011	FTN	10	mg/kg	0.75	12	3.2
NCI-9-12	2/23/2011	FTN	12	mg/kg	0.33	14	3.4
NCI-10-2	2/23/2011	FTN	2	mg/kg	<0.50	5.6	4.5
NCI-10-8	2/23/2011	FTN	8	mg/kg	1.6	4000	1500
NCI-10-9	2/23/2011	FTN	9	mg/kg	0.38	<4.0	<4.0
NCI-11-2	2/23/2011	FTN	2	mg/kg	<0.50	<4.0	<4.0
NCI-11-4	2/23/2011	FTN	4	mg/kg	<0.50	<4.0	<4.0
NCI-11-9	2/23/2011	FTN	9	mg/kg	<0.50	<4.0	<4.0
NCI-12-2	2/24/2011	FTN	2	mg/kg	27	8800	880
NCI-12-10	2/24/2011	FTN	10	mg/kg	64	3500	300
NCI-12-14	2/24/2011	FTN	14	mg/kg	0.26	44	11
NCI-13-2	2/28/2011	FTN	2	mg/kg	<0.50	560	130
NCI-13-10	2/28/2011	FTN	10	mg/kg	<0.50	18	<4.0
NCI-13-12	2/28/2011	FTN	12	mg/kg	<0.50	2.2	<4.0
NCI-19-2	2/22/2011	FTN	2	mg/kg	92	20000	2200
NCI-19-10	2/22/2011	FTN	10	mg/kg	180	4900	740
NCI-19-21	2/22/2011	FTN	21	mg/kg	0.77	6.8	3.2
NCI-20-2	2/22/2011	FTN	2	mg/kg	7.8	21000	2300
NCI-20-14	2/22/2011	FTN	14	mg/kg	1	<4.0	<4.0
NCI-20-20	2/22/2011	FTN	20	mg/kg	<0.50	<4.0	<4.0
				Number of Detects	21	31	29
				Number of Analysis	53	53	53
				Minimum Detect	0.26	2.2	2
				Maximum Detect	1500	21000	2300
				Human Health Screening			
				USEPA RSL Table - Residential Soil (mg/kg)	na	na	na
				USEPA RSL Table - Protection of Groundwater (mg/kg)	na	na	na
				ADEQ TPH SL (mg/kg)	440	2300	4500
				Ecological Screening			
				USEPA Ecological SL - Soil	na	na	na
				USEPA Region 4 Ecological SL	na	na	na
				PRG for Ecological Endpoints	na	na	na
				Endpoint			

Table 2.0o
Surface Water Data
Polycyclic Aromatic Hydrocarbons (PAHs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Units	Anthracene	Acenaphthene	Acenaphthylene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene
SW-1	2/28/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
SW-2	2/24/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
SW-3	2/25/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
SW-4	2/24/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
SW-5	2/24/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
SW-6	2/23/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
SW-7	2/25/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
SW-7D	2/25/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
			Number of Detects	0	0	0	0	0	0	0	0	0
			Number of Analysis	8	8	8	8	8	8	8	8	8
			Minimum Detect	0	0	0	0	0	0	0	0	0
			Maximum Detect	0	0	0	0	0	0	0	0	0
			Human Health Screening									
			USEPA RSL Table - Tapwater (ug/L)	11000	2200	na	0.029	0.0029	0.029	na	0.29	2.9
			Maximum Contaminant Level (MCL) (ug/L)	na	na	na	na	0.2	na	na	na	na
			AWQC Human Health for Consumption of Organisms (ug/L)	40000	990	na	0.018	0.018	0.018	na	0.18	0.018
			Ecological Screening									
			APC & EC Reg. 2									
			Acute	na	na	na	na	na	na	na	na	na
			Chronic	na	na	na	na	na	na	na	na	na
			Federal AWQC									
			CMC (acute)	na	na	na	na	na	na	na	na	na
			CCC (chronic)	na	na	na	na	na	na	na	na	na
			USEPA Region 4									
			Acute	na	170	na	na	na	na	na	na	na
			Chronic	na	17	na	na	na	na	na	na	na
			PRG for Ecological Endpoints	0.00073	0.023	na	0.000027	0.000014	na	na	na	na
			Endpoint	aquatic life	aquatic life		aquatic life	aquatic life				

Table 2.0o
Surface Water Data
Polycyclic Aromatic Hydrocarbons (PAHs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Units	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	1-Methylnaphthalene	2-Methylnaphthalene	Naphthalene	Phenanthrene	Pyrene
SW-1	2/28/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<1.0	<1.0	<1.0	<0.10	<0.10
SW-2	2/24/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<1.0	<1.0	<1.0	<0.10	<0.10
SW-3	2/25/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<1.0	<1.0	<1.0	<0.10	<0.10
SW-4	2/24/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<1.0	<1.0	<1.0	<0.10	<0.10
SW-5	2/24/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<1.0	<1.0	<1.0	<0.10	<0.10
SW-6	2/23/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<1.0	<1.0	<1.0	<0.10	<0.10
SW-7	2/25/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<1.0	<1.0	<1.0	<0.10	<0.10
SW-7D	2/25/2011	FTN	ug/L	<0.10	<0.10	<0.10	<0.10	<1.0	<1.0	<1.0	<0.10	<0.10
			Number of Detects	0	0	0	0	0	0	0	0	0
			Number of Analysis	8	8	8	8	8	8	8	8	8
			Minimum Detect	0	0	0	0	0	0	0	0	0
			Maximum Detect	0	0	0	0	0	0	0	0	0
			Human Health Screening									
			USEPA RSL Table - Tapwater (ug/L)	0.0029	1500	1500	0.029	2.3	150	0.14	na	1100
			Maximum Contaminant Level (MCL) (ug/L)	na	na	na	na	na	na	na	na	na
			AWQC Human Health for Consumption of Organisms (ug/L)	0.018	140	5300	0.018	na	na	na	na	4000
			Ecological Screening									
			APC & EC Reg. 2									
			Acute	na	na	na	na	na	na	na	na	na
			Chronic	na	na	na	na	na	na	na	na	na
			Federal AWQC									
			CMC (acute)	na	na	na	na	na	na	na	na	na
			CCC (chronic)	na	na	na	na	na	na	na	na	na
			USEPA Region 4									
			Acute	na	398	na	na	na	na	230	na	na
			Chronic	na	39.8	na	na	na	na	62	na	na
			PRG for Ecological Endpoints	na	0.0062	0.0039	na	0.0021	na	0.012	0.0063	na
			Endpoint		aquatic life	aquatic life		aquatic life		aquatic life	aquatic life	

Table 2.0p
Surface Water Data
Metals
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Units	Chromium	Lead
SW-1	2/28/2011	FTN	ug/L	<10	3.1
SW-2	2/24/2011	FTN	ug/L	<10	<5.0
SW-3	2/25/2011	FTN	ug/L	2.9	7.4
SW-4	2/24/2011	FTN	ug/L	<10	<5.0
SW-5	2/24/2011	FTN	ug/L	<10	<5.0
SW-6	2/23/2011	FTN	ug/L	<10	<5.0
SW-7	2/25/2011	FTN	ug/L	<10	4.5
SW-7D	2/25/2011	FTN	ug/L	4.3	3.4
			Number of Detects	2	4
			Number of Analysis	8	8
			Minimum Detect	2.9	3.1
			Maximum Detect	4.3	7.4
			Human Health Screening		
			USEPA RSL Table - Tapwater (ug/L)	na	na
			Maximum Contaminant Level (MCL) (ug/L)	100	15
			AWQC Human Health for Consumption of Organisms (ug/L)	na	na
			Ecological Screening		
			APC & EC Reg. 2		
			Acute	na	na
			Chronic	101	1.17
			Federal AWQC		
			CMC (acute)	na	65
			CCC (chronic)	na	2.5
			USEPA Region 4		
			Acute	na	33.78
			Chronic	na	1.32
			PRG for Ecological Endpoints	0.21	0.0032
			Endpoint	aquatic life	aquatic life

Table 2.0q
Surface Water Data
Total Petroleum Hydrocarbons (TPH)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Units	TPH Gasoline Range	C10-C28 Diesel Range	C28-C40 Oil Range
SW-1	2/28/2011	FTN	ug/L	<100	200	97
SW-2	2/24/2011	FTN	ug/L	<100	110	<100
SW-3	2/25/2011	FTN	ug/L	<100	210	57
SW-4	2/24/2011	FTN	ug/L	<100	87	<100
SW-5	2/24/2011	FTN	ug/L	<100	120	<100
SW-6	2/23/2011	FTN	ug/L		180	<100
SW-6	2/23/2011	FTN	ug/L	<100		
SW-7	2/25/2011	FTN	ug/L	<100	3200	250
SW-7D	2/25/2011	FTN	ug/L	<100	3700	280
			Number of Detects	0	8	4
			Number of Analysis	8	8	8
			Minimum Detect	0	87	57
			Maximum Detect	0	3700	280
			USEPA RSL Table - Tapwater (ug/L)	na	na	na
			Maximum Contaminant Level (MCL) (ug/L)	na	na	na
			ADEQ TPH SL (ug/L)	200	400	700

Table 2.0r
Sediment Data
Volatile Organic Compounds (VOCs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Units	Acetone	Acrylonitrile	Benzene	Bromobenzene	Bromodichloromethane	Bromoform	Bromomethane	n-Butylbenzene
SD-1	3/5/2011	FTN	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050
SD-1-D	3/5/2011	FTN	mg/kg	0.06	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050
SD-2	3/2/2011	FTN	mg/kg	0.06	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050
SD-3	3/2/2011	FTN	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050
SD-4	2/27/2011	FTN	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050
SD-5	2/27/2011	FTN	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050
SD-6	2/27/2011	FTN	mg/kg	<0.25	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050
			Number of Detects	2	0	0	0	0	0	0	0
			Number of Analysis	7	7	7	7	7	7	7	7
			Minimum Detect	0.06	0	0	0	0	0	0	0
			Maximum Detect	0.06	0	0	0	0	0	0	0
			Human Health Screening								
			USEPA RSL Table - Residential Soil (mg/kg)	61000	0.24	1.1	300	0.27	61	7.3	na
			Ecological Screening								
			USEPA Region 4 Ecological SL - Sediment	NA	NA	NA	NA	NA	NA	NA	NA
			USEPA Region 5 Ecological SL - Sediment	0.0099	0.0012	0.142	NA	NA	0.492	NA	NA
			PRG for Ecological Endpoints	0.0091	NA	0.16	NA	NA	NA	NA	NA

Table 2.0r
Sediment Data
Volatile Organic Compounds (VOCs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Units	sec-Butylbenzene	tert-Butylbenzene	Carbon tetrachloride	Chlorobenzene	Chlorodibromomethane	Chloroethane	2-Chloroethyl vinyl ether	Chloroform
SD-1	3/5/2011	FTN	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025
SD-1-D	3/5/2011	FTN	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025
SD-2	3/2/2011	FTN	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025
SD-3	3/2/2011	FTN	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025
SD-4	2/27/2011	FTN	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025
SD-5	2/27/2011	FTN	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025
SD-6	2/27/2011	FTN	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.25	<0.025
			Number of Detects	0	0	0	0	0	0	0	0
			Number of Analysis	7	7	7	7	7	7	7	7
			Minimum Detect	0	0	0	0	0	0	0	0
			Maximum Detect	0	0	0	0	0	0	0	0
			Human Health Screening								
			USEPA RSL Table - Residential Soil (mg/kg)	na	na	0.61	290	0.68	15000	na	0.29
			Ecological Screening								
			USEPA Region 4 Ecological SL - Sediment	NA	NA	NA	NA	NA	NA	NA	NA
			USEPA Region 5 Ecological SL - Sediment	NA	NA	1.45	0.291	NA	NA	NA	0.121
			PRG for Ecological Endpoints	NA	NA	2	0.417	NA	NA	NA	0.96

Table 2.0r
Sediment Data
Volatile Organic Compounds (VOCs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Units	Chloromethane	2-Chlorotoluene	4-Chlorotoluene	1,2-Dibromo-3-Chloropropane	1,2-Dibromoethane	Dibromomethane	1,2-Dichlorobenzene	1,3-Dichlorobenzene
SD-1	3/5/2011	FTN	mg/kg	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SD-1-D	3/5/2011	FTN	mg/kg	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SD-2	3/2/2011	FTN	mg/kg	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SD-3	3/2/2011	FTN	mg/kg	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SD-4	2/27/2011	FTN	mg/kg	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SD-5	2/27/2011	FTN	mg/kg	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
SD-6	2/27/2011	FTN	mg/kg	<0.013	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050
			Number of Detects	0	0	0	0	0	0	0	0
			Number of Analysis	7	7	7	7	7	7	7	7
			Minimum Detect	0	0	0	0	0	0	0	0
			Maximum Detect	0	0	0	0	0	0	0	0
			Human Health Screening								
			USEPA RSL Table - Residential Soil (mg/kg)	120	1600	5500	0.0054	0.034	25	1900	na
			Ecological Screening								
			USEPA Region 4 Ecological SL - Sediment	NA	NA	NA	NA	NA	NA	NA	NA
			USEPA Region 5 Ecological SL - Sediment	NA	NA	NA	NA	NA	NA	0.294	NA
			PRG for Ecological Endpoints	NA	NA	NA	NA	NA	NA	0.33	1.70

Table 2.0r
Sediment Data
Volatile Organic Compounds (VOCs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Units	1,4-Dichlorobenzene	Dichlorodifluoromethane	1,1-Dichloroethane	1,2-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	1,2-Dichloropropane
SD-1	3/5/2011	FTN	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SD-1-D	3/5/2011	FTN	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SD-2	3/2/2011	FTN	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SD-3	3/2/2011	FTN	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SD-4	2/27/2011	FTN	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SD-5	2/27/2011	FTN	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SD-6	2/27/2011	FTN	mg/kg	<0.0050	<0.025	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
			Number of Detects	0	0	0	0	0	0	0	0
			Number of Analysis	7	7	7	7	7	7	7	7
			Minimum Detect	0	0	0	0	0	0	0	0
			Maximum Detect	0	0	0	0	0	0	0	0
			Human Health Screening								
			USEPA RSL Table - Residential Soil (mg/kg)	2.4	180	3.3	0.43	240	160	150	0.89
			Ecological Screening								
			USEPA Region 4 Ecological SL - Sediment	NA	NA	NA	NA	NA	NA	NA	NA
			USEPA Region 5 Ecological SL - Sediment	0.318	NA	0.00058	0.26	0.26	NA	0.654	0.333
			PRG for Ecological Endpoints	0.35	NA	0.027	4.3	3.5	0.4	0.4	NA

Table 2.0r
Sediment Data
Volatile Organic Compounds (VOCs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Units	1,1-Dichloropropene	1,3-Dichloropropane	cis-1,3-Dichloropropene	trans-1,3-Dichloropropene	2,2-Dichloropropane	Di-isopropyl ether	Ethylbenzene	Hexachloro-1,3-butadiene
SD-1	3/5/2011	FTN	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SD-1-D	3/5/2011	FTN	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SD-2	3/2/2011	FTN	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SD-3	3/2/2011	FTN	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SD-4	2/27/2011	FTN	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SD-5	2/27/2011	FTN	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SD-6	2/27/2011	FTN	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
			Number of Detects	0	0	0	0	0	0	0	0
			Number of Analysis	7	7	7	7	7	7	7	7
			Minimum Detect	0	0	0	0	0	0	0	0
			Maximum Detect	0	0	0	0	0	0	0	0
			Human Health Screening								
			USEPA RSL Table - Residential Soil (mg/kg)	na	1600	na	na	na	1400	5.4	6.2
			Ecological Screening								
			USEPA Region 4 Ecological SL - Sediment	NA	NA	NA	NA	NA	NA	NA	NA
			USEPA Region 5 Ecological SL - Sediment	NA	NA	NA	NA	NA	NA	0.175	0.0265
			PRG for Ecological Endpoints	NA	NA	0.23	0.23	NA	NA	5.4	NA

Table 2.0r
Sediment Data
Volatile Organic Compounds (VOCs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Units	Isopropylbenzene	p-Isopropyltoluene	2-Butanone (MEK)	Methylene Chloride	4-Methyl-2-pentanone (MIBK)	Methyl tert-butyl ether	Naphthalene	n-Propylbenzene
SD-1	3/5/2011	FTN	mg/kg	<0.0050	<0.0050	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
SD-1-D	3/5/2011	FTN	mg/kg	<0.0050	<0.0050	<0.050	<0.025	<0.050	<0.0050	0.0017	<0.0050
SD-2	3/2/2011	FTN	mg/kg	0.003	<0.0050	<0.050	<0.025	<0.050	<0.0050	0.0022	<0.0050
SD-3	3/2/2011	FTN	mg/kg	<0.0050	<0.0050	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
SD-4	2/27/2011	FTN	mg/kg	<0.0050	<0.0050	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
SD-5	2/27/2011	FTN	mg/kg	<0.0050	<0.0050	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
SD-6	2/27/2011	FTN	mg/kg	<0.0050	<0.0050	<0.050	<0.025	<0.050	<0.0050	<0.025	<0.0050
			Number of Detects	1	0	0	0	0	0	2	0
			Number of Analysis	7	7	7	7	7	7	7	7
			Minimum Detect	0.003	0	0	0	0	0	0.0017	0
			Maximum Detect	0.003	0	0	0	0	0	0.0022	0
			Human Health Screening								
			USEPA RSL Table - Residential Soil (mg/kg)	2100	na	28000	11	5300	43	3.6	3400
			Ecological Screening								
			USEPA Region 4 Ecological SL - Sediment	NA	NA	NA	NA	NA	NA	330	NA
			USEPA Region 5 Ecological SL - Sediment	NA	NA	NA	NA	0.025	NA	0.179	NA
			PRG for Ecological Endpoints	NA	NA	0.27	18	15	NA	0.39	NA

Table 2.0r
Sediment Data
Volatile Organic Compounds (VOCs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Units	Styrene	1,1,1,2-Tetrachloroethane	1,1,2,2-Tetrachloroethane	1,1,2-Trichloro-1,2,2-trifluoroethane	Tetrachloroethene	Toluene
SD-1	3/5/2011	FTN	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
SD-1-D	3/5/2011	FTN	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
SD-2	3/2/2011	FTN	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
SD-3	3/2/2011	FTN	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
SD-4	2/27/2011	FTN	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
SD-5	2/27/2011	FTN	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
SD-6	2/27/2011	FTN	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
			Number of Detects	0	0	0	0	0	0
			Number of Analysis	7	7	7	7	7	7
			Minimum Detect	0	0	0	0	0	0
			Maximum Detect	0	0	0	0	0	0
			Human Health Screening						
			USEPA RSL Table - Residential Soil (mg/kg)	6300	1.9	0.56	43000	0.55	5000
			Ecological Screening						
			USEPA Region 4 Ecological SL - Sediment	NA	NA	NA	NA	NA	NA
			USEPA Region 5 Ecological SL - Sediment	0.254	NA	0.85	NA	0.99	1.22
			PRG for Ecological Endpoints	NA	NA	5.4	NA	3.2	0.05

Table 2.0r
Sediment Data
Volatile Organic Compounds (VOCs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Units	1,2,3-Trichlorobenzene	1,2,4-Trichlorobenzene	1,1,1-Trichloroethane	1,1,2-Trichloroethane	Trichloroethene	Trichlorofluoromethane
SD-1	3/5/2011	FTN	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
SD-1-D	3/5/2011	FTN	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
SD-2	3/2/2011	FTN	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
SD-3	3/2/2011	FTN	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
SD-4	2/27/2011	FTN	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
SD-5	2/27/2011	FTN	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
SD-6	2/27/2011	FTN	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.025
			Number of Detects	0	0	0	0	0	0
			Number of Analysis	7	7	7	7	7	7
			Minimum Detect	0	0	0	0	0	0
			Maximum Detect	0	0	0	0	0	0
			Human Health Screening						
			USEPA RSL Table - Residential Soil (mg/kg)	49	22	8700	1.1	2.8	790
			Ecological Screening						
			USEPA Region 4 Ecological SL - Sediment	NA	NA	NA	NA	NA	NA
			USEPA Region 5 Ecological SL - Sediment	NA	5.062	0.213	0.213	0.112	NA
			PRG for Ecological Endpoints	NA	9.7	9.6	9.8	52	NA

Table 2.0r
Sediment Data
Volatile Organic Compounds (VOCs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Units	1,2,3-Trichloropropane	1,2,4-Trimethylbenzene	1,2,3-Trimethylbenzene	1,3,5-Trimethylbenzene	Vinyl chloride	Xylenes, Total
SD-1	3/5/2011	FTN	mg/kg	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
SD-1-D	3/5/2011	FTN	mg/kg	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
SD-2	3/2/2011	FTN	mg/kg	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
SD-3	3/2/2011	FTN	mg/kg	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
SD-4	2/27/2011	FTN	mg/kg	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
SD-5	2/27/2011	FTN	mg/kg	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
SD-6	2/27/2011	FTN	mg/kg	<0.013	<0.0050	<0.0050	<0.0050	<0.0050	<0.015
			Number of Detects	0	0	0	0	0	0
			Number of Analysis	7	7	7	7	7	7
			Minimum Detect	0	0	0	0	0	0
			Maximum Detect	0	0	0	0	0	0
			Human Health Screening						
			USEPA RSL Table - Residential Soil (mg/kg)	0.005	62	na	780	0.06	630
			Ecological Screening						
			USEPA Region 4 Ecological SL - Sediment	NA	NA	NA	NA	NA	NA
			USEPA Region 5 Ecological SL - Sediment	NA	NA	NA	NA	NA	NA
			PRG for Ecological Endpoints	NA	NA	NA	NA	NA	0.16

Table 2.0s
Sediment Data
Polycyclic Aromatic Hydrocarbons (PAHs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Units	Anthracene	Acenaphthene	Acenaphthylene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene
SD-1	FTN	3/11/2011	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SD-1-D	FTN	3/11/2011	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SD-2	FTN	3/6/2011	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SD-3	FTN	3/7/2011	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SD-4	FTN	3/2/2011	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SD-5	FTN	3/2/2011	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SD-6	FTN	3/2/2011	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
			Number of Detects	0	0	0	0	0	0	0	0	0
			Number of Analysis	7	7	7	7	7	7	7	7	7
			Minimum Detect	0	0	0	0	0	0	0	0	0
			Maximum Detect	0	0	0	0	0	0	0	0	0
			Human Health Screening									
			USEPA RSL Table - Residential Soil (mg/kg)	17000	3400	na	0.15	0.015	0.15	na	1.5	15
			Ecological Screening									
			USEPA Region 4 Ecological SL - Sediment	0.33	0.33	0.33	0.33	0.33	0.655	0.655	0.655	0.33
			USEPA Region 5 Ecological SL - Sediment	0.0572	0.00671	0.00587	0.108	0.15	10.4	0.17	0.24	0.166
			PRG for Ecological Endpoints	0.25	0.089	0.13	0.69	0.394	NA	6.3	NA	0.85

Table 2.0s
Sediment Data
Polycyclic Aromatic Hydrocarbons (PAHs)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Units	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	1-Methylnaphthalene	2-Methylnaphthalene	Naphthalene	Phenanthrene	Pyrene
SD-1	FTN	3/11/2011	mg/kg	<0.020	<0.020	<0.020	<0.020	0.028	0.017	<0.020	<0.020	<0.020
SD-1-D	FTN	3/11/2011	mg/kg	<0.020	<0.020	<0.020	<0.020	0.062	0.044	<0.020	<0.020	<0.020
SD-2	FTN	3/6/2011	mg/kg	<0.020	0.9	<0.020	<0.020	0.44	0.064	<0.020	0.32	0.43
SD-3	FTN	3/7/2011	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	0.076	0.051	<0.020	<0.020
SD-4	FTN	3/2/2011	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SD-5	FTN	3/2/2011	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
SD-6	FTN	3/2/2011	mg/kg	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
			Number of Detects	0	1	0	0	3	4	1	1	1
			Number of Analysis	7	7	7	7	7	7	7	7	7
			Minimum Detect	0	0.9	0	0	0.028	0.017	0.051	0.32	0.43
			Maximum Detect	0	0.9	0	0	0.44	0.076	0.051	0.32	0.43
			Human Health Screening									
			USEPA RSL Table - Residential Soil (mg/kg)	0.015	2300	2300	0.15	22	310	3.6	na	1700
			Ecological Screening									
			USEPA Region 4 Ecological SL - Sediment	0.33	0.33	0.33	0.655	NA	0.33	0.33	NA	0.33
			USEPA Region 5 Ecological SL - Sediment	0.033	0.423	0.0774	0.2	NA	0.0202	0.176	0.204	0.195
			PRG for Ecological Endpoints	0.0282	0.834	0.14	0.837	NA	NA	0.39	NA	1.4

Table 2.0t
Sediment Data
Metals
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Units	Chromium	Lead
SD-1	3/8/2011	FTN	mg/kg	3.9	13
SD-1-D	3/8/2011	FTN	mg/kg	4.4	14
SD-2	3/9/2011	FTN	mg/kg	2.3	28
SD-3	3/9/2011	FTN	mg/kg	3	40
SD-4	2/26/2011	FTN	mg/kg	3.5	6.5
SD-5	2/26/2011	FTN	mg/kg	1.2	2.8
SD-6	2/26/2011	FTN	mg/kg	4.1	4.8
			Number of Detects	7	7
			Number of Analysis	7	7
			Minimum Detect	1.2	2.8
			Maximum Detect	4.4	40
			Background Concentration (Shacklette and Boerngen, 1984)	10	10
			Human Health Screening		
			USEPA RSL Table - Residential Soil (mg/kg)	na	400
			Ecological Screening		
			USEPA Region 4 Ecological SL - Sediment	52.3	30.2
			PRG for Ecological Endpoints	159	110

Table 2.0u
Sediment Data
Total Petroleum Hydrocarbons (TPH)
Norphlet Chemical - Norphlet, Arkansas

Sample ID	Sampling Date	Sample Collector	Units	TPH (GC/FID) Low Fraction	C10-C28 Diesel Range	C28-C40 Oil Range
SD-1	3/8/2011	FTN	mg/kg	0.42	810	210
SD-1-D	3/8/2011	FTN	mg/kg	1.1	1000	200
SD-2	3/3/2011	FTN	mg/kg	1.6	1400	640
SD-3	3/3/2011	FTN	mg/kg	2.3	1600	440
SD-4	3/1/2011	FTN	mg/kg	<0.50	<4.0	<4.0
SD-5	3/1/2011	FTN	mg/kg	<0.50	78	15
SD-6	3/1/2011	FTN	mg/kg	<0.50	22	<20
			Number of Detects	4	6	5
			Number of Analysis	7	7	7
			Minimum Detect	0.42	22	15
			Maximum Detect	2.3	1600	640
			Human Health Screening			
			USEPA RSL Table - Residential Soil (mg/kg)	na	na	na
			ADEQ TPH Soil (mg/kg)	440	2300	4500
			Ecological Screening			
			USEPA Region 4 Ecological SL - Sediment	na	na	na
			USEPA Region 5 Ecological SL - Sediment	na	na	na
			PRG for Ecological Endpoints	na	na	na

Table 3.3.1a Chemicals of Potential Concern in Groundwater

Chemical	Maximum Detect	Arithmetic Mean	Recommended 95% Upper Level Confidence Level	Distrubution
Benzene	8	**2.65**	2.08	Nonparametric
Chromium	160	31.5	**77.3**	Nonparametric
Diesel Range Organics	41000	3478	**21086**	Nonparametric
Gasoline Range Organics	24000	2973	**7615**	Nonparametric
Lead	200	29.7	**133**	Nonparametric
1-Methylnaphthalene	20	**5.41**	4.10	Nonparametric
Naphthalene	88	22.0	**68.3**	Nonparametric
Oil Range Organics	3400	471	**1205**	Nonparametric
1,2,4-Trimethylbenzene	290	28.3	**144**	Nonparametric

Concentrations reported in ug/L
Bolded value represents the selected EPC

Table 3.3.1b Chemicals of Potential Concern in Surface Soil (0 – 0.5 ft bgs)

Chemical	Maximum Detect		Arithmetic Mean		Recommended 95% Upper Level Confidence Level		Distrubution
	Hotspot	Non-Hotspot	Hotspot	Non-Hotspot	Hotspot	Non-Hotspot	
Benzo(a)pyrene	**5.7**	ND	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	**2.6**	ND	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	**5.4**	ND	NA	NA	NA	NA	NA
Chromium (hexavalent)	ND	**1.7**	NA	NA	NA	NA	NA
Diesel Range Organics	320	22000	NA	2992	NA	**11967**	Nonparametric
Lead	7.5	690	NA	**29.7**	NA	117	Nonparametric

Concentrations reported in mg/kg
Bolded value represents the selected EPC

Table 3.3.1c Chemicals of Potential Concern in Subsurface Soil (0 – 10 ft bgs)

Chemical	Maximum Detect		Arithmetic Mean		Recommended 95% Upper Level Confidence Level		Distrubution
	Hotspot	Non-Hotspot	Hotspot	Non-Hotspot	Hotspot	Non-Hotspot	
Benzene	ND	0.042	NA	**0.015**	NA	0.00610	Nonparametric
Benzo(a)pyrene	**5.7**	ND	NA	ND	NA	ND	NA
Benzo(b)fluoranthene	**2.6**	ND	NA	ND	NA	ND	NA
Benzo(k)fluoranthene	**5.4**	ND	NA	ND	NA	ND	NA
Chromium (hexavalent)	ND	**1.9**	NA	NA	NA	NA	NA
Diesel Range Organics	320	22000	NA	3406	NA	**6917**	Nonparametric
Gasoline Range Organics	ND	1500	NA	128	NA	**187**	Nonparametric
Isopropylbenzene	ND	2.4	NA	**0.421**	NA	0.146	Nonparametric
Lead	7.5	690	NA	**19.5**	NA	66.1	Nonparametric
Methylene chloride	**0.0033**	0.085	NA	**0.0195**	NA	0.0118	Nonparametric
1-Methylnaphthalene	ND	4.8	NA	**0.884**	NA	0.454	Nonparametric
2-Methylnaphthalene	ND	6.6	NA	**0.865**	NA	0.488	Nonparametric
Naphthalene	ND	6.6	NA	**1.09**	NA	0.480	Nonparametric
1,2,4-Trimethylbenzene	ND	39	NA	2.98	NA	**4.88**	Nonparametric
1,3,5-Trimethylbenzene	ND	27	NA	**2.36**	NA	1.41	Nonparametric

Concentrations reported in mg/kg
Bolded value represents the selected EPC

Table 3.3.1d Chemicals of Potential Concern in Surface Water

Chemical	Maximum Detect	Arithmetic Mean	Recommended 95% Upper Level Confidence Level	Distrubution
Diesel Range Organics	**3700**	658	3826	Nonparametric

Concentrations reported in ug/L
Bolded value represents the selected EPC

TABLE 3.3.2a
VALUES USED FOR DAILY INTAKE CALCULATIONS
Norphlet Chemical
Norphlet, Arkansas

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Soil
Exposure Point: On-Site Soils
Receptor Population: Child-at-play
Receptor Age: Older Child

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	Chemical Concentration in Soil	mg/kg	chemical-specific		
	IR-S	Ingestion Rate of Soil	mg/day	100	USEPA, 2009a	Chronic Daily Intake (CDI) (mg/kg/day) =
	BA	Oral Relative Bioavailability	unitless	1	USEPA, 1989	CS x IR-S x BA x EF x ED x CF x 1/BW x 1/AT
	EF	Exposure Frequency	days/year	30	Judgment	
	ED	Exposure Duration	years	10	USEPA, 2000	
	CF	Conversion Factor	kg/mg	1.00E-06	--	
	BW	Body Weight	kg	45	USEPA, 2000	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	3,650	USEPA, 1989	
Dermal	CS	Chemical Concentration in Soil	mg/kg	chemical-specific		
	CF	Conversion Factor	kg/mg	1.00E-06		CDI (mg/kg/day) =
	SA	Skin Surface Area Available for Contact	cm^2	6000	USEPA, 2008	CS x CF x SA x SSAF x DABS x EF x ED x 1/BW x
	SSAF	Soil to Skin Adherence Factor	mg/cm^2/event	0.3	USEPA, 2004	1/AT
	DABS	Dermal Absorption Factor (Soil)	--	chemical-specific	--	
	EF	Exposure Frequency	days/year	30	Judgment	
	ED	Exposure Duration	years	10	USEPA, 2000	
	BW	Body Weight	kg	45	USEPA, 2000	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	3,650	USEPA, 1989	

TABLE 3.3.2b
VALUES USED FOR DAILY INTAKE CALCULATIONS
Norphlet Chemical
Norphlet, Arkansas

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Air
Exposure Point: On-Site Soils
Receptor Population: Child-at-play
Receptor Age: Older Child

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Inhalation	CA	Chemical Concentration in Air	mg/m^3	(1)	(1)	
	ET	Exposure Time	hrs/day	1	USEPA, 2009b	Exposure Concentration (EC) (mg/m^3) =
	EF	Exposure Frequency	days/year	30	Judgment	CA x ET x EF x ED x 1/AT
	ED	Exposure Duration	years	10	USEPA, 2000	
	AT-C	Averaging Time (Cancer)	(2) hrs/exp period	613,200	USEPA, 2009b	
	AT-N	Averaging Time (Non-Cancer)	(2) hrs/exp period	87,600	USEPA, 2009b	

(1) Air concentrations assumed 0.5 mg/m3 dust in air; air concentration calculated by multiplying dust concentration x soil conc. (mg/kg) x 1E-6 kg/mg
(2) AT = ED in years x 365 days/year x 24 hours/day: hours/exposure period

TABLE 3.3.2c
VALUES USED FOR DAILY INTAKE CALCULATIONS
Norphlet Chemical
Norphlet, Arkansas

Scenario Timeframe: Current
Exposure Medium: Surface Water
Exposure Point: Surface Water
Receptor Population: Child-at-play
Receptor Age: Older Child

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Model Name/ Intake Equation
Dermal	DAevent	Dermal absorbed dose per wading event	mg/cm^2	(1) chemical-specific		
	EV	Events per day	event/day	1	USEPA, 2004	CDI (mg/kg/day) =
	SA	Skin Surface Area Available for Contact	cm^2	13,100	USEPA, 2008	DAevent x EV x ED x EF x SA x 1/BW x 1/AT
	EF	Exposure Frequency	days/year	30	Judgment	
	ED	Exposure Duration	years	10	USEPA, 2000	
	BW	Body Weight	kg	45	USEPA, 2000	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	3,650	USEPA, 1989	

(1) calculated according to methods and assumptions outlined in USEPA, 2004; chemical-specific permeability coefficients from Exhibit 3-1

Skin surface area is from Table 7-7 from the USEPA Child-Specific Exposure Factors Handbook - it is the average of girls and boys and the average of the 6 to <11 and the 11 to <16 child

TABLE 3.3.2d
VALUES USED FOR DAILY INTAKE CALCULATIONS
Norphlet Chemical
Norphlet, Arkansas

Scenario Timeframe: Current
Exposure Medium: Surface Water
Exposure Point: Air
Receptor Population: Child-at-play
Receptor Age: Older Child

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Model Name/ Intake Equation
Inhalation	CA	Chemical Concentration in Air	mg/m^3	chemical-specific		
	ET	Exposure Time	hours/day	1	Judgment	Chronic Daily Intake (CDI) (mg/m^3) =
	EF	Exposure Frequency	days/year	30	Judgment	CA x ET x EF x ED x 1/AT
	ED	Exposure Duration	years	10	USEPA, 1991	
	BW	Body Weight	kg	45	USEPA, 2009a	
	AT-C	Averaging Time (Cancer)	(1) hrs/exp period	613,200	USEPA, 2009b	
	AT-N	Averaging Time (Non-Cancer)	(1) hrs/exp period	87,600	USEPA, 2009b	

(1) AT = ED in years x 365 days/year x 24 hours/day: hours/exposure period

TABLE 3.3.2e
VALUES USED FOR DAILY INTAKE CALCULATIONS
Norphlet Chemical
Norphlet, Arkansas

Scenario Timeframe: Current
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Creek
Receptor Population: Child-at-play
Receptor Age: Older Child

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Model Name/ Intake Equation
Ingestion	CS	Chemical Concentration in Sediment	mg/kg	chemical-specific		
	IR-S	Ingestion Rate of Sediment	mg/day	100	USEPA, 2009a	Chronic Daily Intake (CDI) (mg/kg/day) =
	EF	Exposure Frequency	days/year	30	Judgement	CS x IR-S x EF x ED x CF x 1/BW x 1/AT
	ED	Exposure Duration	years	10	USEPA, 2000	
	CF	Conversion Factor	kg/mg	1.00E-06	--	
	BW	Body Weight	kg	45	USEPA, 2000	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	3,650	USEPA, 1989	
Dermal	DAevent	Dermal absorbed dose per shower/bath	mg/cm^2	(1) chemical-specific		
	EV	Events per day	event/day	1	USEPA, 2004	CDI (mg/kg/day) =
	SA	Skin Surface Area Available for Contact	cm^2	6,000	USEPA, 2008	DAevent x EV x ED x EF x SA x 1/BW x 1/AT
	EF	Exposure Frequency	days/year	30	Judgment	
	ED	Exposure Duration	years	10	USEPA, 2000	
	BW	Body Weight	kg	45	USEPA, 2000	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	3,650	USEPA, 1989	

(1) calculated according to methods and assumptions outlined in USEPA, 2004; assumed wading time is one hour

TABLE 3.3.2f
VALUES USED FOR DAILY INTAKE CALCULATIONS
Norphlet Chemical
Norphlet, Arkansas

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: On-Site Soils
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Model Name/ Intake Equation
Ingestion	CS	Chemical Concentration in Soil	mg/kg	chemical-specific		
	IR-S	Ingestion Rate of Soil	mg/day	100	USEPA, 2009a	Chronic Daily Intake (CDI) (mg/kg/day) =
	EF	Exposure Frequency	days/year	350	USEPA, 2002	CS x IR-S x EF x ED x CF x 1/BW x 1/AT
	ED	Exposure Duration	years	24	USEPA, 1991	
	CF	Conversion Factor	kg/mg	1.00E-06	--	
	BW	Body Weight	kg	70	USEPA, 1991	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	8,760	USEPA, 1989	
Dermal	CS	Chemical Concentration in Soil	mg/kg	chemical-specific		
	CF	Conversion Factor	kg/mg	1.00E-06	--	CDI (mg/kg/day) =
	SA	Skin Surface Area Available for Contac	cm^2	5700	USEPA, 2002	CS x CF x SA x SSAF x DABS x EF x ED x 1/BW x
	SSAF	Soil to Skin Adherence Factor	mg/cm^2/event	0.07	USEPA, 2002	1/AT
	DABS	Dermal Absorption Factor (Soil)	--	chemical-specific	--	
	EF	Exposure Frequency	days/year	350	USEPA, 2002	
	ED	Exposure Duration	years	24	USEPA, 1991	
	BW	Body Weight	kg	70	USEPA, 1991	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	8,760	USEPA, 1989	

TABLE 3.3.2g
VALUES USED FOR DAILY INTAKE CALCULATIONS
Norphlet Chemical
Norphlet, Arkansas

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Air
Exposure Point: Contaminants in soil may be released to air as fugitive dusts or vapors may migrate and be inhaled
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Model Name/ Intake Equation
Inhalation	CA	Chemical Concentration in Air	mg/m^3	(1)	(1)	
	ET	Exposure Time	hrs/day	24	USEPA, 2009b	Chronic Daily Intake (CDI) (mg/m^3) =
	EF	Exposure Frequency	days/year	350	USEPA, 2002	CA x ET x EF x ED x 1/AT
	ED	Exposure Duration	years	24	USEPA, 1991	
	AT-C	Averaging Time (Cancer)	(2) hrs/exp period	613,200	USEPA, 2009b	
	AT-N	Averaging Time (Non-Cancer)	(2) hrs/exp period	210,240	USEPA, 2009b	

(1) Air concentrations assumed 0.0017 mg/m3 dust in air; air concentration calculated by multiplying dust concentration x soil conc. (mg/kg) x 1E-6 kg/mg

(2) AT = ED in years x 365 days/year x 24 hours/day: hours/exposure period

TABLE 3.3.2h
VALUES USED FOR DAILY INTAKE CALCULATIONS
Norphlet Chemical
Norphlet, Arkansas

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: On-site residence
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CW	Chemical Concentration in Water	mg/L			
	IR-W	Ingestion Rate of Water	L/day	2	USEPA, 2009a	Chronic Daily Intake (CDI) (mg/kg/day) =
	EF	Exposure Frequency	days/year	350	USEPA, 2002	CW x IR-W x EF x ED x 1/BW x 1/AT
	ED	Exposure Duration	years	24	USEPA, 1991	
	BW	Body Weight	kg	70	USEPA, 1991	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	8,760	USEPA, 1989	
Dermal	DAevent	Dermal absorbed dose per shower/bath	mg/cm^2	(1) chemical-specific		
	EV	Events per day	event/day	1	USEPA, 2004	CDI (mg/kg/day) =
	SA	Skin Surface Area Available for Contact	cm^2	18,000	USEPA, 2004	DAevent x EV x ED x EF x SA x 1/BW x 1/AT
	EF	Exposure Frequency	days/year	350	USEPA, 2002	
	ED	Exposure Duration	years	24	USEPA, 1991	
	BW	Body Weight	kg	70	USEPA, 1991	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	8,760	USEPA, 1989	

(1) calculated according to methods and assumptions outlined in USEPA, 2004

TABLE 3.3.2i
VALUES USED FOR DAILY INTAKE CALCULATIONS
Norphlet Chemical
Norphlet, Arkansas

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air
Exposure Point: On-site residence
Receptor Population: Resident
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Model Name/ Intake Equation
Inhalation	CA	Chemical Concentration in Air	mg/m^3	(1)	(1)	
	ET	Exposure Time	hours/day	24	USEPA, 2009b	Chronic Daily Intake (CDI) (mg/m^3) =
	EF	Exposure Frequency	days/year	350	USEPA, 2002	CA x ET x EF x ED x 1/AT
	ED	Exposure Duration	years	24	USEPA, 1991	
	AT-C	Averaging Time (Cancer)	(2) hrs/exp period	613,200	USEPA, 2009b	
	AT-N	Averaging Time (Non-Cancer)	(2) hrs/exp period	210,240	USEPA, 2009b	

(1) The air concentration will be modeled using the model described in Section 3 of the RAWP
(2) AT = ED in years x 365 days/year x 24 hours/day: hours/exposure period

TABLE 3.3.2j
VALUES USED FOR DAILY INTAKE CALCULATIONS
Norphlet Chemical
Norphlet, Arkansas

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: On-Site Soils
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	Chemical Concentration in Soil	mg/kg	chemical-specific		
	IR-S	Ingestion Rate of Soil	mg/day	100	USEPA, 2009a	Chronic Daily Intake (CDI) (mg/kg/day) =
	EF	Exposure Frequency	days/year	350	USEPA, 2002	CS x IR-S x EF x ED x CF x 1/BW x 1/AT
	ED	Exposure Duration	years	6	USEPA, 1991	
	CF	Conversion Factor	kg/mg	1.00E-06	--	
	BW	Body Weight	kg	15	USEPA, 2008	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2,190	USEPA, 1989	
Dermal	CS	Chemical Concentration in Soil	mg/kg			
	CF	Conversion Factor	kg/mg	1.00E-06	--	CDI (mg/kg/day) =
	SA	Skin Surface Area Available for Contact	cm^2	2800	USEPA, 2002	CS x CF x SA x SSAF x DABS x EF x ED x 1/BW x
	SSAF	Soil to Skin Adherence Factor	mg/cm^2/event	0.2	USEPA, 2002	1/AT
	DABS	Dermal Absorption Factor (Soil)	--	chemical-specific	--	
	EF	Exposure Frequency	days/year	350	USEPA, 2002	
	ED	Exposure Duration	years	6	USEPA, 1991	
	BW	Body Weight	kg	15	USEPA, 2008	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2,190	USEPA, 1989	

TABLE 3.3.2k
VALUES USED FOR DAILY INTAKE CALCULATIONS
Norphlet Chemical
Norphlet, Arkansas

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Air
Exposure Point: Contaminants in soil may be released to air as fugitive dusts or vapors, migrate and be inhaled
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Model Name/ Intake Equation
Inhalation	CA	Chemical Concentration in Air	mg/m^3	(1)	(1)	
	ET	Exposure Time	hours/day	24	USEPA, 2009b	Chronic Daily Intake (CDI) (mg/m^3) =
	EF	Exposure Frequency	days/year	350	USEPA, 2002	CA x ET x EF x ED x 1/AT
	ED	Exposure Duration	years	6	USEPA, 1991	
	AT-C	Averaging Time (Cancer)	(2) hrs/exp period	613,200	USEPA, 2009b	
	AT-N	Averaging Time (Non-Cancer)	(2) hrs/exp period	52,560	USEPA, 2009b	

(1) Air concentrations assumed 0.0017 mg/m3 dust in air; air concentration calculated by multiplying dust concentration x soil conc. (mg/kg) x 1E-6 kg/mg

(2) AT = ED in years x 365 days/year x 24 hours/day: hours/exposure period

TABLE 3.3.2l
VALUES USED FOR DAILY INTAKE CALCULATIONS
Norphlet Chemical
Norphlet, Arkansas

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: On-site residence
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CW	Chemical Concentration in Water	mg/L			
	IR-W	Ingestion Rate of Water	L/day	1	USEPA, 2009a	Chronic Daily Intake (CDI) (mg/kg/day) =
	EF	Exposure Frequency	days/year	350	USEPA, 2002	CW x IR-W x EF x ED x CF x 1/BW x 1/AT
	ED	Exposure Duration	years	6	USEPA, 1991	
	BW	Body Weight	kg	15	USEPA, 2008	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2,190	USEPA, 1989	
Dermal	DAevent	Dermal absorbed dose per shower/bath	mg/cm^2	(1) chemical-specific	USEPA, 2004	
	EV	Events per day	event/day	1	USEPA, 2004	CDI (mg/kg/day) =
	SA	Skin Surface Area Available for Contact	cm^2	6,600	USEPA, 2004	DAevent x EV x ED x EF x SA x 1/BW x 1/AT
	EF	Exposure Frequency	days/year	350	USEPA, 2002	
	ED	Exposure Duration	years	6	USEPA, 1991	
	BW	Body Weight	kg	15	USEPA, 2008	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2,190	USEPA, 1989	

(1) calculated according to methods and assumptions outlined in USEPA, 2004

TABLE 3.3.2m
VALUES USED FOR DAILY INTAKE CALCULATIONS
Norphlet Chemical
Norphlet, Arkansas

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Air
Exposure Point: On-site residence
Receptor Population: Resident
Receptor Age: Child

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Model Name/ Intake Equation
Inhalation	CA	Chemical Concentration in Air	mg/m^3	(1)	(1)	
	ET	Exposure Time	hours/day	24	USEPA, 2009b	Chronic Daily Intake (CDI) (mg/m^3) =
	EF	Exposure Frequency	days/year	350	USEPA, 2002	CA x ET x EF x ED x 1/AT
	ED	Exposure Duration	years	6	USEPA, 1991	
	AT-C	Averaging Time (Cancer)	(2) hrs/exp period	613,200	USEPA, 2009b	
	AT-N	Averaging Time (Non-Cancer)	(2) hrs/exp period	52,560	USEPA, 2009b	

(1) The air concentration will be modeled using the model described in Section 3 of the RAWP
(2) AT = ED in years x 365 days/year x 24 hours/day: hours/exposure period

TABLE 3.3.2n
VALUES USED FOR DAILY INTAKE CALCULATIONS
Norphlet Chemical
Norphlet, Arkansas

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: On-Site Soils
Receptor Population: Commercial/Industrial Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	Chemical Concentration in Soil	mg/kg	chem-specific		
	IR-S	Ingestion Rate of Soil	mg/day	100	USEPA, 2009a	Chronic Daily Intake (CDI) (mg/kg/day) =
	EF	Exposure Frequency	days/year	250	USEPA, 2002	CS x IR-S x EF x ED x CF x 1/BW x 1/AT
	ED	Exposure Duration	years	25	USEPA, 1991	
	CF	Coversion Factor	kg/mg	1.00E-06	--	
	BW	Body Weight	kg	70	USEPA, 1991	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	9,125	USEPA, 1989	
Dermal	CS	Chemical Concentration in Soil	mg/kg	chem-specific		
	CF	Conversion Factor	kg/mg	1.00E-06		CDI (mg/kg/day) =
	SA	Skin Surface Area Available for Contact	cm^2	3300	USEPA, 2002	CS x CF x SA x SSAF x DABS x EF x ED x 1/BW x
	SSAF	Soil to Skin Adherence Factor	mg/cm^2/event	0.2	USEPA, 2002	1/AT
	DABS	Dermal Absorption Factor (Soil)	--	chemical specific	--	
	EF	Exposure Frequency	days/year	250	USEPA, 2002	
	ED	Exposure Duration	years	25	USEPA, 1991	
	BW	Body Weight	kg	70	USEPA,1991	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	9,125	USEPA, 1989	

TABLE 3.3.2o
VALUES USED FOR DAILY INTAKE CALCULATIONS
Norphlet Chemical
Norphlet, Arkansas

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Outdoor Air
Exposure Point: On-Site Soils
Receptor Population: Commercial/Industrial Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Inhalation	CA	Chemical Concentration in Air	mg/m^3	(1)	(1)	
	ET	Exposure Time	hours/day	8	USEPA, 2009b	Chronic Daily Intake (CDI) (mg/m^3) =
	EF	Exposure Frequency	days/year	250	USEPA, 2002	CA x ET x EF x ED x 1/AT
	ED	Exposure Duration	years	25	USEPA, 1991	
	AT-C	Averaging Time (Cancer)	(2) hrs/exp period	613,200	USEPA, 2009b	
	AT-N	Averaging Time (Non-Cancer)	(2) hrs/exp period	219,000	USEPA, 2009b	

(1) Air concentrations assumed 0.0017 mg/m3 dust in air; air concentration calculated by multiplying dust concentration x soil conc. (mg/kg) x 1E-6 mg/kg

(2) AT = ED in years x 365 days/year x 24 hours/day: hours/exposure period

TABLE 3.3.2p
VALUES USED FOR DAILY INTAKE CALCULATIONS
Norphlet Chemical
Norphlet, Arkansas

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Soil
Exposure Point: Soils in working areas of site
Receptor Population: Construction Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS	Chemical Concentration in Soil	mg/kg			
	IR-S	Ingestion Rate of Soil	mg/day	330	USEPA, 2002	Chronic Daily Intake (CDI) (mg/kg/day) =
	EF	Exposure Frequency	days/year	250	USEPA, 2002	CS x IR-S x EF x ED x CF x 1/BW x 1/AT
	ED	Exposure Duration	years	1	USEPA, 2002	
	CF	Conversion Factor	kg/mg	1.00E-06	--	
	BW	Body Weight	kg	70	USEPA, 1991	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	365	USEPA, 1989	
Dermal	CS	Chemical Concentration in Soil	mg/kg			
	CF	Conversion Factor	kg/mg	1.00E-06		CDI (mg/kg/day) =
	SA	Skin Surface Area Available for Contac	cm^2	3300	USEPA, 2002	CS x CF x SA x SSAF x DABS x EF x ED x 1/BW x
	SSAF	Soil to Skin Adherence Factor	$mg/cm^2/event$	0.3	USEPA, 2002	1/AT
	DABS	Dermal Absorption Factor (Soil)	--	chemical-specific	--	
	EF	Exposure Frequency	days/year	250	USEPA, 2002	
	ED	Exposure Duration	years	1	USEPA, 2002	
	BW	Body Weight	kg	70	USEPA, 1991	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	365	USEPA, 1989	

TABLE 3.3.2q
VALUES USED FOR DAILY INTAKE CALCULATIONS
Norphlet Chemical
Norphlet, Arkansas

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Outdoor Air
Exposure Point: On-Site Soils
Receptor Population: Construction Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	Intake Equation/ Model Name
Inhalation	CA	Chemical Concentration in Air	mg/m^3	(1)	(1)	
	ET	Exposure Time	hours/day	8	USEPA, 2009b	Chronic Daily Intake (CDI) (mg/m^3) =
	EF	Exposure Frequency	days/year	250	USEPA, 1991	CA x ET x EF x ED x 1/AT
	ED	Exposure Duration	years	1	USEPA, 2002	
	AT-C	Averaging Time (Cancer)	(2) hrs/exp period	613,200	USEPA, 2009b	
	AT-N	Averaging Time (Non-Cancer)	(2) hrs/exp period	8,760	USEPA, 2009b	

(1) Air concentrations assumed 0.5 mg/m3 dust in air; air concentration calculated by multiplying dust concentration x soil conc. (mg/kg) x 1E-6 mg/kg

(2) AT = ED in years x 365 days/year x 24 hours/day: hours/exposure period

Table 3.3.2r Current Trespasser: Exposure to Surface Soil (Direct Contact) – Hotspot

		ADI			LADI		
Constituent	Exposure Point Concentration	Ingestion	Dermal Contact	Inhalation*	Ingestion	Dermal Contact	Inhalation*
Benzo(a)pyrene	5.7	1.04E-06	2.44E-06	NA	1.49E-07	3.48E-07	NA
Benzo(b)fluoranthene	2.6	4.75E-07	1.11E-06	NA	6.78E-08	1.59E-07	NA
Benzo(k)fluoranthene	5.4	9.86E-07	2.31E-06	NA	1.41E-07	3.30E-07	NA

EPCs reported in units of mg/kg
Ingestion and dermal ADI and LADI reported as mg/kg/day
Inhalation Average Exposure Concentration is reported as mg/m^3

Table 3.3.2s Current Trespasser: Exposure to Surface Soil (Direct Contact) – Non-Hotspot

		ADI			LADI		
Constituent	Exposure Point Concentration	Ingestion	Dermal Contact	Inhalation*	Ingestion	Dermal Contact	Inhalation*
Chromium (hexavalent)	1.7	3.11E-07	NA	1.21E-09	4.44E-08	NA	1.21E-09
Diesel Range Organics	11967	NA	NA	NA	NA	NA	NA

EPCs reported in units of mg/kg
Ingestion and dermal ADI and LADI reported as mg/kg/day
Inhalation Average Exposure Concentration is reported as mg/m^3

Table 3.3.2t Future Indoor Commercial/Industrial Worker: Exposure to Groundwater

		ADI	LADI
Constituent	Exposure Point Concentration	Ingestion (Direct Contact)	Ingestion (Direct Contact)
Benzene	2.65	2.59E-05	9.26E-06
Chromium	77.3	7.56E-04	2.70E-04
Diesel Range Organics	21086	NA	NA
Gasoline Range Organics	7615	NA	NA
Lead	133	NA	NA
1-Methylnaphthalene	5.41	5.29E-05	1.89E-05
Naphthalene	68.3	6.68E-04	2.39E-04
Oil Range Organics	1205	NA	NA
1,2,4-Trimethylbenzene	144	1.4E-03	5.0E-04

EPCs reported in units of ug/L
Ingestion ADI and LADI reported as mg/kg/day
Inhalation ADI and LADI reported as mg/m^3

Table 3.3.2u Future Indoor Commercial/Industrial Worker: Exposure to Surface Soil (Direct Contact) – Hotspot

		ADI			LADI		
Constituent	Exposure Point Concentration	Ingestion	Dermal Contact	Inhalation*	Ingestion	Dermal Contact	Inhalation*
Benzo(a)pyrene	5.7	5.58E-06	4.79E-06	NA	1.99E-06	1.71E-06	NA
Benzo(b)fluoranthene	2.6	2.54E-06	2.18E-06	NA	9.09E-07	7.80E-07	NA
Benzo(k)fluoranthene	5.4	5.28E-06	4.53E-06	NA	1.89E-06	1.62E-06	NA

EPCs reported in units of mg/kg
Ingestion and dermal ADI and LADI reported as mg/kg/day
Inhalation Average Exposure Concentration is reported as mg/m^3

Table 3.3.2v Future Indoor Commercial/Industrial Worker: Exposure to Surface Soil (Direct Contact) – Non-Hotspot

		ADI			LADI		
Constituent	Exposure Point Concentration	Ingestion	Dermal Contact	Inhalation*	Ingestion	Dermal Contact	Inhalation*
Chromium (hexavalent)	1.7	1.66E-06	NA	1.21E-09	5.94E-07	NA	1.21E-09
Diesel Range Organics	11967	NA	NA	NA	NA	NA	NA

EPCs reported in units of mg/kg
Ingestion and dermal ADI and LADI reported as mg/kg/day
Inhalation Average Exposure Concentration is reported as mg/m^3

Table 3.3.2w Future Construction Worker: Exposure to Subsurface Soil (Direct Contact) – Hotspot

		ADI			LADI		
Constituent	Exposure Point Concentration	Ingestion	Dermal Contact	Inhalation*	Ingestion	Dermal Contact	Inhalation*
Benzo(a)pyrene	5.7	1.8E-05	7.18E-06	NA	2.63E-07	1.03E-07	NA
Benzo(b)fluoranthene	2.6	8.4E-06	3.27E-06	NA	1.20E-07	4.68E-08	NA
Benzo(k)fluoranthene	5.4	1.7E-05	6.80E-06	NA	2.49E-07	9.72E-08	NA
Methylene chloride	0.0033	1.1E-08	NA	2.3E-04	1.5E-10	NA	2.3E-04

EPCs reported in units of mg/kg
Ingestion and dermal ADI and LADI reported as mg/kg/day
Inhalation Average Exposure Concentration is reported as mg/m^3

Table 3.3.2x Future Construction Worker: Exposure to Subsurface Soil (Direct Contact) – Non- Hotspot

		ADI			LADI		
Constituent	Exposure Point Concentration	Ingestion	Dermal Contact	Inhalation*	Ingestion	Dermal Contact	Inhalation*
Benzene	0.015	4.8E-08	3.4E-09	6.4E-04	6.9E-10	4.8E-11	6.4E-04
Chromium (hexavalent)	1.8	6.1E-06	NA	9.0E-07	8.3E-08	NA	9.0E-07
Diesel Range Organics	6917	NA	NA	NA	NA	NA	NA
Gasoline Range Organics	187	NA	NA	NA	NA	NA	NA
Isopropylbenzene	0.421	1.4E-06	NA	1.0E-02	1.9E-08	NA	1.0E-02
Methylene chloride	0.0195	6.3E-08	NA	1.4E-03	9.0E-10	NA	1.4E-03
1-Methylnaphthalene	0.884	2.9E-06	2.0E-07	2.3E-03	4.1E-08	2.9E-09	2.3E-03
2-Methylnaphthalene	0.865	2.8E-06	7.8E-08	2.3E-03	4.0E-08	1.1E-09	2.3E-03
Naphthalene	1.09	3.5E-06	2.5E-07	3.6E-03	5.0E-08	3.5E-09	3.6E-03
1,2,4-Trimethylbenzene	4.88	1.6E-05	NA	9.3E-02	2.3E-07	NA	9.3E-02
1,3,5-Trimethylbenzene	2.36	7.6E-06	NA	5.4E-02	1.1E-07	NA	5.4E-02

EPCs reported in units of mg/kg
Ingestion and dermal ADI and LADI reported as mg/kg/day
Inhalation Average Exposure Concentration is reported as mg/m^3

Table 3.3.2y Future Child Resident: Exposure to Groundwater (Direct Contact)

		ADI			LADI		
Constituent	Exposure Point Concentration	Ingestion	Dermal Contact	Inhalation*	Ingestion	Dermal Contact	Inhalation*
Benzene	2.65	1.69E-04	1.90E-05	1.30E-03	1.45E-05	1.62E-06	1.09E-04
Chromium	77.3	4.94E-03	3.78E-05	NA	4.24E-04	3.24E-06	NA
Diesel Range Organics	21086	NA	NA	NA	NA	NA	NA
Gasoline Range Organics	7615	NA	NA	NA	NA	NA	NA
Lead	133	NA	NA	NA	NA	NA	NA
1-Methylnaphthalene	5.41	3.46E-04	3.66E-04	2.60E-03	2.96E-05	3.13E-05	2.22E-04
Naphthalene	68.3	4.37E-03	2.11E-03	3.30E-02	3.74E-04	1.81E-04	2.81E-03
Oil Range Organics	1205	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	144	9.2E-03	7.8E-03	6.9E-02	7.9E-04	6.7E-04	5.9E-03

EPCs reported in units of ug/L
Ingestion and dermal ADI and LADI reported as mg/kg/day
Inhalation Average Exposure Concentration is reported as mg/m^3

Table 3.3.2z Future Adult Resident: Exposure to Groundwater (Direct Contact)

		ADI			LADI		
Constituent	Exposure Point Concentration	Ingestion	Dermal Contact	Inhalation*	Ingestion	Dermal Contact	Inhalation*
Benzene	2.65	7.26E-05	1.11E-05	1.30E-03	2.49E-05	3.80E-06	4.36E-04
Chromium	77.3	2.12E-03	2.21E-05	NA	7.26E-04	7.58E-06	NA
Diesel Range Organics	21086	NA	NA	NA	NA	NA	NA
Gasoline Range Organics	7615	NA	NA	NA	NA	NA	NA
Lead	133	NA	NA	NA	NA	NA	NA
1-Methylnaphthalene	5.41	1.48E-04	2.14E-04	2.60E-03	5.08E-05	7.33E-05	8.89E-04
Naphthalene	68.3	1.87E-03	1.23E-03	3.30E-02	6.42E-04	4.23E-04	1.12E-02
Oil Range Organics	1205	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	144	3.9E-03	4.5E-03	6.9E-02	1.4E-03	1.6E-03	2.4E-02

EPCs reported in units of ug/L
Ingestion and dermal ADI and LADI reported as mg/kg/day
Inhalation Average Exposure Concentration is reported as mg/m^3

Table 3.3.2aa Future Resident: Exposure to Surface Soil (Direct Contact) – Hotspot

		ADI			LADI		
Constituent	Exposure Point Concentration	Ingestion	Dermal Contact	Inhalation*	Ingestion	Dermal Contact	Inhalation*
Benzo(a)pyrene (0-2)	5.7	7.29E-05	2.65E-05	NA	2.08E-06	7.58E-07	NA
Benzo(a)pyrene (2-6)	5.7	7.29E-05	2.65E-05	NA	4.16E-06	1.52E-06	NA
Benzo(a)pyrene (6-16)	5.7	7.81E-06	4.05E-06	NA	1.12E-06	5.79E-07	NA
Benzo(a)pyrene (16-30)	5.7	7.81E-06	4.05E-06	NA	1.56E-06	8.10E-07	NA
Benzo(b)fluoranthene (0-2)	2.6	3.32E-05	1.21E-05	NA	9.50E-07	3.46E-07	NA
Benzo(b)fluoranthene (2-6)	2.6	3.32E-05	1.21E-05	NA	1.90E-06	6.91E-07	NA
Benzo(b)fluoranthene (6-16)	2.6	3.56E-06	1.85E-06	NA	5.09E-07	2.64E-07	NA
Benzo(b)fluoranthene (16-30)	2.6	3.56E-06	1.85E-06	NA	7.12E-07	3.70E-07	NA
Benzo(k)fluoranthene (0-2)	5.4	6.90E-05	2.51E-05	NA	1.97E-06	7.18E-07	NA
Benzo(k)fluoranthene (2-6)	5.4	6.90E-05	2.51E-05	NA	3.95E-06	1.44E-06	NA
Benzo(k)fluoranthene (6-16)	5.4	7.40E-06	3.84E-06	NA	1.06E-06	5.48E-07	NA
Benzo(k)fluoranthene (16-30)	5.4	7.40E-06	3.84E-06	NA	1.48E-06	7.67E-07	NA

EPCs reported in units of mg/kg
Ingestion and dermal ADI and LADI reported as mg/kg/day
Inhalation Average Exposure Concentration is reported as mg/m^3

Table 3.3.2bb Future Child Resident: Exposure to Surface Soil (Direct Contact) – Non-Hotspot

		ADI			LADI		
Constituent	Exposure Point Concentration	Ingestion	Dermal Contact	Inhalation*	Ingestion	Dermal Contact	Inhalation*
Diesel Range Organics	11967	NA	NA	NA	NA	NA	NA
Chromium (hexavalent)	1.7	2.17E-05	NA	1.21E-09	1.86E-06	NA	1.21E-09

EPCs reported in units of mg/kg
Ingestion and dermal ADI and LADI reported as mg/kg/day
Inhalation Average Exposure Concentration is reported as mg/m^3

Table 3.3.2cc Future Adult Resident: Exposure to Surface Soil (Direct Contact) – Non-Hotspot

		ADI			LADI		
Constituent	Exposure Point Concentration	Ingestion	Dermal Contact	Inhalation*	Ingestion	Dermal Contact	Inhalation*
Diesel Range Organics	11967	NA	NA	NA	NA	NA	NA
Chromium (hexavalent)	1.7	2.33E-06	NA	1.21E-09	7.98E-07	NA	1.21E-09

EPCs reported in units of mg/kg
Ingestion and dermal ADI and LADI reported as mg/kg/day
Inhalation Average Exposure Concentration is reported as mg/m^3

TABLE 4.1a
NON-CANCER TOXICITY DATA -- ORAL/DERMAL
FORMER NORPHLET CHEMICAL, INC
NORPHLET, ARKANSAS

Chemical	Chronic/ Subchronic	Oral RfD	Units	GI ABS	Dermal RfD (1)	Units	Sources of RfD	Dates of RfD (2)
Benzene	Chronic	4.0E-03	mg/kg/day	1	4.0E-03	mg/kg/day	USEPA	November 2010
	Subchronic	1.0E-02	mg/kg/day	1	1.0E-02	mg/kg/day	PROV	November 2010
Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	USEPA	November 2010
Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	USEPA	November 2010
Benzo(k)fluoranthene	NA	NA	NA	NA	NA	NA	USEPA	November 2010
Chromium (hexavalent)	Chronic	3.0E-03	mg/kg/day	0.025	7.5E-05	mg/kg/day	USEPA	November 2010
	Subchronic	2.0E-02	mg/kg/day	1	2.0E-02	mg/kg/day	HEAST	November 2010
Isopropylbenzene	Chronic	1.0E-01	mg/kg/day	1	1.0E-01	mg/kg/day	USEPA	November 2010
	Subchronic	4.0E-01	mg/kg/day	1	4.0E-01	mg/kg/day	USEPA	November 2010
Methylene chloride	Chronic	6.0E-02	mg/kg/day	1	6.0E-02	mg/kg/day	USEPA	November 2010
	Subchronic	6.0E-02	mg/kg/day	1	6.0E-02	mg/kg/day	HEAST	November 2010
1-Methylnaphthalene	Chronic	7.0E-02	mg/kg/day	1	7.0E-02	mg/kg/day	USEPA	November 2010
2-Methylnaphthalene	Chronic	4.0E-03	mg/kg/day	1	4.0E-03	mg/kg/day	USEPA	November 2010
	Subchronic	4.0E-03	mg/kg/day	1	4.0E-03	mg/kg/day	PROV	November 2010
Naphthalene	Chronic	2.0E-02	mg/kg/day	1	2.0E-02	mg/kg/day	USEPA	November 2010
1,2,4-Trimethylbenzene	Chronic	NA	NA	1	NA	NA	USEPA	November 2010
1,3,5-Trimethylbenzene	Chronic	1.0E-02	mg/kg/day	1	1.0E-02	mg/kg/day	USEPA	November 2010
	Subchronic	1.0E-01	mg/kg/day	1	1.0E-01	mg/kg/day	USEPA	November 2010

NA = Not Available
USEPA = USEPA Regional Screening Levels (RSLs) Table, 2010

(1) Dermal RfD calculated by multiplying the oral RfD by the gastrointestinal absorption (GI ABS)
(2) Date source was searched or last updated

TABLE 4.1b
NON-CANCER TOXICITY DATA -- INHALATION
FORMER NORPHLET CHEMICAL, INC
NORPHLET, ARKANSAS

Chemical	Chronic/ Subchronic	Inhalation RfC	Units	Sources of RfC	Dates of RfC (1)
Benzene	Chronic	3.0E-02	mg/m3	USEPA	November 2010
	Subchronic	8.0E-02	mg/m3	PROV	November 2010
Benzo(a)pyrene	NA	NA	NA		November 2010
Benzo(b)fluoranthene	NA	NA	NA		November 2010
Benzo(k)fluoranthene	NA	NA	NA		November 2010
Chromium (hexavalent)	Chronic	1.0E-04	mg/m3	USEPA	November 2010
	Subchronic	1.0E-04	mg/m3		November 2010
Isopropylbenzene	Chronic	4.0E-01	mg/m3	USEPA	November 2010
	Subchronic	4.0E-01	mg/m4	USEPA	November 2010
Methylene chloride	Chronic	1.0E+00	mg/m3	ATSDR	November 2010
	Subchronic	3.0E+00	mg/m3	HEAST	November 2010
1-Methylnaphthalene	Chronic	NA	NA		November 2010
2-Methylnaphthalene	Chronic	NA	NA		November 2010
Naphthalene	Chronic	3.0E-03	mg/m3	USEPA	November 2010
	Subchronic	3.0E-03	mg/m3		November 2010
1,2,4-Trimethylbenzene	Chronic	7.0E-03	mg/m3	PROV	November 2010
	Subchronic	7.0E-02	mg/m3	PROV	November 2010
1,3,5-Trimethylbenzene	Chronic	6.0E-03	mg/m3	PROV	November 2010
	Subchronic	1.0E-02	mg/m3	PROV	November 2010

NA = Not Available
USEPA = USEPA Regional Screening Levels (RSLs) Table, 2010

(1) Date source was searched or last updated

TABLE 4.2a
CANCER TOXICITY DATA -- ORAL/DERMAL
FORMER NORPHLET CHEMICAL, INC
NORPHLET, ARKANSAS

Chemical	Oral Cancer Slope Factor (kg-day/mg)	GI ABS	Dermal Cancer Slope Factor (kg-day/mg) (1)	Weight of Evidence/ Cancer Guideline Description	Primary Target Organ	Source of SF	Dates of SF (2)
Benzene	5.5E-02	1	5.5E-02	A	Hematopoietic	USEPA	April 2011
Benzo(a)pyrene	7.3E+00	1	7.3E+00	B2	Skin/Lung	USEPA	April 2011
Benzo(b)fluoranthene	7.3E-01	1	7.3E-01	B2	Skin/Lung	USEPA	April 2011
Benzo(k)fluoranthene	7.3E-02	1	7.3E-02	B2	Skin/Lung	USEPA	April 2011
Chromium (hexavalent)	5.0E-01	0.025	2.0E+01	A	Nasal	USEPA	April 2011
Isopropylbenzene	NA	1	NA	NA	NA	USEPA	April 2011
Methylene chloride	7.5E-03	1	7.5E-03	NA	Liver	USEPA	April 2011
1-Methylnaphthalene	2.9E-02	1	2.9E-02	B2	Skin/Lung	USEPA	April 2011
2-Methylnaphthalene	NA	1	NA	NA	NA	USEPA	April 2011
Naphthalene	NA	1	NA	C	Skin/Lung	USEPA	April 2011
1,2,4-Trimethylbenzene	NA	1	NA	NA	NA	USEPA	April 2011
1,3,5-Trimethylbenzene	NA	1	NA	NA	NA	USEPA	April 2011

NA - Not available
USEPA = USEPA RSL Table

(1) Dermal RfD calculated by dividing the oral RfD by the gastrointestinal absorption (GI ABS)

(2) Date IRIS was searched.

USEPA Group:
A - Human carcinogen
B1 - Probable human carcinogen - indicates that limited human data are available
B2 - Probable human carcinogen - indicates sufficient evidence in animals and inadequate or no evidence in humans
C - Possible human carcinogen
D - Not classifiable as a human carcinogen
E - Evidence of noncarcinogenicity

TABLE 4.2b
CANCER TOXICITY DATA -- INHALATION
FORMER NORPHLET CHEMICAL, INC
NORPHLET, ARKANSAS

Chemical	Unit Risk $(ug/m^3)^{-1}$	Weight of Evidence/ Cancer Guideline Description	Target Organ	Source	Date (1)
Benzene	7.8E-06	A	Hematopoietic	USEPA	April 2011
Benzo(a)pyrene	1.1E-03	B2	Skin/Lung	USEPA	April 2011
Benzo(b)fluoranthene	1.1E-04	B2	Skin/Lung	USEPA	April 2011
Benzo(k)fluoranthene	1.1E-04	B2	Skin/Lung	USEPA	April 2011
Chromium (hexavalent)	8.4E-02	A	Nasal	USEPA	April 2011
Isopropylbenzene	NA	NA	NA	USEPA	April 2011
Methylene chloride	4.7E-07	NA	Liver	USEPA	April 2011
1-Methylnaphthalene	NA	B2	Skin/Lung	USEPA	April 2011
2-Methylnaphthalene	NA	NA	NA	USEPA	April 2011
Naphthalene	3.4E-05	C	Skin/Lung	USEPA	April 2011
1,2,4-Trimethylbenzene	NA	NA	NA	USEPA	April 2011
1,3,5-Trimethylbenzene	NA	NA	NA	USEPA	April 2011

NA - Not Available
USEPA = USEPA RSL Table

(1) Date source was searched or last updated

USEPA Group:
A - Human carcinogen
B1 - Probable human carcinogen - indicates that limited human data are available
B2 - Probable human carcinogen - indicates sufficient evidence in animals and inadequate or no evidence in humans
C - Possible human carcinogen
D - Not classifiable as a human carcinogen
E - Evidence of noncarcinogenicity

Table 5.0a Current Trespasser: Exposure to Chemicals in Surface Soil (Direct Contact) - Hotspot

		HQ				LCR			
Constituent	Exposure Point Concentration	Ingestion	Dermal Contact	Inhalation	Total for Chemical	Ingestion	Dermal Contact	Inhalation	Total for Chemical
Benzo(a)pyrene	5.7	NA	NA	NA	NA	3.26E-06	7.62E-06	6.57E-12	1.09E-05
Benzo(b)fluoranthene	2.6	NA	NA	NA	NA	1.49E-07	3.48E-07	3.00E-13	4.96E-07
Benzo(k)fluoranthene	5.4	NA	NA	NA	NA	3.09E-08	7.22E-08	6.23E-13	1.03E-07
Chromium (hexavalent)	ND	NA	NA	NA	NA	NA	NA	NA	NA
Diesel Range Organics	320	NA	NA	NA	NA	NA	NA	NA	NA
Lead	7.5	NA	NA	NA	NA	NA	NA	NA	NA
Summed Risk for Exposure Pathway						3E-06	8E-06	7E-12	
Summed Risk			NA				1E-05		

EPCs reported in units of mg/kg

NA - not available; noncancer or cancer toxicity values not available for calculating risk

Table 5.0b Current Trespasser: Exposure to Chemicals in Surface Soil (Direct Contact) – Non-Hotspot

		HQ				LCR			
Constituent	Exposure Point Concentration	Ingestion	Dermal Contact	Inhalation	Total for Chemical	Ingestion	Dermal Contact	Inhalation	Total for Chemical
Benzo(a)pyrene	ND	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	ND	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	ND	NA	NA	NA	NA	NA	NA	NA	NA
Chromium (hexavalent)	1.7	1.04E-04	NA	4.16E-08	1.04E-04	2.22E-08	NA	4.99E-11	2.22E-08
Diesel Range Organics	11967	NA	NA	NA	NA	NA	NA	NA	NA
Lead	117	NA	NA	NA	NA	NA	NA	NA	NA
Summed Risk for Exposure Pathway		1.0E-04	NA	4.2E-08		2E-08	NA	5E-11	
Summed Risk			1E-04				2E-08		

EPCs reported in units of mg/kg

NA - not available; noncancer or cancer toxicity values not available for calculating risk

Table 5.0c Future Indoor Commercial/Industrial Worker: Exposure to Chemicals in Groundwater

		*HQ			**LCR		
Constituent	Exposure Point Concentration	Ingestion (Direct Contact)	Inhalation (Vapor Intrusion)	Total for Chemical	Ingestion (Direct Contact)	Inhalation (Vapor Intrusion)	Total for Chemical
Benzene	2.65	6.50E-03	9.6E-03	1.61E-02	5.09E-07	8.0E-08	5.89E-07
Chromium	77.3	2.50E-11	NV	2.50E-11	1.35E-04	NV	1.35E-04
Diesel Range Organics	21086	NA	NA	NA	NA	NA	NA
Gasoline Range Organics	7615	NA	NA	NA	NA	NA	NA
Lead	133	NA	NV	NA	NA	NV	NA
1-Methylnaphthalene	5.41	7.60E-04	NA	7.60E-04	5.48E-07	NA	5.48E-07
Naphthalene	68.3	3.30E-02	1.4E-02	4.70E-02	NA	5.1E-07	5.10E-07
Oil Range Organics	1205	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	144	NA	1.6E-01	1.60E-01	NA	NA	NA
Summed Risk for Exposure Pathway		4.0E-02	1.8E-01		1E-04	5.9E-07	
Summed Risk		2.2E-01			1E-04		

EPCs reported in units of ug/L
NA - not available; no reference concentration or inhalation unit risk factor
NV - not volatile; chemical does not volatilize and migrate into indoor air
*Calculations represent child resident exposure
**Calculations represent combined adult and child exposures

Table 5.0d Future Outdoor Commercial/Industrial Worker: Exposure to Chemicals in Surface Soil (Direct Contact) – Hotspot

		HQ				LCR			
Constituent	Exposure Point Concentration	Ingestion	Dermal Contact	Inhalation	Total for Chemical	Ingestion	Dermal Contact	Inhalation	Total for Chemical
Benzo(a)pyrene	5.7	NA	NA	NA	NA	1.45E-05	1.25E-05	3.65E-10	2.70E-05
Benzo(b)fluoranthene	2.6	NA	NA	NA	NA	6.63E-07	5.69E-07	1.67E-11	1.23E-06
Benzo(k)fluoranthene	5.4	NA	NA	NA	NA	1.38E-07	1.18E-07	3.46E-11	2.56E-07
Chromium (hexavalent)	ND	NA	NA	NA	NA	NA	NA	NA	NA
Diesel Range Organics	320	NA	NA	NA	NA	NA	NA	NA	NA
Lead	29.7	NA	NA	NA	NA	NA	NA	NA	NA
Summed Risk for Exposure Pathway						2E-05	1E-05	4E-10	
Summed Risk		NA				3E-05			

EPCs reported in units of mg/kg
NA - not available; noncancer or cancer toxicity values not available for calculating risk

Table 5.0e Future Outdoor Commercial/Industrial Worker: Exposure to Chemicals in Surface Soil (Direct Contact) – Non-Hotspot

		HQ				LCR			
Constituent	Exposure Point Concentration	Ingestion	Dermal Contact	Inhalation	Total for Chemical	Ingestion	Dermal Contact	Inhalation	Total for Chemical
Benzo(a)pyrene	ND	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	ND	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	ND	NA	NA	NA	NA	NA	NA	NA	NA
Chromium (hexavalent)	1.7	5.55E-04	NA	2.77E-06	5.57E-04	2.97E-07	NA	8.32E-09	3.05E-07
Diesel Range Organics	11967	NA	NA	NA	NA	NA	NA	NA	NA
Lead	117	NA	NA	NA	NA	NA	NA	NA	NA
Summed Risk for Exposure Pathway		5.5E-04	NA	2.8E-06		3E-07	NA	8E-09	
Summed Risk		5.6E-04				3E-07			

EPCs reported in units of mg/kg

NA - not available; noncancer or cancer toxicity values not available for calculating risk

Table 5.0f Future Indoor Commercial/Industrial Worker: Exposure to Chemicals in Groundwater (Vapor Intrusion)

		HQ	LCR
Constituent	Exposure Point Concentration in Soil	Inhalation	Inhalation
Benzene	0.0150	1.1E-01	9.0E-06
Diesel Range Organics	9239	NA	NA
Gasoline Range Organics	160	NA	NA
Lead	22.5	NV	NV
Methylene chloride	0.0240	1.7E-01	5.3E-06
1-Methylnaphthalene	0.624	NA	NA
2-Methylnaphthalene	1.24	NA	NA
Naphthalene	1.280	4.0E-01	1.4E-05
1,2,4-Trimethylbenzene	4.88	1.2E+01	NA
1,3,5-Trimethylbenzene	2.36	NA	NA
	Summed Risks	1.3E+01	2.8E-05

EPCs reported in units of mg/kg

NA - not available; no reference concentration or inhalation unit risk factor

NV - not volatile; chemical does not volatilize and migrate into indoor air

Table 5.0g Future Construction Worker: Exposure to Chemicals in Subsurface Soil (Direct Contact) – Hotspot

		Subchronic HQ				LCR			
Constituent	Exposure Point Concentration	Ingestion	Dermal Contact	Inhalation	Total for Chemical	Ingestion	Dermal Contact	Inhalation	Total for Chemical
Benzene	ND	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	5.7	NA	NA	NA	NA	1.92E-06	7.49E-07	1.02E-08	2.68E-06
Benzo(b)fluoranthene	2.6	NA	NA	NA	NA	8.76E-08	3.41E-08	4.66E-10	1.22E-07
Benzo(k)fluoranthene	5.4	NA	NA	NA	NA	1.82E-08	7.09E-09	9.69E-10	2.62E-08
Chromium (hexavalent)	ND	NA	NA	NA	NA	NA	NA	NA	NA
Diesel Range Organics	320	NA	NA	NA	NA	NA	NA	NA	NA
Gasoline Range Organics	ND	NA	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene	ND	NA	NA	NA	NA	NA	NA	NA	NA
Lead	7.5	NA	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	0.0033	1.78E-07	NA	1.73E-05	1.75E-05	1.14E-12	NA	3.49E-10	3.50E-10
1-Methylnaphthalene	ND	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	ND	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	ND	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	ND	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	ND	NA	NA	NA	NA	NA	NA	NA	NA
Summed Risk for Exposure Pathway		1.8E-07	NA	1.7E-05		2E-06	8E-07	1E-08	
Summed Risk		1.8E-05				3E-06			

EPCs reported in units of mg/kg

NA - not available; noncancer or cancer toxicity values not available for calculating risk

Table 5.0h Future Construction Worker: Exposure to Chemicals in Subsurface Soil (Direct Contact) – Non-Hotspot

		Subchronic HQ				LCR			
Constituent	Exposure Point Concentration	Ingestion	Dermal Contact	Inhalation	Total for Chemical	Ingestion	Dermal Contact	Inhalation	Total for Chemical
Benzene	0.015	4.84E-06	3.39E-07	1.83E-03	1.83E-03	3.81E-11	2.66E-12	1.63E-08	1.63E-08
Benzo(a)pyrene	ND	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	ND	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	ND	NA	NA	NA	NA	NA	NA	NA	NA
Chromium (hexavalent)	1.9	3.07E-04	NA	2.17E-03	2.48E-03	4.38E-08	NA	2.60E-07	3.04E-07
Diesel Range Organics	6917	NA	NA	NA	NA	NA	NA	NA	NA
Gasoline Range Organics	187	NA	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene	0.421	3.40E-06	NA	5.85E-03	5.85E-03	NA	NA	NA	NA
Lead	66.1	NA	NA	NA	NA	NA	NA	NA	NA
Methylene chloride	0.0195	1.05E-06	NA	1.02E-04	1.03E-04	6.75E-12	NA	2.06E-09	2.07E-09
1-Methylnaphthalene	0.884	4.08E-05	2.85E-06	NA	4.36E-05	1.18E-09	8.28E-11	NA	1.27E-09
2-Methylnaphthalene	0.865	6.98E-04	1.96E-05	NA	7.18E-04	NA	NA	NA	NA
Naphthalene	1.09	1.76E-04	1.23E-05	2.71E-01	2.71E-01	NA	NA	3.94E-07	3.94E-07
1,2,4-Trimethylbenzene	4.88	NA	NA	3.04E-01	3.04E-01	NA	NA	NA	NA
1,3,5-Trimethylbenzene	2.36	7.62E-05	NA	1.23E+00	1.23E+00	NA	NA	NA	NA
Summed Risk for Exposure Pathway		1.3E-03	3.5E-05	1.8E+00		5E-08	9E-11	7E-07	
Summed Risk		1.8E+00				7E-07			

EPCs reported in units of mg/kg

NA - not available; noncancer or cancer toxicity values not available for calculating risk

Table 5.0i Future Child Resident: Exposure to Chemicals in Groundwater (Direct Contact)

		HQ				LCR			
Constituent	Exposure Point Concentration	Ingestion	Dermal Contact	Inhalation	Total for Chemical	Ingestion	Dermal Contact	Inhalation	Total for Chemical
Benzene	2.65	4.20E-02	4.20E-02	4.20E-02	1.26E-01	2.20E-06	3.00E-07	4.20E-06	6.70E-06
Chromium	77.3	1.60E+00	6.60E+01	NA	6.76E+01	5.70E-04	2.20E-04	NA	7.90E-04
Diesel Range Organics	21086	NA	NA	NA	NA	NA	NA	NA	NA
Gasoline Range Organics	7615	NA	NA	NA	NA	NA	NA	NA	NA
Lead	133	NA	NA	NA	NA	NA	NA	NA	NA
1-Methylnaphthalene	5.41	4.90E-03	4.90E-03	NA	9.80E-03	2.30E-06	3.00E-06	NA	5.30E-06
Naphthalene	68.3	2.20E-01	2.20E-01	1.10E+01	1.14E+01	NA	NA	4.80E-04	4.80E-04
Oil Range Organics	1205	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	144	NA	NA	9.90E+00	9.90E+00	NA	NA	NA	NA
Summed Risk for Exposure Pathway		1.9E+00	6.6E+01	2.1E+01		6E-04	2E-04	5E-04	
Summed Risk		8.9E+01				1E-03			

EPCs reported in units of ug/L

NA - not available; noncancer or cancer toxicity values not available for calculating risk

Table 5.0j Future Adult Resident: Exposure to Chemicals in Groundwater (Direct Contact)

		HQ				LCR			
Constituent	Exposure Point Concentration	Ingestion	Dermal Contact	Inhalation	Total for Chemical	Ingestion	Dermal Contact	Inhalation	Total for Chemical
Benzene	2.65	1.80E-02	1.80E-02	4.20E-02	7.80E-02	2.20E-06	3.00E-07	4.20E-06	6.70E-06
Chromium	77.3	7.10E-01	2.80E+01	NA	2.87E+01	5.70E-04	2.20E-04	NA	7.90E-04
Diesel Range Organics	21086	NA	NA	NA	NA	NA	NA	NA	NA
Gasoline Range Organics	7615	NA	NA	NA	NA	NA	NA	NA	NA
Lead	133	NA	NA	NA	NA	NA	NA	NA	NA
1-Methylnaphthalene	5.41	2.10E-03	2.10E-03	NA	4.20E-03	2.30E-06	3.00E-06	NA	5.30E-06
Naphthalene	68.3	9.40E-02	9.40E-02	1.10E+01	1.12E+01	NA	NA	4.80E-04	4.80E-04
Oil Range Organics	1205	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	144	NA	NA	9.90E+00	9.90E+00	NA	NA	NA	NA
Summed Risk for Exposure Pathway		8.2E-01	2.8E+01	2.1E+01		6E-04	2E-04	5E-04	
Summed Risk			5.0E+01				1E-03		

EPCs reported in units of ug/L

NA - not available; noncancer or cancer toxicity values not available for calculating risk

Table 5.0k Future Resident: Exposure to Chemicals in Groundwater (Vapor Intrusion)

		*HQ	**LCR
Constituent	Exposure Point Concentration in Groundwater	Inhalation	Inhalation
Benzene	2.65	1.6E-02	1.6E-06
Chromium	77.3	NV	NV
Diesel Range Organics	21086	NA	NA
Gasoline Range Organics	7615	NA	NA
Lead	133	NV	NV
1-Methylnaphthalene	5.41	NA	NA
Naphthalene	68.3	2.4E-01	1.0E-05
Oil Range Organics	1205	NA	NA
1,2,4-Trimethylbenzene	144	2.8E+00	NA
	Summed Risks	3.1E+00	1.2E-05

EPCs reported in units of ug/L

*Calculations represent child resident exposure

**Calculations represent combined adult and child exposures

NA - not available; noncancer or cancer toxicity values not available for calculating risk

NV - not volatile; chemical does not volatilize and migrate into indoor air

Table 5.0l Future Resident: Exposure to Chemicals in Surface Soil (Direct Contact) – Hotspot

		HQ				LCR			
Constituent	Exposure Point Concentration	Ingestion	Dermal Contact	Inhalation	Total for Chemical	Ingestion	Dermal Contact	Inhalation	Total for Chemical
Benzo(a)pyrene (0-2)	5.7	NA	NA	NA	NA	1.52E-04	5.53E-05	1.23E-09	2.07E-04
Benzo(a)pyrene (2-6)	5.7	NA	NA	NA	NA	9.12E-05	3.32E-05	7.36E-10	1.24E-04
Benzo(a)pyrene (6-16)	5.7	NA	NA	NA	NA	2.44E-05	1.27E-05	1.84E-09	3.71E-05
Benzo(a)pyrene (16-30)	5.7	NA	NA	NA	NA	1.14E-05	5.91E-06	8.59E-10	1.73E-05
Benzo(b)fluoranthene (0-2)	2.6	NA	NA	NA	NA	6.93E-06	2.52E-06	5.60E-11	9.46E-06
Benzo(b)fluoranthene (2-6)	2.6	NA	NA	NA	NA	4.16E-06	1.51E-06	3.36E-11	5.67E-06
Benzo(b)fluoranthene (6-16)	2.6	NA	NA	NA	NA	1.11E-06	5.78E-07	8.40E-11	1.69E-06
Benzo(b)fluoranthene (16-30)	2.6	NA	NA	NA	NA	5.20E-07	2.70E-07	3.92E-11	7.90E-07
Benzo(k)fluoranthene (0-2)	5.4	NA	NA	NA	NA	1.44E-06	5.24E-07	1.16E-10	1.96E-06
Benzo(k)fluoranthene (2-6)	5.4	NA	NA	NA	NA	8.64E-07	3.15E-07	6.98E-11	1.18E-06
Benzo(k)fluoranthene (6-16)	5.4	NA	NA	NA	NA	2.31E-07	1.20E-07	1.74E-10	3.52E-07
Benzo(k)fluoranthene (16-30)	5.4	NA	NA	NA	NA	1.08E-07	5.60E-08	8.14E-11	1.64E-07
Chromium (hexavalent)	ND	NA	NA	NA	NA	NA	NA	NA	NA
Diesel Range Organics	320	NA	NA	NA	NA	NA	NA	NA	NA
Lead	7.5	NA	NA	NA	NA	NA	NA	NA	NA
Summed Risk for Exposure Pathway						3E-04	1E-04	5E-09	
Summed Risk			NA				4E-04		

EPCs reported in units of mg/kg

NA - not available; noncancer or cancer toxicity values not available for calculating risk

Table 5.0m Future Child Resident: Exposure to Chemicals in Surface Soil (Direct Contact) – Non-Hotspot

		HQ				LCR			
Constituent	Exposure Point Concentration	Ingestion	Dermal Contact	Inhalation	Total for Chemical	Ingestion	Dermal Contact	Inhalation	Total for Chemical
Benzo(a)pyrene	ND	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	ND	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	ND	NA	NA	NA	NA	NA	NA	NA	NA
Chromium (hexavalent)	1.7	7.25E-03	NA	1.16E-05	7.26E-03	9.32E-07	NA	8.38E-09	9.4E-07
Diesel Range Organics	11967	NA	NA	NA	NA	NA	NA	NA	NA
Lead	117	NA	NA	NA	NA	NA	NA	NA	NA
Summed Risk for Exposure Pathway		7.2E-03	NA	1.2E-05		9E-07	NA	8E-09	
Summed Risk			7.3E-03				9E-07		

EPCs reported in units of mg/kg

NA - not available; noncancer or cancer toxicity values not available for calculating risk

Table 5.0n Future Adult Resident: Exposure to Chemicals in Surface Soil (Direct Contact) – Non-Hotspot

		HQ				LCR			
Constituent	Exposure Point Concentration	Ingestion	Dermal Contact	Inhalation	Total for Chemical	Ingestion	Dermal Contact	Inhalation	Total for Chemical
Benzo(a)pyrene	ND	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	ND	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	ND	NA	NA	NA	NA	NA	NA	NA	NA
Chromium (hexavalent)	1.7	7.76E-04	NA	1.16E-05	7.88E-04	3.99E-07	NA	3.35E-08	4.33E-07
Diesel Range Organics	11967	NA	NA	NA	NA	NA	NA	NA	NA
Lead	117	NA	NA	NA	NA	NA	NA	NA	NA
Summed Risk for Exposure Pathway		7.8E-04	NA	1.2E-05		4E-07	NA	3E-08	
Summed Risk		7.9E-04				4E-07			

EPCs reported in units of mg/kg
NA - not available; noncancer or cancer toxicity values not available for calculating risk

Table 5.0o Future Resident: Exposure to Chemicals in Subsurface Soil (Vapor Intrusion)

		*HQ	**LCR
Constituent	Exposure Point Concentration in Soil	Inhalation	Inhalation
Benzene	0.0150	1.8E+00	1.8E-04
Diesel Range Organics	9239	NA	NA
Gasoline Range Organics	160	NA	NA
Lead	22.5	NV	NV
Methylene chloride	0.0240	2.8E+00	1.1E-04
1-Methylnaphthalene	0.624	NA	NA
2-Methylnaphthalene	1.24	NA	NA
Naphthalene	1.280	6.5E+00	2.8E-04
1,2,4-Trimethylbenzene	4.88	2.0E+02	NA
1,3,5-Trimethylbenzene	2.36	NA	NA
	Summed Risks	2.1E+02	5.7E-04

EPCs reported in units of mg/kg
*Calculations represent child resident exposure
**Calculations represent combined adult and child exposures
NA - not available; noncancer or cancer toxicity values not available for calculating risk
NV - not volatile; chemical does not volatilize and migrate into indoor air

APPENDIX A

Johnson & Ettinger Outputs

INDOOR AIR SIMULATION RESULTS

Screening-Level Johnson and Ettinger Model

Site Name: Norphlet
Report Date: Wed Apr 13 14:36:01 CDT 2011
Report Generated From: http://www.epa.gov/athens/learn2model/part-two/onsite/JnE_lite_forward.htm
Type of sample: GROUND WATER Concentration = 2.65[µg/L]
Depth to ground water table: 8ft +/- 0ft
Average soil/ground water temperature: 67F

CHEMICAL PROPERTIES
Chemical of Concern: Benzene CAS Number: 71432
Molecular Weight: 78.11 [g/mole] Henrys Constant: 0.1783058 [unitless]
Diffusivity in Air: 8.800e-2 [cm^2/sec] Diffusivity in Water: 9.800e-6 [cm^2/sec]
Unit Risk Factor: 0.0000078 [$(\mu g/m^3)^{-1}$] Reference Concentration: 0.03 [mg/m^3]

SOIL PROPERTIES
Soil Type: Sand Total Porosity: 0.375
Unsaturated Zone Moisture Content:
low= 0.053 best estimate= 0.054 high= 0.055
Capillary Zone Moisture Content: 0.253 Height of Capillary Rise: 0.17 [m]
Soil-Gas Flow Rate into Building: 5 [L/min]

BUILDING PROPERTIES
Building Type: Slab-on-Grade Air Exchange Rate: 1[hr^{-1}]
Building Mixing Height: 2.44[m] Building Footprint Area: 100[m^2]
Subsurface Foundation Area: 106[m^2] Building Crack Ratio: 0.00038[unitless]
Foundation Slab Thickness: 0.1[m]

EXPOSURE PARAMETERS
Exposure Duration: carcinogens 25 [years] non-carcinogens: 25 [years]
Exposure Frequency: carcinogens 250 [days/year] non-carcinogens: 250 [days/year]
Averaging Time: carcinogens 70 [years] non-carcinogens: 25 [years]

JOHNSON & ETTINGER SIMULATION RESULTS
Effective Diffusion Coefficient (D^T_{eff}): 0.005337[cm^2/s]
Ground Water to Indoor Air Attenuation Factor (α_{GW}) = 0.0002678

[1]Low Indoor Air Prediction: 0.1262 [$\mu g/m^3$] or 0.03952 [ppbv]
Cancer Risk of this concentration: 2.407e-7 Hazard Risk of this concentration: 0.002880

Best Estimate Indoor Air Prediction: 0.1265[$\mu g/m^3$] or 0.03963 [ppbv]
Cancer Risk of this concentration: 2.414e-7 Hazard Risk of this concentration: 0.002889

[2]High Indoor Air Prediction: 0.1269[$\mu g/m^3$] or 0.03974 [ppbv]
Cancer Risk of this concentration: 2.421e-7 Hazard Risk of this concentration: 0.002897

Based on parameter analysis: Advection is the dominant mechanism across foundation.

[1]"Low Prediction" concentrations produced with HIGHEST moisture content.
[2]"High Prediction" concentrations produced with LOWEST moisture content.

Exposure Frequency for carcinogens has been changed from default value of 350 days/year.
Exposure Duration for carcinogens has been changed from default value of 30 years.
Exposure Frequency for non-carcinogens has been changed from default value of 365 days/year.

INDOOR AIR SIMULATION RESULTS

Screening-Level Johnson and Ettinger Model

Site Name: Norphlet
Report Date: Wed Apr 13 14:24:36 CDT 2011
Report Generated From: http://www.epa.gov/athens/learn2model/part-two/onsite/JnE_lite_forward.htm
Type of sample: GROUND WATER Concentration = 2.65[µg/L]
Depth to ground water table: 8ft +/- 0ft
Average soil/ground water temperature: 67F

CHEMICAL PROPERTIES
Chemical of Concern: Benzene CAS Number: 71432
Molecular Weight: 78.11 [g/mole] Henrys Constant: 0.1783058 [unitless]
Diffusivity in Air: 8.800e-2 [cm^2/sec] Diffusivity in Water: 9.800e-6 [cm^2/sec]
Unit Risk Factor: 0.0000078 [$(\mu g/m^3)^{-1}$] Reference Concentration: 0.03 [mg/m^3]

SOIL PROPERTIES
Soil Type: Sand Total Porosity: 0.375
Unsaturated Zone Moisture Content:
low= 0.053 best estimate= 0.054 high= 0.055
Capillary Zone Moisture Content: 0.253 Height of Capillary Rise: 0.17 [m]
Soil-Gas Flow Rate into Building: 5 [L/min]

BUILDING PROPERTIES
Building Type: Slab-on-Grade Air Exchange Rate: 0.25[hr^{-1}]
Building Mixing Height: 2.44[m] Building Footprint Area: 100[m^2]
Subsurface Foundation Area: 106[m^2] Building Crack Ratio: 0.00038[unitless]
Foundation Slab Thickness: 0.1[m]

EXPOSURE PARAMETERS
Exposure Duration: carcinogens 30 [years] non-carcinogens: 30 [years]
Exposure Frequency: carcinogens 350 [days/year] non-carcinogens: 350 [days/year]
Averaging Time: carcinogens 70 [years] non-carcinogens: 30 [years]

JOHNSON & ETTINGER SIMULATION RESULTS
Effective Diffusion Coefficient (D^T_{eff}): 0.005337[cm^2/s]
Ground Water to Indoor Air Attenuation Factor (α_{GW}) = 0.001071

[1]Low Indoor Air Prediction: 0.5046 [$\mu g/m^3$] or 0.1581 [ppbv]
Cancer Risk of this concentration: 1.618e-6 Hazard Risk of this concentration: 0.01613

Best Estimate Indoor Air Prediction: 0.5061[$\mu g/m^3$] or 0.1585 [ppbv]
Cancer Risk of this concentration: 1.622e-6 Hazard Risk of this concentration: 0.01618

[2]High Indoor Air Prediction: 0.5075[$\mu g/m^3$] or 0.1590 [ppbv]
Cancer Risk of this concentration: 1.627e-6 Hazard Risk of this concentration: 0.01622

Based on parameter analysis: Advection is the dominant mechanism across foundation.

[1]"Low Prediction" concentrations produced with HIGHEST moisture content.
[2]"High Prediction" concentrations produced with LOWEST moisture content.

Exposure Frequency for non-carcinogens has been changed from default value of 365 days/year.

INDOOR AIR SIMULATION RESULTS

Screening-Level Johnson and Ettinger Model

Site Name: Norphlet
Report Date: Tue Apr 12 14:36:32 CDT 2011
Report Generated From: http://www.epa.gov/athens/learn2model/part-two/onsite/JnE_lite_forward.htm
Type of sample: GROUND WATER Concentration = 68.3[µg/L]
Depth to ground water table: 8ft +/- 0ft
Average soil/ground water temperature: 67F

CHEMICAL PROPERTIES
Chemical of Concern: Naphthalene CAS Number: 91203
Molecular Weight: 128.18 [g/mole] Henrys Constant: 0.01330918 [unitless]
Diffusivity in Air: 5.900e-2 [cm^2/sec] Diffusivity in Water: 7.500e-6 [cm^2/sec]
Unit Risk Factor: 0.000034 [$(\mu g/m^3)^{-1}$] Reference Concentration: 0.003 [mg/m^3]

SOIL PROPERTIES
Soil Type: Sand Total Porosity: 0.375
Unsaturated Zone Moisture Content:
low= 0.053 best estimate= 0.054 high= 0.055
Capillary Zone Moisture Content: 0.253 Height of Capillary Rise: 0.17 [m]
Soil-Gas Flow Rate into Building: 5 [L/min]

BUILDING PROPERTIES
Building Type: Slab-on-Grade Air Exchange Rate: 1[hr^{-1}]
Building Mixing Height: 2.44[m] Building Footprint Area: 100[m^2]
Subsurface Foundation Area: 106[m^2] Building Crack Ratio: 0.00038[unitless]
Foundation Slab Thickness: 0.1[m]

EXPOSURE PARAMETERS
Exposure Duration: carcinogens 25 [years] non-carcinogens: 25 [years]
Exposure Frequency: carcinogens 250 [days/year] non-carcinogens: 250 [days/year]
Averaging Time: carcinogens 70 [years] non-carcinogens: 25 [years]

JOHNSON & ETTINGER SIMULATION RESULTS
Effective Diffusion Coefficient (D^T_{eff}): 0.003805[cm^2/s]
Ground Water to Indoor Air Attenuation Factor (α_{GW}) = 0.0002036

[1]Low Indoor Air Prediction: 0.1845 [$\mu g/m^3$] or 0.03521 [ppbv]
Cancer Risk of this concentration: 1.534e-6 Hazard Risk of this concentration: 0.04212

Best Estimate Indoor Air Prediction: 0.1851[$\mu g/m^3$] or 0.03533 [ppbv]
Cancer Risk of this concentration: 1.539e-6 Hazard Risk of this concentration: 0.04226

[2]High Indoor Air Prediction: 0.1857[$\mu g/m^3$] or 0.03544 [ppbv]
Cancer Risk of this concentration: 1.544e-6 Hazard Risk of this concentration: 0.04239

Based on parameter analysis: Advection is the dominant mechanism across foundation.

[1]"Low Prediction" concentrations produced with HIGHEST moisture content.
[2]"High Prediction" concentrations produced with LOWEST moisture content.

Exposure Frequency for carcinogens has been changed from default value of 350 days/year.
Exposure Duration for carcinogens has been changed from default value of 30 years.
Exposure Frequency for non-carcinogens has been changed from default value of 365 days/year.

INDOOR AIR SIMULATION RESULTS

Screening-Level Johnson and Ettinger Model

Site Name: Norphlet
Report Date: Tue Apr 12 14:28:32 CDT 2011
Report Generated From: http://www.epa.gov/athens/learn2model/part-two/onsite/JnE_lite_forward.htm
Type of sample: GROUND WATER Concentration = 68.3[µg/L]
Depth to ground water table: 8ft +/- 0ft
Average soil/ground water temperature: 67F

CHEMICAL PROPERTIES
Chemical of Concern: Naphthalene CAS Number: 91203
Molecular Weight: 128.18 [g/mole] Henrys Constant: 0.01330918 [unitless]
Diffusivity in Air: 5.900e-2 [cm^2/sec] Diffusivity in Water: 7.500e-6 [cm^2/sec]
Unit Risk Factor: 0.000034 [$(\mu g/m^3)^{-1}$] Reference Concentration: 0.003 [mg/m^3]

SOIL PROPERTIES
Soil Type: Sand Total Porosity: 0.375
Unsaturated Zone Moisture Content:
low= 0.053 best estimate= 0.054 high= 0.055
Capillary Zone Moisture Content: 0.253 Height of Capillary Rise: 0.17 [m]
Soil-Gas Flow Rate into Building: 5 [L/min]

BUILDING PROPERTIES
Building Type: Slab-on-Grade Air Exchange Rate: 0.25[hr^{-1}]
Building Mixing Height: 2.44[m] Building Footprint Area: 100[m^2]
Subsurface Foundation Area: 106[m^2] Building Crack Ratio: 0.00038[unitless]
Foundation Slab Thickness: 0.1[m]

EXPOSURE PARAMETERS
Exposure Duration: carcinogens 30 [years] non-carcinogens: 30 [years]
Exposure Frequency: carcinogens 350 [days/year] non-carcinogens: 350 [days/year]
Averaging Time: carcinogens 70 [years] non-carcinogens: 30 [years]

JOHNSON & ETTINGER SIMULATION RESULTS
Effective Diffusion Coefficient (D^T_{eff}): 0.003805[cm^2/s]
Ground Water to Indoor Air Attenuation Factor (α_{GW}) = 0.0008144

[1]Low Indoor Air Prediction: 0.7379 [$\mu g/m^3$] or 0.1409 [ppbv]
Cancer Risk of this concentration: 1.031e-5 Hazard Risk of this concentration: 0.2359

Best Estimate Indoor Air Prediction: 0.7403[$\mu g/m^3$] or 0.1413 [ppbv]
Cancer Risk of this concentration: 1.034e-5 Hazard Risk of this concentration: 0.2366

[2]High Indoor Air Prediction: 0.7427[$\mu g/m^3$] or 0.1418 [ppbv]
Cancer Risk of this concentration: 1.038e-5 Hazard Risk of this concentration: 0.2374

Based on parameter analysis: Advection is the dominant mechanism across foundation.

[1]"Low Prediction" concentrations produced with HIGHEST moisture content.
[2]"High Prediction" concentrations produced with LOWEST moisture content.

Exposure Frequency for non-carcinogens has been changed from default value of 365 days/year.

INDOOR AIR SIMULATION RESULTS

Screening-Level Johnson and Ettinger Model

Site Name: Norphlet
Report Date: Tue Apr 12 14:45:09 CDT 2011
Report Generated From: http://www.epa.gov/athens/learn2model/part-two/onsite/JnE_lite_forward.htm
Type of sample: GROUND WATER Concentration = 144[µg/L]
Depth to ground water table: 8ft +/- 0ft
Average soil/ground water temperature: 67F

CHEMICAL PROPERTIES
Chemical of Concern: 1,2,4-Trimethylbenzene CAS Number: 95636
Molecular Weight: 120.2 [g/mole] Henrys Constant: 0.1766197 [unitless]
Diffusivity in Air: 6.060e-2 [cm^2/sec] Diffusivity in Water: 7.920e-6 [cm^2/sec]
Unit Risk Factor: 0 [$(\mu g/m^3)^{-1}$] Reference Concentration: 0.007 [mg/m^3]

SOIL PROPERTIES
Soil Type: Sand Total Porosity: 0.375
Unsaturated Zone Moisture Content:
low= 0.053 best estimate= 0.054 high= 0.055
Capillary Zone Moisture Content: 0.253 Height of Capillary Rise: 0.17 [m]
Soil-Gas Flow Rate into Building: 5 [L/min]

BUILDING PROPERTIES
Building Type: Slab-on-Grade Air Exchange Rate: 1[hr^{-1}]
Building Mixing Height: 2.44[m] Building Footprint Area: 100[m^2]
Subsurface Foundation Area: 106[m^2] Building Crack Ratio: 0.00038[unitless]
Foundation Slab Thickness: 0.1[m]

EXPOSURE PARAMETERS
Exposure Duration: carcinogens 25 [years] non-carcinogens: 25 [years]
Exposure Frequency: carcinogens 250 [days/year] non-carcinogens: 250 [days/year]
Averaging Time: carcinogens 70 [years] non-carcinogens: 25 [years]

JOHNSON & ETTINGER SIMULATION RESULTS
Effective Diffusion Coefficient (D^T_{eff}): 0.003678[cm^2/s]
Ground Water to Indoor Air Attenuation Factor (α_{GW}) = 0.0001979

[1]Low Indoor Air Prediction: 5.019 [$\mu g/m^3$] or 1.022 [ppbv]
Cancer Risk of this concentration: 0. Hazard Risk of this concentration: 0.4911

Best Estimate Indoor Air Prediction: 5.034[$\mu g/m^3$] or 1.025 [ppbv]
Cancer Risk of this concentration: 0. Hazard Risk of this concentration: 0.4926

[2]High Indoor Air Prediction: 5.050[$\mu g/m^3$] or 1.028 [ppbv]
Cancer Risk of this concentration: 0. Hazard Risk of this concentration: 0.4941

Based on parameter analysis: Advection is the dominant mechanism across foundation.

[1]"Low Prediction" concentrations produced with HIGHEST moisture content.
[2]"High Prediction" concentrations produced with LOWEST moisture content.

Exposure Frequency for carcinogens has been changed from default value of 350 days/year.
Exposure Duration for carcinogens has been changed from default value of 30 years.
Exposure Frequency for non-carcinogens has been changed from default value of 365 days/year.

INDOOR AIR SIMULATION RESULTS

Screening-Level Johnson and Ettinger Model

Site Name: Norphlet
Report Date: Tue Apr 12 14:42:31 CDT 2011
Report Generated From: http://www.epa.gov/athens/learn2model/part-two/onsite/JnE_lite_forward.htm
Type of sample: GROUND WATER Concentration = 144[µg/L]
Depth to ground water table: 8ft +/- 0ft
Average soil/ground water temperature: 67F

CHEMICAL PROPERTIES
Chemical of Concern: 1,2,4-Trimethylbenzene CAS Number: 95636
Molecular Weight: 120.2 [g/mole] Henrys Constant: 0.1766197 [unitless]
Diffusivity in Air: 6.060e-2 [cm^2/sec] Diffusivity in Water: 7.920e-6 [cm^2/sec]
Unit Risk Factor: 0 [$(\mu g/m^3)^{-1}$] Reference Concentration: 0.007 [mg/m^3]

SOIL PROPERTIES
Soil Type: Sand Total Porosity: 0.375
Unsaturated Zone Moisture Content:
low= 0.053 best estimate= 0.054 high= 0.055
Capillary Zone Moisture Content: 0.253 Height of Capillary Rise: 0.17 [m]
Soil-Gas Flow Rate into Building: 5 [L/min]

BUILDING PROPERTIES
Building Type: Slab-on-Grade Air Exchange Rate: 0.25[hr^{-1}]
Building Mixing Height: 2.44[m] Building Footprint Area: 100[m^2]
Subsurface Foundation Area: 106[m^2] Building Crack Ratio: 0.00038[unitless]
Foundation Slab Thickness: 0.1[m]

EXPOSURE PARAMETERS
Exposure Duration: carcinogens 30 [years] non-carcinogens: 30 [years]
Exposure Frequency: carcinogens 350 [days/year] non-carcinogens: 350 [days/year]
Averaging Time: carcinogens 70 [years] non-carcinogens: 30 [years]

JOHNSON & ETTINGER SIMULATION RESULTS
Effective Diffusion Coefficient (D^T_{eff}): 0.003678[cm^2/s]
Ground Water to Indoor Air Attenuation Factor (α_{GW}) = 0.0007918

[1]Low Indoor Air Prediction: 20.08 [$\mu g/m^3$] or 4.086 [ppbv]
Cancer Risk of this concentration: 0. Hazard Risk of this concentration: 2.750

Best Estimate Indoor Air Prediction: 20.14[$\mu g/m^3$] or 4.099 [ppbv]
Cancer Risk of this concentration: 0. Hazard Risk of this concentration: 2.759

[2]High Indoor Air Prediction: 20.20[$\mu g/m^3$] or 4.111 [ppbv]
Cancer Risk of this concentration: 0. Hazard Risk of this concentration: 2.767

Based on parameter analysis: Advection is the dominant mechanism across foundation.

[1]"Low Prediction" concentrations produced with HIGHEST moisture content.
[2]"High Prediction" concentrations produced with LOWEST moisture content.

Exposure Frequency for non-carcinogens has been changed from default value of 365 days/year.

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES [ ]

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES [X]

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial soil conc., C_R (µg/kg)	Chemica
71432	1.50E+01	Benzene

MORE ↓

ENTER Average soil temperature, T_S (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to top of contamination, L_t (cm)	ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L_b (cm)	ENTER Totals must add up to value of L_t (cell G28) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
25	15	15	0	15	0	0	S		

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum A soil organic carbon fraction, f_{oc}^A (unitless)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum B soil organic carbon fraction, f_{oc}^B (unitless)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	ENTER Stratum C soil organic carbon fraction, f_{oc}^C (unitless)
S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	1	5

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	25	25	250	1.0E-06	1

Used to calculate risk-based soil concentration.

END

RESULTS SHEET

RISK-BASED SOIL CONCENTRATION CALCULATIONS:

Indoor exposure soil conc., carcinogen (µg/kg)	Indoor exposure soil conc., noncarcinogen (µg/kg)	Risk-based indoor exposure soil conc., (µg/kg)	Soil saturation conc., C_{sat} (µg/kg)	Final indoor exposure soil conc., (µg/kg)
NA	NA	NA	3.47E+05	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
2.7E-05	3.3E-01

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES X

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial soil conc., C_R (µg/kg)	Chemica
71432	1.50E+01	Benzene

MORE ↓

ENTER Average soil temperature, T_S (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to top of contamination, L_t (cm)	ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L_b (cm)	ENTER Totals must add up to value of L_t (cell G28) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
25	15	15	0	15	0	0	S		

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum A soil organic carbon fraction, f_{oc}^A (unitless)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum B soil organic carbon fraction, f_{oc}^B (unitless)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	ENTER Stratum C soil organic carbon fraction, f_{oc}^C (unitless)
S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25	5

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

Used to calculate risk-based soil concentration.

END

RESULTS SHEET

RISK-BASED SOIL CONCENTRATION CALCULATIONS:

Indoor exposure soil conc., carcinogen (µg/kg)	Indoor exposure soil conc., noncarcinogen (µg/kg)	Risk-based indoor exposure soil conc., (µg/kg)	Soil saturation conc., C_{sat} (µg/kg)	Final indoor exposure soil conc., (µg/kg)
NA	NA	NA	3.47E+05	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
1.8E-04	1.8E+00

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES [ ]

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES [X]

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial soil conc., C_R (µg/kg)	Chemica
98828	4.21E+02	Cumene

MORE ↓

ENTER Average soil temperature, T_S (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to top of contamination, L_t (cm)	ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L_b (cm)	ENTER Totals must add up to value of L_t (cell G28) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
25	15	15	0	15	0	0	S		

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum A soil organic carbon fraction, f_{oc}^A (unitless)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum B soil organic carbon fraction, f_{oc}^B (unitless)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	ENTER Stratum C soil organic carbon fraction, f_{oc}^C (unitless)
S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	1	5

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	25	25	250	1.0E-06	1

Used to calculate risk-based soil concentration.

END

RESULTS SHEET

RISK-BASED SOIL CONCENTRATION CALCULATIONS:

Indoor exposure soil conc., carcinogen (µg/kg)	Indoor exposure soil conc., noncarcinogen (µg/kg)	Risk-based indoor exposure soil conc., (µg/kg)	Soil saturation conc., C_{sat} (µg/kg)	Final indoor exposure soil conc., (µg/kg)
NA	NA	NA	6.90E+04	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	3.1E-01

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES X

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial soil conc., C_R (µg/kg)	Chemica
98828	4.21E+02	Cumene

MORE ↓

ENTER Average soil temperature, T_S (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to top of contamination, L_t (cm)	ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L_b (cm)	ENTER Totals must add up to value of L_t (cell G28) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
25	15	15	0	15	0	0	S		

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum A soil organic carbon fraction, f_{oc}^A (unitless)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum B soil organic carbon fraction, f_{oc}^B (unitless)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	ENTER Stratum C soil organic carbon fraction, f_{oc}^C (unitless)
S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25	5

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

Used to calculate risk-based soil concentration.

END

RESULTS SHEET

RISK-BASED SOIL CONCENTRATION CALCULATIONS:

Indoor exposure soil conc., carcinogen (µg/kg)	Indoor exposure soil conc., noncarcinogen (µg/kg)	Risk-based indoor exposure soil conc., (µg/kg)	Soil saturation conc., C_{sat} (µg/kg)	Final indoor exposure soil conc., (µg/kg)
NA	NA	NA	6.90E+04	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	1.7E+00

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES X

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial soil conc., C_R (µg/kg)	Chemica
74873	2.40E+01	Methyl chloride (chloromethane)

MORE ↓

ENTER Average soil temperature, T_S (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to top of contamination, L_t (cm)	ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L_b (cm)	ENTER Totals must add up to value of L_t (cell G28) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
25	15	15	0	15	0	0	S		

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum A soil organic carbon fraction, f_{oc}^A (unitless)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum B soil organic carbon fraction, f_{oc}^B (unitless)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	ENTER Stratum C soil organic carbon fraction, f_{oc}^C (unitless)
S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	1	5

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	25	25	250	1.0E-06	1

Used to calculate risk-based soil concentration.

END

RESULTS SHEET

RISK-BASED SOIL CONCENTRATION CALCULATIONS:

Indoor exposure soil conc., carcinogen (µg/kg)	Indoor exposure soil conc., noncarcinogen (µg/kg)	Risk-based indoor exposure soil conc., (µg/kg)	Soil saturation conc., C_{sat} (µg/kg)	Final indoor exposure soil conc., (µg/kg)
NA	NA	NA	5.66E+05	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
1.6E-05	5.0E-01

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES X

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial soil conc., C_R (µg/kg)	Chemica
74873	2.40E+01	Methyl chloride (chloromethane)

MORE ↓

ENTER Average soil temperature, T_S (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to top of contamination, L_t (cm)	ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L_b (cm)	ENTER Totals must add up to value of L_t (cell G28) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
25	15	15	0	15	0	0	S		

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum A soil organic carbon fraction, f_{oc}^A (unitless)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum B soil organic carbon fraction, f_{oc}^B (unitless)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	ENTER Stratum C soil organic carbon fraction, f_{oc}^C (unitless)
S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25	5

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

Used to calculate risk-based soil concentration.

END

RESULTS SHEET

RISK-BASED SOIL CONCENTRATION CALCULATIONS:

Indoor exposure soil conc., carcinogen (µg/kg)	Indoor exposure soil conc., noncarcinogen (µg/kg)	Risk-based indoor exposure soil conc., (µg/kg)	Soil saturation conc., C_{sat} (µg/kg)	Final indoor exposure soil conc., (µg/kg)
NA	NA	NA	5.66E+05	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
1.1E-04	2.8E+00

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES X

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial soil conc., C_R (µg/kg)	Chemica
91203	1.28E+03	Naphthalene

MORE ↓

ENTER Average soil temperature, T_S (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to top of contamination, L_t (cm)	ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L_b (cm)	ENTER Totals must add up to value of L_t (cell G28) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
25	15	15	0	15	0	0	S		

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum A soil organic carbon fraction, f_{oc}^A (unitless)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum B soil organic carbon fraction, f_{oc}^B (unitless)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	ENTER Stratum C soil organic carbon fraction, f_{oc}^C (unitless)
S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	1	5

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	25	25	250	1.0E-06	1

Used to calculate risk-based soil concentration.

END

RESULTS SHEET

RISK-BASED SOIL CONCENTRATION CALCULATIONS:

Indoor exposure soil conc., carcinogen (µg/kg)	Indoor exposure soil conc., noncarcinogen (µg/kg)	Risk-based indoor exposure soil conc., (µg/kg)	Soil saturation conc., C_{sat} (µg/kg)	Final indoor exposure soil conc., (µg/kg)
NA	NA	NA	1.25E+05	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
4.2E-05	1.2E+00

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES X

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial soil conc., C_R (µg/kg)	Chemica
91203	1.28E+03	Naphthalene

MORE ↓

ENTER Average soil temperature, T_S (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to top of contamination, L_t (cm)	ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L_b (cm)	ENTER Totals must add up to value of L_t (cell G28) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
25	15	15	0	15	0	0	S		

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum A soil organic carbon fraction, f_{oc}^A (unitless)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum B soil organic carbon fraction, f_{oc}^B (unitless)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	ENTER Stratum C soil organic carbon fraction, f_{oc}^C (unitless)
S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25	5

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

Used to calculate risk-based soil concentration.

END

RESULTS SHEET

RISK-BASED SOIL CONCENTRATION CALCULATIONS:

Indoor exposure soil conc., carcinogen (µg/kg)	Indoor exposure soil conc., noncarcinogen (µg/kg)	Risk-based indoor exposure soil conc., (µg/kg)	Soil saturation conc., C_{sat} (µg/kg)	Final indoor exposure soil conc., (µg/kg)
NA	NA	NA	1.25E+05	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
2.8E-04	6.5E+00

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES X

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial soil conc., C_R (µg/kg)	Chemica
95636	4.88E+03	1,2,4-Trimethylbenzene

MORE ↓

ENTER Average soil temperature, T_S (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to top of contamination, L_t (cm)	ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L_b (cm)	ENTER Totals must add up to value of L_t (cell G28) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
25	15	15	0	15	0	0	S		

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum A soil organic carbon fraction, f_{oc}^A (unitless)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum B soil organic carbon fraction, f_{oc}^B (unitless)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	ENTER Stratum C soil organic carbon fraction, f_{oc}^C (unitless)
S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	1	5

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	25	25	250	1.0E-06	1

Used to calculate risk-based soil concentration.

END

RESULTS SHEET

RISK-BASED SOIL CONCENTRATION CALCULATIONS:

Indoor exposure soil conc., carcinogen (µg/kg)	Indoor exposure soil conc., noncarcinogen (µg/kg)	Risk-based indoor exposure soil conc., (µg/kg)	Soil saturation conc., C_{sat} (µg/kg)	Final indoor exposure soil conc., (µg/kg)
NA	NA	NA	1.59E+05	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	3.5E+01

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SL-ADV
Version 3.1; 02/04

Reset to Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES X

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial soil conc., C_R (µg/kg)	Chemica
95636	4.88E+03	1,2,4-Trimethylbenzene

MORE ↓

ENTER Average soil temperature, T_S (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to top of contamination, L_t (cm)	ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L_b (cm)	ENTER Totals must add up to value of L_t (cell G28) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
25	15	15	0	15	0	0	S		

MORE ↓

ENTER Stratum A SCS soil type (Lookup Soil Parameters)	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum A soil organic carbon fraction, f_{oc}^A (unitless)	ENTER Stratum B SCS soil type (Lookup Soil Parameters)	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum B soil organic carbon fraction, f_{oc}^B (unitless)	ENTER Stratum C SCS soil type (Lookup Soil Parameters)	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	ENTER Stratum C soil organic carbon fraction, f_{oc}^C (unitless)
S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002

MORE ↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($g/cm\text{-}s^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	1000	1000	366	0.1	0.25	5

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

Used to calculate risk-based soil concentration.

END

RESULTS SHEET

RISK-BASED SOIL CONCENTRATION CALCULATIONS:

Indoor exposure soil conc., carcinogen (µg/kg)	Indoor exposure soil conc., noncarcinogen (µg/kg)	Risk-based indoor exposure soil conc., (µg/kg)	Soil saturation conc., C_{sat} (µg/kg)	Final indoor exposure soil conc., (µg/kg)
NA	NA	NA	1.59E+05	NA

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	2.0E+02

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

APPENDIX B

ProUCL Outputs

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet.wst
Full Precision	ON
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Benzene - Groundwater

General Statistics

Number of Valid Data	23	Number of Detected Data	8
Number of Distinct Detected Data	7	Number of Non-Detect Data	15
Number of Missing Values	3	Percent Non-Detects	65.22%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.38	Minimum Detected	-0.967584
Maximum Detected	8	Maximum Detected	2.0794415
Mean of Detected	2.6525	Mean of Detected	0.2198476
SD of Detected	3.1392071	SD of Detected	1.3375092
Minimum Non-Detect	1	Minimum Non-Detect	0
Maximum Non-Detect	50	Maximum Non-Detect	3.912023

Note: Data have multiple DLs - Use of KM Method is recommended	Number treated as Non-Detect	23
For all methods (except KM, DL/2, and ROS Methods),	Number treated as Detected	0
Observations < Largest ND are treated as NDs	Single DL Non-Detect Percentage	100.00%

Warning: There are only 8 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.7545309	Shapiro Wilk Test Statistic	0.79577
5% Shapiro Wilk Critical Value	0.818	5% Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	2.313913	Mean	-0.205496
SD	5.3539363	SD	1.1486242
95% DL/2 (t) UCL	4.2308864	95% H-Stat (DL/2) UCL	3.0710909
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-0.302226
		SD in Log Scale	1.0885961
		Mean in Original Scale	1.4149993
		SD in Original Scale	2.0487186
		95% t UCL	2.1485416
		95% Percentile Bootstrap UCL	2.1532684
		95% BCA Bootstrap UCL	2.3393883
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.5752657	Data do not follow a Discernable Distribution (0.05)	
Theta Star	4.610913		
nu star	9.2042508		
A-D Test Statistic	0.8819072	Nonparametric Statistics	
5% A-D Critical Value	0.7437012	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.7437012	Mean	1.2852727
5% K-S Critical Value	0.3036742	SD	2.0536613
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.4709709
		95% KM (t) UCL	2.0939978
Assuming Gamma Distribution		95% KM (z) UCL	2.059951
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	2.0629612
Minimum	1.00E-12	95% KM (bootstrap t) UCL	2.8691136
Maximum	8	95% KM (BCA) UCL	2.0781818
Mean	2.222084	95% KM (Percentile Bootstrap) UCL	2.0932955
Median	1.6382079	95% KM (Chebyshev) UCL	3.3381875
SD	2.156009	97.5% KM (Chebyshev) UCL	4.2264853
k star	0.1929926	99% KM (Chebyshev) UCL	5.9713745
Theta star	11.513828		
Nu star	8.8776613	Potential UCLs to Use	
AppChi2	3.2532286	95% KM (BCA) UCL	2.0781818
95% Gamma Approximate UCL	6.0637942		
95% Adjusted Gamma UCL	6.5529218		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Concentrations in ug/L

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet.wst
Full Precision	ON
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Chromium - Groundwater

General Statistics			
Number of Valid Data	23	Number of Detected Data	17
Number of Distinct Detected Data	16	Number of Non-Detect Data	6
Number of Missing Values	4	Percent Non-Detects	26.09%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	2.6	Minimum Detected	0.9555114
Maximum Detected	160	Maximum Detected	5.0751738
Mean of Detected	31.505882	Mean of Detected	2.6668338
SD of Detected	44.904391	SD of Detected	1.2540839
Minimum Non-Detect	10	Minimum Non-Detect	2.3025851
Maximum Non-Detect	10	Maximum Non-Detect	2.3025851

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.672976	Shapiro Wilk Test Statistic	0.9422641
5% Shapiro Wilk Critical Value	0.892	5% Shapiro Wilk Critical Value	0.892
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	24.591304	Mean	2.3909914
SD	40.10111	SD	1.1701222
95% DL/2 (t) UCL	38.949481	95% H-Stat (DL/2) UCL	43.099542
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	2.3590079
		SD in Log Scale	1.23562
		Mean in Original Scale	24.653727
		SD in Original Scale	40.096291
		95% t UCL	39.010178
		95% Percentile Bootstrap UCL	38.58441
		95% BCA Bootstrap UCL	41.995125
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.6671584	Data appear Lognormal at 5% Significance Level	
Theta Star	47.223994		
nu star	22.683384		
A-D Test Statistic	0.9085607	Nonparametric Statistics	
5% A-D Critical Value	0.7758889	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.7758889	Mean	24.650932
5% K-S Critical Value	0.2171515	SD	39.205514
Data not Gamma Distributed at 5% Significance Level		SE of Mean	8.4327019
		95% KM (t) UCL	39.131098
Assuming Gamma Distribution		95% KM (z) UCL	38.521492
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	39.018127
Minimum	1.00E-12	95% KM (bootstrap t) UCL	53.506693
Maximum	160	95% KM (BCA) UCL	40.242236
Mean	27.773345	95% KM (Percentile Bootstrap) UCL	39.326087
Median	11	95% KM (Chebyshev) UCL	61.408227
SD	39.924207	97.5% KM (Chebyshev) UCL	77.313138
k star	0.2231813	99% KM (Chebyshev) UCL	108.55526
Theta star	124.44298		
Nu star	10.266339	Potential UCLs to Use	
AppChi2	4.1089072	97.5% KM (Chebyshev) UCL	77.313138
95% Gamma Approximate UCL	69.393288		
95% Adjusted Gamma UCL	74.451182		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Concentrations in ug/L

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet.wst
Full Precision	ON
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Diesel Range Organics - Groundwater

General Statistics			
Number of Valid Data	23	Number of Detected Data	23
Number of Distinct Detected Data	19	Number of Non-Detect Data	0
Number of Missing Values	4	Percent Non-Detects	0.00%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	52	Minimum Detected	3.9512437
Maximum Detected	41000	Maximum Detected	10.621327
Mean of Detected	3477.913	Mean of Detected	6.9095788
SD of Detected	8487.3121	SD of Detected	1.5366421
Minimum Non-Detect	N/A	Minimum Non-Detect	N/A
Maximum Non-Detect	N/A	Maximum Non-Detect	N/A

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.4006826	Shapiro Wilk Test Statistic	0.9764235
5% Shapiro Wilk Critical Value	0.914	5% Shapiro Wilk Critical Value	0.914
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	3477.913	Mean	6.9095788
SD	8487.3121	SD	1.5366421
95% DL/2 (t) UCL	6516.7896	95% H-Stat (DL/2) UCL	9632.1153
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	N/A
		SD in Log Scale	N/A
		Mean in Original Scale	N/A
		SD in Original Scale	N/A
		95% t UCL	N/A
		95% Percentile Bootstrap UCL	N/A
		95% BCA Bootstrap UCL	N/A
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.4715482	Data appear Lognormal at 5% Significance Level	
Theta Star	7375.5199		
nu star	21.691217		
A-D Test Statistic	1.3284183	Nonparametric Statistics	
5% A-D Critical Value	0.8042337	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.8042337	Mean	3477.913
5% K-S Critical Value	0.1917637	SD	8300.755
Data not Gamma Distributed at 5% Significance Level		SE of Mean	1769.7269
		95% KM (t) UCL	6516.7896
Assuming Gamma Distribution		95% KM (z) UCL	6388.8548
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	6516.7896
Minimum	52	95% KM (bootstrap t) UCL	15590.251
Maximum	41000	95% KM (BCA) UCL	7073.1304
Mean	3477.913	95% KM (Percentile Bootstrap) UCL	6829.1304
Median	1100	95% KM (Chebyshev) UCL	11191.974
SD	8487.3121	97.5% KM (Chebyshev) UCL	14529.854
k star	0.4715482	99% KM (Chebyshev) UCL	21086.474
Theta star	7375.5199		
Nu star	21.691217	Potential UCLs to Use	
AppChi2	12.107083	99% KM (Chebyshev) UCL	21086.474
95% Gamma Approximate UCL	6231.077		
95% Adjusted Gamma UCL	6509.7838		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Concentrations in ug/L

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet.wst
Full Precision	ON
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Gasoline Range Organics - Groundwater

General Statistics			
Number of Valid Data	24	Number of Detected Data	9
Number of Distinct Detected Data	8	Number of Non-Detect Data	15
Number of Missing Values	3	Percent Non-Detects	62.50%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	96	Minimum Detected	4.5643482
Maximum Detected	24000	Maximum Detected	10.085809
Mean of Detected	2972.8889	Mean of Detected	6.1204353
SD of Detected	7889.2775	SD of Detected	1.6186309
Minimum Non-Detect	100	Minimum Non-Detect	4.6051702
Maximum Non-Detect	100	Maximum Non-Detect	4.6051702

Warning: There are only 9 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.4157265	Shapiro Wilk Test Statistic	0.7566928
5% Shapiro Wilk Critical Value	0.829	5% Shapiro Wilk Critical Value	0.829
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1146.0833	Mean	4.7401776
SD	4872.1995	SD	1.4505371
95% DL/2 (t) UCL	2850.5861	95% H-Stat (DL/2) UCL	861.96694
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	4.3261091
		SD in Log Scale	1.9689429
		Mean in Original Scale	1143.2245
		SD in Original Scale	4872.9888
		95% t UCL	2848.0033
		95% Percentile Bootstrap UCL	3108.4042
		95% BCA Bootstrap UCL	4172.4735
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.3121462	Data do not follow a Discernable Distribution (0.05)	
Theta Star	9524.0285		
nu star	5.6186308		
A-D Test Statistic	1.8314545	Nonparametric Statistics	
5% A-D Critical Value	0.7968321	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.7968321	Mean	1174.8333
5% K-S Critical Value	0.2993527	SD	4763.056
Data not Gamma Distributed at 5% Significance Level		SE of Mean	1031.2319
		95% KM (t) UCL	2942.2322
Assuming Gamma Distribution		95% KM (z) UCL	2871.0588
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	2831.1068
Minimum	1.00E-12	95% KM (bootstrap t) UCL	62306.865
Maximum	81889.701	95% KM (BCA) UCL	4124.6667
Mean	14616.352	95% KM (Percentile Bootstrap) UCL	3169.25
Median	1078.6623	95% KM (Chebyshev) UCL	5669.8688
SD	23140.966	97.5% KM (Chebyshev) UCL	7614.8743
k star	0.1222039	99% KM (Chebyshev) UCL	11435.461
Theta star	119606.23		
Nu star	5.8657892	Potential UCLs to Use	
AppChi2	1.571668	97.5% KM (Chebyshev) UCL	7614.8743
95% Gamma Approximate UCL	54551.242		
95% Adjusted Gamma UCL	60308.659		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Concentrations in ug/L

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet.wst
Full Precision	ON
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Lead - Groundwater

General Statistics			
Number of Valid Data	23	Number of Detected Data	19
Number of Distinct Detected Data	19	Number of Non-Detect Data	4
Number of Missing Values	4	Percent Non-Detects	17.39%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.42	Minimum Detected	-0.867501
Maximum Detected	200	Maximum Detected	5.2983174
Mean of Detected	29.738421	Mean of Detected	2.035215
SD of Detected	56.210402	SD of Detected	1.71698
Minimum Non-Detect	1	Minimum Non-Detect	0
Maximum Non-Detect	45	Maximum Non-Detect	3.8066625
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	20
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	3
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	86.96%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.5584412	Shapiro Wilk Test Statistic	0.9668464
5% Shapiro Wilk Critical Value	0.901	5% Shapiro Wilk Critical Value	0.901
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	25.61	Mean	1.7262243
SD	51.829269	SD	1.8385153
95% DL/2 (t) UCL	44.167436	95% H-Stat (DL/2) UCL	134.34147
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	1.61758
		SD in Log Scale	1.8646042
		Mean in Original Scale	24.780271
		SD in Original Scale	52.03407
		95% t UCL	43.411036
		95% Percentile Bootstrap UCL	43.592445
		95% BCA Bootstrap UCL	50.533096
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.4327278	Data appear Lognormal at 5% Significance Level	
Theta Star	68.723154		
nu star	16.443657		
A-D Test Statistic	1.0446279	Nonparametric Statistics	
5% A-D Critical Value	0.8083619	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.8083619	Mean	24.918764
5% K-S Critical Value	0.2107045	SD	50.858545
Data not Gamma Distributed at 5% Significance Level		SE of Mean	10.900312
		95% KM (t) UCL	43.636174
Assuming Gamma Distribution		95% KM (z) UCL	42.848182
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	43.547354
Minimum	1.00E-12	95% KM (bootstrap t) UCL	76.695642
Maximum	200	95% KM (BCA) UCL	45.633967
Mean	25.197708	95% KM (Percentile Bootstrap) UCL	43.929719
Median	4.8	95% KM (Chebyshev) UCL	72.432124
SD	51.910568	97.5% KM (Chebyshev) UCL	92.991192
k star	0.1614686	99% KM (Chebyshev) UCL	133.3755
Theta star	156.05326		
Nu star	7.4275574	Potential UCLs to Use	
AppChi2	2.4081705	99% KM (Chebyshev) UCL	133.3755
95% Gamma Approximate UCL	77.717678		
95% Adjusted Gamma UCL	84.839666		
Note: DL/2 is not a recommended method.			

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Concentrations in ug/L

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet.wst
Full Precision	ON
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

1-Methylnaphthalene - Groundwater

General Statistics			
Number of Valid Data	23	Number of Detected Data	9
Number of Distinct Detected Data	9	Number of Non-Detect Data	14
Number of Missing Values	3	Percent Non-Detects	60.87%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.026	Minimum Detected	-3.649659
Maximum Detected	20	Maximum Detected	2.9957323
Mean of Detected	5.4117778	Mean of Detected	0.657725
SD of Detected	6.3113096	SD of Detected	2.0484774
Minimum Non-Detect	1	Minimum Non-Detect	0
Maximum Non-Detect	20	Maximum Non-Detect	2.9957323

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	22
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	1
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	95.65%

Warning: There are only 9 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.8171925	Shapiro Wilk Test Statistic	0.8997867
5% Shapiro Wilk Critical Value	0.829	5% Shapiro Wilk Critical Value	0.829
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	2.8350435	Mean	-0.034296
SD	4.7703403	SD	1.4921649
95% DL/2 (t) UCL	4.5430607	95% H-Stat (DL/2) UCL	8.2350245
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-0.769452
		SD in Log Scale	1.9932069
		Mean in Original Scale	2.331004
		SD in Original Scale	4.575852
		95% t UCL	3.9693848
		95% Percentile Bootstrap UCL	4.1387978
		95% BCA Bootstrap UCL	4.6591961
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.4737159	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	11.424099		
nu star	8.5268868		
A-D Test Statistic	0.1878893	Nonparametric Statistics	
5% A-D Critical Value	0.7630393	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.7630393	Mean	2.3756467
5% K-S Critical Value	0.2921703	SD	4.4885218
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	1.0040412
		95% KM (t) UCL	4.0997304
Assuming Gamma Distribution		95% KM (z) UCL	4.0271475
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	4.0474072
Minimum	0.026	95% KM (bootstrap t) UCL	5.5440398
Maximum	20	95% KM (BCA) UCL	4.7192379
Mean	4.869819	95% KM (Percentile Bootstrap) UCL	4.3629565
Median	4.5671037	95% KM (Chebyshev) UCL	6.7521609
SD	3.9739184	97.5% KM (Chebyshev) UCL	8.6458822
k star	1.1394619	99% KM (Chebyshev) UCL	12.365731
Theta star	4.2737885		
Nu star	52.415246	Potential UCLs to Use	
AppChi2	36.785257	95% KM (t) UCL	4.0997304
95% Gamma Approximate UCL	6.9389964		
95% Adjusted Gamma UCL	7.1227898		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Concentrations in ug/L

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet.wst
Full Precision	ON
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Naphthalene (as VOC) - Groundwater

General Statistics			
Number of Valid Data	23	Number of Detected Data	12
Number of Distinct Detected Data	10	Number of Non-Detect Data	11
Number of Missing Values	3	Percent Non-Detects	47.83%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	1.2	Minimum Detected	0.1823216
Maximum Detected	88	Maximum Detected	4.4773368
Mean of Detected	22.033333	Mean of Detected	1.8572292
SD of Detected	32.360114	SD of Detected	1.6483968
Minimum Non-Detect	5	Minimum Non-Detect	1.6094379
Maximum Non-Detect	250	Maximum Non-Detect	5.5214609
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	23
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.67452	Shapiro Wilk Test Statistic	0.794502
5% Shapiro Wilk Critical Value	0.859	5% Shapiro Wilk Critical Value	0.859
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	18.017391	Mean	1.5773031
SD	34.089223	SD	1.4423478
95% DL/2 (t) UCL	30.223015	95% H-Stat (DL/2) UCL	36.195005
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	1.4633569
		SD in Log Scale	1.4066134
		Mean in Original Scale	13.450629
		SD in Original Scale	24.756431
		95% t UCL	22.314653
		95% Percentile Bootstrap UCL	22.858888
		95% BCA Bootstrap UCL	26.281414
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.4397491	Data do not follow a Discernable Distribution (0.05)	
Theta Star	50.104327		
nu star	10.553979		
A-D Test Statistic	1.4578607	Nonparametric Statistics	
5% A-D Critical Value	0.7839917	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.7839917	Mean	13.063636
5% K-S Critical Value	0.2584902	SD	24.907347
Data not Gamma Distributed at 5% Significance Level		SE of Mean	5.5488127
		95% KM (t) UCL	22.591749
Assuming Gamma Distribution		95% KM (z) UCL	22.190621
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	22.411658
Minimum	1.00E-12	95% KM (bootstrap t) UCL	39.791465
Maximum	88	95% KM (BCA) UCL	21.881818
Mean	20.30509	95% KM (Percentile Bootstrap) UCL	21.793651
Median	14.436028	95% KM (Chebyshev) UCL	37.25035
SD	24.255532	97.5% KM (Chebyshev) UCL	47.71596
k star	0.3148815	99% KM (Chebyshev) UCL	68.273625
Theta star	64.48487		
Nu star	14.484547	Potential UCLs to Use	
AppChi2	6.9044105	99% KM (Chebyshev) UCL	68.273625
95% Gamma Approximate UCL	42.597415		
95% Adjusted Gamma UCL	45.061507		
Note: DL/2 is not a recommended method.			

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Concentrations in ug/L

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet.wst
Full Precision	ON
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Oil Range Organics - Groundwater

General Statistics			
Number of Valid Data	24	Number of Detected Data	13
Number of Distinct Detected Data	12	Number of Non-Detect Data	11
Number of Missing Values	3	Percent Non-Detects	45.83%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	53	Minimum Detected	3.9702919
Maximum Detected	3400	Maximum Detected	8.1315307
Mean of Detected	470.53846	Mean of Detected	5.1340784
SD of Detected	941.043	SD of Detected	1.2679724
Minimum Non-Detect	100	Minimum Non-Detect	4.6051702
Maximum Non-Detect	100	Maximum Non-Detect	4.6051702

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.5025101	Shapiro Wilk Test Statistic	0.8336383
5% Shapiro Wilk Critical Value	0.866	5% Shapiro Wilk Critical Value	0.866
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	277.79167	Mean	4.5739697
SD	712.63412	SD	1.107118
95% DL/2 (t) UCL	527.10141	95% H-Stat (DL/2) UCL	332.67449
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	4.5068662
		SD in Log Scale	1.2462815
		Mean in Original Scale	279.29576
		SD in Original Scale	712.46513
		95% t UCL	528.54638
		95% Percentile Bootstrap UCL	548.94768
		95% BCA Bootstrap UCL	665.75508
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.5167604	Data do not follow a Discernable Distribution (0.05)	
Theta Star	910.5544		
nu star	13.435771		
A-D Test Statistic	1.6049005	Nonparametric Statistics	
5% A-D Critical Value	0.7816916	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.7816916	Mean	280.88542
5% K-S Critical Value	0.2481533	SD	696.6305
Data not Gamma Distributed at 5% Significance Level		SE of Mean	148.00845
		95% KM (t) UCL	534.55289
Assuming Gamma Distribution		95% KM (z) UCL	524.33766
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	529.84673
Minimum	1.00E-12	95% KM (bootstrap t) UCL	2452.1851
Maximum	3400	95% KM (BCA) UCL	519.41667
Mean	560.06284	95% KM (Percentile Bootstrap) UCL	551
Median	169.49052	95% KM (Chebyshev) UCL	926.03931
SD	815.32345	97.5% KM (Chebyshev) UCL	1205.1979
k star	0.2091164	99% KM (Chebyshev) UCL	1753.5509
Theta star	2678.2344		
Nu star	10.037589	Potential UCLs to Use	
AppChi2	3.965269	97.5% KM (Chebyshev) UCL	1205.1979
95% Gamma Approximate UCL	1417.73		
95% Adjusted Gamma UCL	1519.4069		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Concentrations in ug/L

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet.wst
Full Precision	ON
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

1,2,4-Trimethylbenzene

General Statistics			
Number of Valid Data	23	Number of Detected Data	13
Number of Distinct Detected Data	13	Number of Non-Detect Data	10
Number of Missing Values	3	Percent Non-Detects	43.48%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.34	Minimum Detected	-1.07881
Maximum Detected	290	Maximum Detected	5.6698809
Mean of Detected	28.28	Mean of Detected	1.0817417
SD of Detected	79.357386	SD of Detected	2.0217004
Minimum Non-Detect	1	Minimum Non-Detect	0
Maximum Non-Detect	50	Maximum Non-Detect	3.912023
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	22
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	1
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	95.65%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.3998703	Shapiro Wilk Test Statistic	0.8801456
5% Shapiro Wilk Critical Value	0.866	5% Shapiro Wilk Critical Value	0.866
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	17.266957	Mean	0.4801389
SD	60.203385	SD	1.829585
95% DL/2 (t) UCL	38.822739	95% H-Stat (DL/2) UCL	37.526421
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	0.3931653
		SD in Log Scale	1.8364919
		Mean in Original Scale	16.389282
		SD in Original Scale	60.228397
		95% t UCL	37.95402
		95% Percentile Bootstrap UCL	40.699751
		95% BCA Bootstrap UCL	54.293356
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.2853947	Data appear Lognormal at 5% Significance Level	
Theta Star	99.090847		
nu star	7.4202615		
A-D Test Statistic	1.5107378	Nonparametric Statistics	
5% A-D Critical Value	0.828934	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.828934	Mean	16.393789
5% K-S Critical Value	0.2561981	SD	58.932246
Data not Gamma Distributed at 5% Significance Level		SE of Mean	12.796189
		95% KM (t) UCL	38.366693
Assuming Gamma Distribution		95% KM (z) UCL	37.441647
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	37.980203
Minimum	0.34	95% KM (bootstrap t) UCL	213.72726
Maximum	290	95% KM (BCA) UCL	41.554493
Mean	32.245387	95% KM (Percentile Bootstrap) UCL	40.996522
Median	12.442943	95% KM (Chebyshev) UCL	72.171084
SD	61.579912	97.5% KM (Chebyshev) UCL	96.305964
k star	0.429031	99% KM (Chebyshev) UCL	143.71426
Theta star	75.158645		
Nu star	19.735425	Potential UCLs to Use	
AppChi2	10.656332	99% KM (Chebyshev) UCL	143.71426
95% Gamma Approximate UCL	59.718147		
95% Adjusted Gamma UCL	62.551553		
Note: DL/2 is not a recommended method.			

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Concentrations in ug/L

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet_b.wst
Full Precision	ON
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Benzo(a)pyrene - Surface Soil (Non-Hotspot)

General Statistics

Number of Valid Data	33	Number of Detected Data	0
Number of Distinct Detected Data	0	Number of Non-Detect Data	33
Number of Missing Values	5	Percent Non-Detects	100.00%

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Benzo(a)pyrene was not processed!

Concentrations in mg/kg

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet_b.wst
Full Precision	ON
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Benzo(b)fluoranthene - Surface Soil

General Statistics

Number of Valid Data	33	Number of Detected Data	0
Number of Distinct Detected Data	0	Number of Non-Detect Data	33
Number of Missing Values	5	Percent Non-Detects	100.00%

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Benzo(b)fluoranthene was not processed!

Concentrations in mg/kg

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet_b.wst
Full Precision	ON
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Benzo(k)fluoranthene - Surface Soil (Non-Hotspot)

General Statistics

Number of Valid Data	33	Number of Detected Data	0
Number of Distinct Detected Data	0	Number of Non-Detect Data	33
Number of Missing Values	5	Percent Non-Detects	100.00%

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Benzo(k)fluoranthene was not processed!

Concentrations in mg/kg

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet_b.wst
Full Precision	ON
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Diesel Range Organics - Surface Soil (Non-Hotspot)

General Statistics			
Number of Valid Data	34	Number of Detected Data	31
Number of Distinct Detected Data	28	Number of Non-Detect Data	3
Number of Missing Values	5	Percent Non-Detects	8.82%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	6.2	Minimum Detected	1.8245493
Maximum Detected	22000	Maximum Detected	9.9987977
Mean of Detected	2992.0677	Mean of Detected	5.5338457
SD of Detected	5597.877	SD of Detected	2.5253265
Minimum Non-Detect	4	Minimum Non-Detect	1.3862944
Maximum Non-Detect	20	Maximum Non-Detect	2.9957323

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	8
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	26
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	23.53%

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.6104557	Shapiro Wilk Test Statistic	0.9065321
5% Shapiro Wilk Critical Value	0.929	5% Shapiro Wilk Critical Value	0.929
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	2728.4735	Mean	5.1540617
SD	5406.2202	SD	2.7176191
95% DL/2 (t) UCL	4297.5609	95% H-Stat (DL/2) UCL	74579.318
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	1660.84	Mean in Log Scale	5.0666499
SD	6393.1074	SD in Log Scale	2.8658506
95% MLE (t) UCL	3516.3589	Mean in Original Scale	2728.2441
95% MLE (Tiku) UCL	3515.3361	SD in Original Scale	5406.3392
		95% t UCL	4297.366
		95% Percentile Bootstrap UCL	4309.8928
		95% BCA Bootstrap UCL	4682.4887
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.2762311	Data do not follow a Discernable Distribution (0.05)	
Theta Star	10831.756		
nu star	17.126327		
A-D Test Statistic	2.2969595	Nonparametric Statistics	
5% A-D Critical Value	0.8621843	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.8621843	Mean	2728.7185
5% K-S Critical Value	0.1717941	SD	5325.9983
Data not Gamma Distributed at 5% Significance Level		SE of Mean	928.49975
		95% KM (t) UCL	4300.0747
Assuming Gamma Distribution		95% KM (z) UCL	4255.9647
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	4297.7281
Minimum	1.00E-12	95% KM (bootstrap t) UCL	4883.6301
Maximum	22000	95% KM (BCA) UCL	4271.2314
Mean	2728.0618	95% KM (Percentile Bootstrap) UCL	4296.3618
Median	120	95% KM (Chebyshev) UCL	6775.9551
SD	5406.434	97.5% KM (Chebyshev) UCL	8527.1976
k star	0.1523102	99% KM (Chebyshev) UCL	11967.174
Theta star	17911.216		
Nu star	10.357097	Potential UCLs to Use	
AppChi2	4.166168	99% KM (Chebyshev) UCL	11967.174
95% Gamma Approximate UCL	6781.9637		
95% Adjusted Gamma UCL	7111.7305		
Note: DL/2 is not a recommended method.			

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Concentrations in mg/kg

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet_b.wst
Full Precision	ON
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Lead - Surface Soil (Non-Hotspot)

General Statistics			
Number of Valid Data	34	Number of Detected Data	34
Number of Distinct Detected Data	29	Number of Non-Detect Data	0
Number of Missing Values	5	Percent Non-Detects	0.00%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	2.9	Minimum Detected	1.0647107
Maximum Detected	690	Maximum Detected	6.5366916
Mean of Detected	29.658824	Mean of Detected	2.2190286
SD of Detected	116.87253	SD of Detected	0.9541676
Minimum Non-Detect	N/A	Minimum Non-Detect	N/A
Maximum Non-Detect	N/A	Maximum Non-Detect	N/A

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.2130667	Shapiro Wilk Test Statistic	0.7483092
5% Shapiro Wilk Critical Value	0.933	5% Shapiro Wilk Critical Value	0.933
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	29.658824	Mean	2.2190286
SD	116.87253	SD	0.9541676
95% DL/2 (t) UCL	63.579604	95% H-Stat (DL/2) UCL	21.582568
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	N/A
		SD in Log Scale	N/A
		Mean in Original Scale	N/A
		SD in Original Scale	N/A
		95% t UCL	N/A
		95% Percentile Bootstrap UCL	N/A
		95% BCA Bootstrap UCL	N/A
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.5089305	Data do not follow a Discernable Distribution (0.05)	
Theta Star	58.276767		
nu star	34.607273		
A-D Test Statistic	6.8034812	Nonparametric Statistics	
5% A-D Critical Value	0.8081128	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.8081128	Mean	29.658824
5% K-S Critical Value	0.1591592	SD	115.14099
Data not Gamma Distributed at 5% Significance Level		SE of Mean	20.043474
		95% KM (t) UCL	63.579604
Assuming Gamma Distribution		95% KM (z) UCL	62.627404
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	63.579604
Minimum	2.9	95% KM (bootstrap t) UCL	527.83515
Maximum	690	95% KM (BCA) UCL	68.988235
Mean	29.658824	95% KM (Percentile Bootstrap) UCL	69.635294
Median	8.55	95% KM (Chebyshev) UCL	117.0263
SD	116.87253	97.5% KM (Chebyshev) UCL	154.83028
k star	0.5089305	99% KM (Chebyshev) UCL	229.08887
Theta star	58.276767		
Nu star	34.607273	Potential UCLs to Use	
AppChi2	22.1503	95% KM (Chebyshev) UCL	117.0263
95% Gamma Approximate UCL	46.338469		
95% Adjusted Gamma UCL	47.394806		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Concentrations in mg/kg

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet_c.wst
Full Precision	ON
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Benzene - Subsurface Soil (0-10 ft bgs) (Non-Hotspot)

General Statistics

Number of Valid Data	64	Number of Detected Data	4
Number of Distinct Detected Data	4	Number of Non-Detect Data	60
Number of Missing Values	6	Percent Non-Detects	93.75%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0041	Minimum Detected	-5.496768
Maximum Detected	0.042	Maximum Detected	-3.170086
Mean of Detected	0.01495	Mean of Detected	-4.664411
SD of Detected	0.0181002	SD of Detected	1.0316119
Minimum Non-Detect	0.005	Minimum Non-Detect	-5.298317
Maximum Non-Detect	1	Maximum Non-Detect	0

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	64
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: There are only 4 Distinct Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.708963	Shapiro Wilk Test Statistic	0.8534753
5% Shapiro Wilk Critical Value	0.748	5% Shapiro Wilk Critical Value	0.748
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.016325	Mean	-5.60987
SD	0.0690247	SD	1.0646185
95% DL/2 (t) UCL	0.0307288	95% H-Stat (DL/2) UCL	0.0087499
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-5.649626
		SD in Log Scale	0.6406821
		Mean in Original Scale	0.0045081
		SD in Original Scale	0.0051867
		95% t UCL	0.0055905
		95% Percentile Bootstrap UCL	0.0056714
		95% BCA Bootstrap UCL	0.0064978
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.4725455	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	0.0316372		
nu star	3.780364		
A-D Test Statistic	0.577732	Nonparametric Statistics	
5% A-D Critical Value	0.6647146	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.6647146	Mean	0.0048483
5% K-S Critical Value	0.4011268	SD	0.0049502
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	7.51E-04
		95% KM (t) UCL	0.0061012
Assuming Gamma Distribution		95% KM (z) UCL	0.0060828
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.0061475
Minimum	1.00E-12	95% KM (bootstrap t) UCL	0.011175
Maximum	0.042	95% KM (BCA) UCL	0.042
Mean	0.0073891	95% KM (Percentile Bootstrap) UCL	N/A
Median	0.0044545	95% KM (Chebyshev) UCL	0.0081198
SD	0.0084134	97.5% KM (Chebyshev) UCL	0.0095355
k star	0.0995648	99% KM (Chebyshev) UCL	0.0123161
Theta star	0.0742144		
Nu star	12.744298	Potential UCLs to Use	
AppChi2	5.7211814	95% KM (t) UCL	0.0061012
95% Gamma Approximate UCL	0.0164598		
95% Adjusted Gamma UCL	N/A		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Concentrations reported in mg/kg

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet.wst
Full Precision	ON
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Benzo(a)pyrene - Subsurface Soil (0-10 ft bgs) (Non-Hotspot)

General Statistics

Number of Valid Data	60	Number of Detected Data	0
Number of Distinct Detected Data	0	Number of Non-Detect Data	60
Number of Missing Values	6	Percent Non-Detects	100.00%

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Benzo(a)pyrene was not processed!

Concentrations reported in mg/kg

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet.wst
Full Precision	ON
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Benzo(k)fluoranthene

General Statistics

Number of Valid Data	60	Number of Detected Data	0
Number of Distinct Detected Data	0	Number of Non-Detect Data	60
Number of Missing Values	6	Percent Non-Detects	100.00%

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Benzo(k)fluoranthene was not processed!

Concentrations reported in mg/kg

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet.wst
Full Precision	ON
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Benzo(b)fluoranthene - Subsurface Soil (0-10 ft bgs) (Non-Hotspot)

General Statistics

Number of Valid Data	60	Number of Detected Data	0
Number of Distinct Detected Data	0	Number of Non-Detect Data	60
Number of Missing Values	6	Percent Non-Detects	100.00%

Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!
Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable Benzo(b)fluoranthene was not processed!

Concentrations reported in mg/kg

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet_c.wst
Full Precision	ON
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Diesel Range Organics - Subsurface Soil (0-10 ft bgs) (Non-Hotspot)

General Statistics			
Number of Valid Data	64	Number of Detected Data	51
Number of Distinct Detected Data	47	Number of Non-Detect Data	13
Number of Missing Values	6	Percent Non-Detects	20.31%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	2.2	Minimum Detected	0.7884574
Maximum Detected	22000	Maximum Detected	9.9987977
Mean of Detected	3406.3647	Mean of Detected	5.7558454
SD of Detected	5827.5181	SD of Detected	2.7023984
Minimum Non-Detect	4	Minimum Non-Detect	1.3862944
Maximum Non-Detect	20	Maximum Non-Detect	2.9957323

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	23
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	41
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	35.94%

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Lilliefors Test Statistic	0.3228031	Lilliefors Test Statistic	0.1465545
5% Lilliefors Critical Value	0.1240648	5% Lilliefors Critical Value	0.1240648
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	2714.9781	Mean	4.7526323
SD	5371.9097	SD	3.1376665
95% DL/2 (t) UCL	3835.9629	95% H-Stat (DL/2) UCL	81696.673
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	728.47947	Mean in Log Scale	4.5941641
SD	7258.989	SD in Log Scale	3.3969957
95% MLE (t) UCL	2243.251	Mean in Original Scale	2714.8316
95% MLE (Tiku) UCL	2374.4743	SD in Original Scale	5371.9848
		95% t UCL	3835.8321
		95% Percentile Bootstrap UCL	3890.1411
		95% BCA Bootstrap UCL	4062.3655
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.2873392	Data do not follow a Discernable Distribution (0.05)	
Theta Star	11854.857		
nu star	29.308595		
A-D Test Statistic	2.0601732	Nonparametric Statistics	
5% A-D Critical Value	0.8663663	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.8663663	Mean	2714.9496
5% K-S Critical Value	0.1351442	SD	5329.7909
Data not Gamma Distributed at 5% Significance Level		SE of Mean	672.85313
		95% KM (t) UCL	3838.2121
Assuming Gamma Distribution		95% KM (z) UCL	3821.6945
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	3835.3416
Minimum	1.00E-12	95% KM (bootstrap t) UCL	4221.4208
Maximum	22000	95% KM (BCA) UCL	3826.9638
Mean	2714.4469	95% KM (Percentile Bootstrap) UCL	3852.2594
Median	92.5	95% KM (Chebyshev) UCL	5647.8484
SD	5372.1822	97.5% KM (Chebyshev) UCL	6916.916
k star	0.0979875	99% KM (Chebyshev) UCL	9409.7537
Theta star	27701.967		
Nu star	12.542402	Potential UCLs to Use	
AppChi2	5.5863751	97.5% KM (Chebyshev) UCL	6916.916
95% Gamma Approximate UCL	6094.414		
95% Adjusted Gamma UCL	6213.5784		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Concentrations reported in mg/kg

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet.wst
Full Precision	ON
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Gasoline Range Organics - Subsurface Soil (0-10 ft bgs) (Non-Hotspot)

General Statistics			
Number of Valid Data	65	Number of Detected Data	18
Number of Distinct Detected Data	17	Number of Non-Detect Data	47
Number of Missing Values	5	Percent Non-Detects	72.31%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.38	Minimum Detected	-0.967584
Maximum Detected	1500	Maximum Detected	7.3132204
Mean of Detected	127.61278	Mean of Detected	2.3323487
SD of Detected	354.31975	SD of Detected	2.3383233
Minimum Non-Detect	0.5	Minimum Non-Detect	-0.693147
Maximum Non-Detect	0.5	Maximum Non-Detect	-0.693147

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.4058584	Shapiro Wilk Test Statistic	0.9310179
5% Shapiro Wilk Critical Value	0.897	5% Shapiro Wilk Critical Value	0.897
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	35.519692	Mean	-0.356516
SD	191.43163	SD	2.0650839
95% DL/2 (t) UCL	75.149024	95% H-Stat (DL/2) UCL	13.095674
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-2.072493
		SD in Log Scale	3.7702358
		Mean in Original Scale	35.46639
		SD in Original Scale	191.44177
		95% t UCL	75.097821
		95% Percentile Bootstrap UCL	81.316626
		95% BCA Bootstrap UCL	105.7563
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.26829	Data appear Lognormal at 5% Significance Level	
Theta Star	475.65245		
nu star	9.6584386		
A-D Test Statistic	1.4707155	Nonparametric Statistics	
5% A-D Critical Value	0.8515478	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.8515478	Mean	35.613692
5% K-S Critical Value	0.2218213	SD	189.93593
Data not Gamma Distributed at 5% Significance Level		SE of Mean	24.241653
		95% KM (t) UCL	76.073327
Assuming Gamma Distribution		95% KM (z) UCL	75.487664
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	74.984713
Minimum	0.38	95% KM (bootstrap t) UCL	286.64191
Maximum	3700.5076	95% KM (BCA) UCL	83.010308
Mean	682.28156	95% KM (Percentile Bootstrap) UCL	81.160769
Median	180	95% KM (Chebyshev) UCL	141.28061
SD	956.86597	97.5% KM (Chebyshev) UCL	187.00277
k star	0.4254739	99% KM (Chebyshev) UCL	276.8151
Theta star	1603.5801		
Nu star	55.311613	Potential UCLs to Use	
AppChi2	39.220681	97.5% KM (Chebyshev) UCL	187.00277
95% Gamma Approximate UCL	962.19886		
95% Adjusted Gamma UCL	969.79278		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Concentrations reported in mg/kg

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet.wst
Full Precision	ON
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Isopropylbenzene - Subsurface Soil (0-10 ft bgs) (Non-Hotspot)

General Statistics			
Number of Valid Data	64	Number of Detected Data	11
Number of Distinct Detected Data	11	Number of Non-Detect Data	53
Number of Missing Values	6	Percent Non-Detects	82.81%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0031	Minimum Detected	-5.776353
Maximum Detected	2.4	Maximum Detected	0.8754687
Mean of Detected	0.4211	Mean of Detected	-2.367859
SD of Detected	0.7227223	SD of Detected	2.1166156
Minimum Non-Detect	0.005	Minimum Non-Detect	-5.298317
Maximum Non-Detect	0.005	Maximum Non-Detect	-5.298317

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.6409211	Shapiro Wilk Test Statistic	0.9714457
5% Shapiro Wilk Critical Value	0.85	5% Shapiro Wilk Critical Value	0.85
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.0744469	Mean	-5.368657
SD	0.329007	SD	1.6154583
95% DL/2 (t) UCL	0.1431025	95% H-Stat (DL/2) UCL	0.0291194
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-6.487274
		SD in Log Scale	2.9736099
		Mean in Original Scale	0.0754427
		SD in Original Scale	0.3288349
		95% t UCL	0.1440625
		95% Percentile Bootstrap UCL	0.1525359
		95% BCA Bootstrap UCL	0.1925319
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.3750729	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	1.122715		
nu star	8.2516044		
A-D Test Statistic	0.2587554	Nonparametric Statistics	
5% A-D Critical Value	0.7942803	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.7942803	Mean	0.0749438
5% K-S Critical Value	0.2713621	SD	0.3263171
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.0427805
		95% KM (t) UCL	0.1463617
Assuming Gamma Distribution		95% KM (z) UCL	0.1453115
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.1421259
Minimum	1.00E-12	95% KM (bootstrap t) UCL	0.3506694
Maximum	2.4	95% KM (BCA) UCL	0.1640469
Mean	0.2325082	95% KM (Percentile Bootstrap) UCL	0.1567031
Median	0.1433985	95% KM (Chebyshev) UCL	0.2614198
SD	0.3477121	97.5% KM (Chebyshev) UCL	0.3421081
k star	0.0969482	99% KM (Chebyshev) UCL	0.5006047
Theta star	2.3982733		
Nu star	12.409365	Potential UCLs to Use	
AppChi2	5.4978506	95% KM (t) UCL	0.1463617
95% Gamma Approximate UCL	0.5248013		
95% Adjusted Gamma UCL	0.5351343		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Concentrations reported in mg/kg

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet_c.wst
Full Precision	ON
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Lead - Subsurface Soil (0-10 ft bgs) (Non-Hotspot)

General Statistics			
Number of Valid Data	64	Number of Detected Data	64
Number of Distinct Detected Data	44	Number of Non-Detect Data	0
Number of Missing Values	6	Percent Non-Detects	0.00%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	1.7	Minimum Detected	0.5306283
Maximum Detected	690	Maximum Detected	6.5366916
Mean of Detected	19.515625	Mean of Detected	2.0374048
SD of Detected	85.427328	SD of Detected	0.8478983
Minimum Non-Detect	N/A	Minimum Non-Detect	N/A
Maximum Non-Detect	N/A	Maximum Non-Detect	N/A

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Lilliefors Test Statistic	0.4305684	Lilliefors Test Statistic	0.1428603
5% Lilliefors Critical Value	0.11075	5% Lilliefors Critical Value	0.11075
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	19.515625	Mean	2.0374048
SD	85.427328	SD	0.8478983
95% DL/2 (t) UCL	37.342197	95% H-Stat (DL/2) UCL	13.805293
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	N/A
		SD in Log Scale	N/A
		Mean in Original Scale	N/A
		SD in Original Scale	N/A
		95% t UCL	N/A
		95% Percentile Bootstrap UCL	N/A
		95% BCA Bootstrap UCL	N/A
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.6332864	Data do not follow a Discernable Distribution (0.05)	
Theta Star	30.816429		
nu star	81.060659		
A-D Test Statistic	10.07854	Nonparametric Statistics	
5% A-D Critical Value	0.8015404	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.8015404	Mean	19.515625
5% K-S Critical Value	0.1165966	SD	84.757299
Data not Gamma Distributed at 5% Significance Level		SE of Mean	10.678416
		95% KM (t) UCL	37.342197
Assuming Gamma Distribution		95% KM (z) UCL	37.080056
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	37.342197
Minimum	1.7	95% KM (bootstrap t) UCL	192.15044
Maximum	690	95% KM (BCA) UCL	41.239063
Mean	19.515625	95% KM (Percentile Bootstrap) UCL	40.729688
Median	6.7	95% KM (Chebyshev) UCL	66.061761
SD	85.427328	97.5% KM (Chebyshev) UCL	86.202311
k star	0.6332864	99% KM (Chebyshev) UCL	125.76452
Theta star	30.816429		
Nu star	81.060659	Potential UCLs to Use	
AppChi2	61.314299	95% KM (Chebyshev) UCL	66.061761
95% Gamma Approximate UCL	25.80066		
95% Adjusted Gamma UCL	25.967923		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Concentrations reported in mg/kg

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet_c.wst
Full Precision	ON
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Methylene Chloride - Subsurface Soil (0-10 ft bgs) (Non-Hotspot)

General Statistics			
Number of Valid Data	64	Number of Detected Data	15
Number of Distinct Detected Data	14	Number of Non-Detect Data	49
Number of Missing Values	6	Percent Non-Detects	76.56%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0024	Minimum Detected	-6.032287
Maximum Detected	0.085	Maximum Detected	-2.465104
Mean of Detected	0.01952	Mean of Detected	-5.051723
SD of Detected	0.033062	SD of Detected	1.3598886
Minimum Non-Detect	0.025	Minimum Non-Detect	-3.688879
Maximum Non-Detect	5	Maximum Non-Detect	1.6094379

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	64
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.5330711	Shapiro Wilk Test Statistic	0.6632541
5% Shapiro Wilk Critical Value	0.881	5% Shapiro Wilk Critical Value	0.881
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.0758641	Mean	-4.312289
SD	0.3451123	SD	1.2096822
95% DL/2 (t) UCL	0.1478805	95% H-Stat (DL/2) UCL	0.0391576
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-5.396212
		SD in Log Scale	1.0225469
		Mean in Original Scale	0.0090031
		SD in Original Scale	0.0171931
		95% t UCL	0.0125909
		95% Percentile Bootstrap UCL	0.0127059
		95% BCA Bootstrap UCL	0.0143295
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.4922187	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0396572		
nu star	14.766561		
A-D Test Statistic	2.9112034	Nonparametric Statistics	
5% A-D Critical Value	0.788719	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.788719	Mean	0.007555
5% K-S Critical Value	0.2329525	SD	0.0174437
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.0023583
		95% KM (t) UCL	0.0114919
Assuming Gamma Distribution		95% KM (z) UCL	0.011434
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.0114008
Minimum	1.00E-12	95% KM (bootstrap t) UCL	0.0132946
Maximum	0.085	95% KM (BCA) UCL	0.0117951
Mean	0.0179297	95% KM (Percentile Bootstrap) UCL	0.0115517
Median	0.0159105	95% KM (Chebyshev) UCL	0.0178344
SD	0.0186911	97.5% KM (Chebyshev) UCL	0.0222824
k star	0.2223988	99% KM (Chebyshev) UCL	0.0310194
Theta star	0.0806195		
Nu star	28.467044	Potential UCLs to Use	
AppChi2	17.292068	95% KM (BCA) UCL	0.0117951
95% Gamma Approximate UCL	0.0295167		
95% Adjusted Gamma UCL	0.029864		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Concentrations reported in mg/kg

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet_c.wst
Full Precision	ON
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

1-Methylnaphthalene - Subsurface Soil (0-10 ft bgs) (Non-Hotspot)

General Statistics			
Number of Valid Data	60	Number of Detected Data	17
Number of Distinct Detected Data	16	Number of Non-Detect Data	43
Number of Missing Values	6	Percent Non-Detects	71.67%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.017	Minimum Detected	-4.074542
Maximum Detected	4.8	Maximum Detected	1.5686159
Mean of Detected	0.8835294	Mean of Detected	-1.301543
SD of Detected	1.4902459	SD of Detected	1.6095097
Minimum Non-Detect	0.02	Minimum Non-Detect	-3.912023
Maximum Non-Detect	0.02	Maximum Non-Detect	-3.912023

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.6043372	Shapiro Wilk Test Statistic	0.9524262
5% Shapiro Wilk Critical Value	0.892	5% Shapiro Wilk Critical Value	0.892
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.2575	Mean	-3.669143
SD	0.8716812	SD	1.7193645
95% DL/2 (t) UCL	0.445554	95% H-Stat (DL/2) UCL	0.2442939
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-4.321925
		SD in Log Scale	2.6152476
		Mean in Original Scale	0.2593104
		SD in Original Scale	0.8712662
		95% t UCL	0.4472749
		95% Percentile Bootstrap UCL	0.4429748
		95% BCA Bootstrap UCL	0.5495304
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.4789103	Data Follow Appr. Gamma Distribution at 5% Significance Level	
Theta Star	1.8448744		
nu star	16.282952		
A-D Test Statistic	0.9520116	Nonparametric Statistics	
5% A-D Critical Value	0.7950106	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.7950106	Mean	0.2625167
5% K-S Critical Value	0.2204321	SD	0.8629548
Data follow Appr. Gamma Distribution at 5% Significance Level		SE of Mean	0.1148357
		95% KM (t) UCL	0.4544178
Assuming Gamma Distribution		95% KM (z) UCL	0.4514046
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.4415906
Minimum	0.017	95% KM (bootstrap t) UCL	0.7680854
Maximum	10.364558	95% KM (BCA) UCL	0.5243
Mean	2.8905214	95% KM (Percentile Bootstrap) UCL	0.4826
Median	1.6431429	95% KM (Chebyshev) UCL	0.7630739
SD	3.005045	97.5% KM (Chebyshev) UCL	0.9796654
k star	0.6945232	99% KM (Chebyshev) UCL	1.4051174
Theta star	4.1618791		
Nu star	83.34278	Potential UCLs to Use	
AppChi2	63.30285	95% KM (t) UCL	0.4544178
95% Gamma Approximate UCL	3.8055805		
95% Adjusted Gamma UCL	3.8315601		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Concentrations reported in mg/kg

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet_c.wst
Full Precision	ON
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

2-Methylnaphthalene - Subsurface Soil (0-10 ft bgs) (Non-Hotspot)

General Statistics			
Number of Valid Data	60	Number of Detected Data	17
Number of Distinct Detected Data	16	Number of Non-Detect Data	43
Number of Missing Values	6	Percent Non-Detects	71.67%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0083	Minimum Detected	-4.7915
Maximum Detected	6.6	Maximum Detected	1.8870696
Mean of Detected	0.8649	Mean of Detected	-1.901574
SD of Detected	1.8951593	SD of Detected	1.9027284
Minimum Non-Detect	0.02	Minimum Non-Detect	-3.912023
Maximum Non-Detect	0.02	Maximum Non-Detect	-3.912023

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.4982343	Shapiro Wilk Test Statistic	0.9522282
5% Shapiro Wilk Critical Value	0.892	5% Shapiro Wilk Critical Value	0.892
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.2522217	Mean	-3.839151
SD	1.0606226	SD	1.5783454
95% DL/2 (t) UCL	0.4810374	95% H-Stat (DL/2) UCL	0.1471753
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-4.619948
		SD in Log Scale	2.4993217
		Mean in Original Scale	0.252138
		SD in Original Scale	1.060695
		95% t UCL	0.4809694
		95% Percentile Bootstrap UCL	0.5130382
		95% BCA Bootstrap UCL	0.634785
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.3505699	Data Follow Appr. Gamma Distribution at 5% Significance Level	
Theta Star	2.4671255		
nu star	11.919377		
A-D Test Statistic	1.2779145	Nonparametric Statistics	
5% A-D Critical Value	0.8246625	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.8246625	Mean	0.2544792
5% K-S Critical Value	0.2244781	SD	1.0512359
Data follow Appr. Gamma Distribution at 5% Significance Level		SE of Mean	0.1399148
		95% KM (t) UCL	0.4882897
Assuming Gamma Distribution		95% KM (z) UCL	0.4846185
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.4833389
Minimum	0.0083	95% KM (bootstrap t) UCL	1.6496203
Maximum	6.6	95% KM (BCA) UCL	0.5404833
Mean	1.0037305	95% KM (Percentile Bootstrap) UCL	0.4935389
Median	0.8806948	95% KM (Chebyshev) UCL	0.8643535
SD	1.0122656	97.5% KM (Chebyshev) UCL	1.1282466
k star	1.0567556	99% KM (Chebyshev) UCL	1.6466135
Theta star	0.9498228		
Nu star	126.81067	Potential UCLs to Use	
AppChi2	101.80085	95% KM (t) UCL	0.4882897
95% Gamma Approximate UCL	1.250321		
95% Adjusted Gamma UCL	1.2571118		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Concentrations reported in mg/kg

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet_c.wst
Full Precision	ON
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Naphthalene (as VOC) - Subsurface Soil (0-10 ft bgs) (Non-Hotspot)

General Statistics			
Number of Valid Data	64	Number of Detected Data	15
Number of Distinct Detected Data	15	Number of Non-Detect Data	49
Number of Missing Values	6	Percent Non-Detects	76.56%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0026	Minimum Detected	-5.952244
Maximum Detected	6.6	Maximum Detected	1.8870696
Mean of Detected	1.0880933	Mean of Detected	-2.103553
SD of Detected	1.9453786	SD of Detected	2.7103687
Minimum Non-Detect	0.025	Minimum Non-Detect	-3.688879
Maximum Non-Detect	0.025	Maximum Non-Detect	-3.688879

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.6266834	Shapiro Wilk Test Statistic	0.928795
5% Shapiro Wilk Critical Value	0.881	5% Shapiro Wilk Critical Value	0.881
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.2645922	Mean	-3.848009
SD	1.0256183	SD	1.6058714
95% DL/2 (t) UCL	0.4786134	95% H-Stat (DL/2) UCL	0.1304864
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-4.56723
		SD in Log Scale	2.5946432
		Mean in Original Scale	0.2703092
		SD in Original Scale	1.0245382
		95% t UCL	0.484105
		95% Percentile Bootstrap UCL	0.5018066
		95% BCA Bootstrap UCL	0.6018597
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.2948348	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	3.6905186		
nu star	8.8450441		
A-D Test Statistic	0.4301022	Nonparametric Statistics	
5% A-D Critical Value	0.8327488	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.8327488	Mean	0.2602894
5% K-S Critical Value	0.2396167	SD	1.0186527
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.1318152
		95% KM (t) UCL	0.4803419
Assuming Gamma Distribution		95% KM (z) UCL	0.477106
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.4745739
Minimum	1.00E-12	95% KM (bootstrap t) UCL	1.0233819
Maximum	6.6	95% KM (BCA) UCL	0.531375
Mean	0.8399384	95% KM (Percentile Bootstrap) UCL	0.4896938
Median	0.8715574	95% KM (Chebyshev) UCL	0.8348583
SD	1.0327384	97.5% KM (Chebyshev) UCL	1.0834747
k star	0.1526316	99% KM (Chebyshev) UCL	1.5718336
Theta star	5.5030426		
Nu star	19.53685	Potential UCLs to Use	
AppChi2	10.510434	95% KM (t) UCL	0.4803419
95% Gamma Approximate UCL	1.5612819		
95% Adjusted Gamma UCL	1.5843415		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Concentrations reported in mg/kg

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet_c.wst
Full Precision	ON
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

1,2,4-Trimethylbenzene - Subsurface Soil (0-10 ft bgs) (Non-Hotspot)

General Statistics			
Number of Valid Data	64	Number of Detected Data	19
Number of Distinct Detected Data	18	Number of Non-Detect Data	45
Number of Missing Values	6	Percent Non-Detects	70.31%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.002	Minimum Detected	-6.214608
Maximum Detected	39	Maximum Detected	3.6635616
Mean of Detected	2.9757211	Mean of Detected	-2.654665
SD of Detected	9.0289872	SD of Detected	3.1140851
Minimum Non-Detect	0.005	Minimum Non-Detect	-5.298317
Maximum Non-Detect	0.005	Maximum Non-Detect	-5.298317

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.3755617	Shapiro Wilk Test Statistic	0.8968922
5% Shapiro Wilk Critical Value	0.901	5% Shapiro Wilk Critical Value	0.901
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.885175	Mean	-5.000852
SD	5.016646	SD	2.2653423
95% DL/2 (t) UCL	1.932025	95% H-Stat (DL/2) UCL	0.2207582
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-5.718139
		SD in Log Scale	3.2453789
		Mean in Original Scale	0.8866359
		SD in Original Scale	5.0163884
		95% t UCL	1.9334321
		95% Percentile Bootstrap UCL	2.0726483
		95% BCA Bootstrap UCL	3.2173245
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.2009552	Data do not follow a Discernable Distribution (0.05)	
Theta Star	14.807885		
nu star	7.6362965		
A-D Test Statistic	1.6300119	Nonparametric Statistics	
5% A-D Critical Value	0.8888302	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.8888302	Mean	0.8854211
5% K-S Critical Value	0.2199528	SD	4.9772555
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.6392055
		95% KM (t) UCL	1.9525123
Assuming Gamma Distribution		95% KM (z) UCL	1.9368206
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.9322621
Minimum	1.00E-12	95% KM (bootstrap t) UCL	10.276905
Maximum	39	95% KM (BCA) UCL	1.9547656
Mean	2.3757899	95% KM (Percentile Bootstrap) UCL	2.0822375
Median	2.0812138	95% KM (Chebyshev) UCL	3.6716534
SD	4.9644216	97.5% KM (Chebyshev) UCL	4.8772584
k star	0.1550833	99% KM (Chebyshev) UCL	7.2454359
Theta star	15.319444		
Nu star	19.850663	Potential UCLs to Use	
AppChi2	10.741124	97.5% KM (Chebyshev) UCL	4.8772584
95% Gamma Approximate UCL	4.3906954		
95% Adjusted Gamma UCL	4.4549115		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Concentrations reported in mg/kg

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet_c.wst
Full Precision	ON
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

1,3,5-Trimethylbenzene - Subsurface Soil (0-10 ft bgs) (Non-Hotspot)

General Statistics			
Number of Valid Data	65	Number of Detected Data	18
Number of Distinct Detected Data	18	Number of Non-Detect Data	47
Number of Missing Values	5	Percent Non-Detects	72.31%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0018	Minimum Detected	-6.319969
Maximum Detected	27	Maximum Detected	3.2958369
Mean of Detected	2.3632833	Mean of Detected	-2.625971
SD of Detected	6.5558737	SD of Detected	3.1162402
Minimum Non-Detect	0.005	Minimum Non-Detect	-5.298317
Maximum Non-Detect	0.005	Maximum Non-Detect	-5.298317

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.4162779	Shapiro Wilk Test Statistic	0.9134407
5% Shapiro Wilk Critical Value	0.897	5% Shapiro Wilk Critical Value	0.897
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.6562554	Mean	-5.059482
SD	3.5425754	SD	2.2097283
95% DL/2 (t) UCL	1.3896237	95% H-Stat (DL/2) UCL	0.1754271
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-5.386691
		SD in Log Scale	3.0225413
		Mean in Original Scale	0.6599691
		SD in Original Scale	3.5418943
		95% t UCL	1.3931964
		95% Percentile Bootstrap UCL	1.4658739
		95% BCA Bootstrap UCL	2.2877986
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.2116758	Data Follow Appr. Gamma Distribution at 5% Significance Level	
Theta Star	11.164636		
nu star	7.6203289		
A-D Test Statistic	1.2516952	Nonparametric Statistics	
5% A-D Critical Value	0.8801696	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.8801696	Mean	0.6564434
5% K-S Critical Value	0.2249057	SD	3.5151843
Data follow Appr. Gamma Distribution at 5% Significance Level		SE of Mean	0.4486455
		95% KM (t) UCL	1.4052386
Assuming Gamma Distribution		95% KM (z) UCL	1.3943996
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.3898047
Minimum	1.00E-12	95% KM (bootstrap t) UCL	7.1073044
Maximum	27	95% KM (BCA) UCL	1.4542754
Mean	1.9102371	95% KM (Percentile Bootstrap) UCL	1.48408
Median	1.792989	95% KM (Chebyshev) UCL	2.6120438
SD	3.5081009	97.5% KM (Chebyshev) UCL	3.4582336
k star	0.1609469	99% KM (Chebyshev) UCL	5.1204097
Theta star	11.868743		
Nu star	20.923094	Potential UCLs to Use	
AppChi2	11.534429	95% KM (t) UCL	1.4052386
95% Gamma Approximate UCL	3.4651105		
95% Adjusted Gamma UCL	3.5133945		

Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

Concentrations reported in mg/kg

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	WorkSheet_a.wst
Full Precision	ON
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Diesel Range Organics - Surface Water

General Statistics

Number of Valid Data	7	Number of Detected Data	7
Number of Distinct Detected Data	7	Number of Non-Detect Data	0
Number of Missing Values	2	Percent Non-Detects	0.00%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	87	Minimum Detected	4.4659081
Maximum Detected	3700	Maximum Detected	8.2160881
Mean of Detected	658.14286	Mean of Detected	5.4297643
SD of Detected	1342.1689	SD of Detected	1.2726073
Minimum Non-Detect	N/A	Minimum Non-Detect	N/A
Maximum Non-Detect	N/A	Maximum Non-Detect	N/A

Warning: There are only 7 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough to draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.4866673	Shapiro Wilk Test Statistic	0.6983785
5% Shapiro Wilk Critical Value	0.803	5% Shapiro Wilk Critical Value	0.803
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	658.14286	Mean	5.4297643
SD	1342.1689	SD	1.2726073
95% DL/2 (t) UCL	1643.903	95% H-Stat (DL/2) UCL	5292.1668
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	N/A
		SD in Log Scale	N/A
		Mean in Original Scale	N/A
		SD in Original Scale	N/A
		95% t UCL	N/A
		95% Percentile Bootstrap UCL	N/A
		95% BCA Bootstrap UCL	N/A
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.4296637	Data do not follow a Discernable Distribution (0.05)	
Theta Star	1531.7628		
nu star	6.0152917		
A-D Test Statistic	1.4724778	Nonparametric Statistics	
5% A-D Critical Value	0.7462889	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.7462889	Mean	658.14286
5% K-S Critical Value	0.3256783	SD	1242.607
Data not Gamma Distributed at 5% Significance Level		SE of Mean	507.29218
		95% KM (t) UCL	1643.903
Assuming Gamma Distribution		95% KM (z) UCL	1492.5642
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1643.903
Minimum	87	95% KM (bootstrap t) UCL	17983.937
Maximum	3700	95% KM (BCA) UCL	1675.7143
Mean	658.14286	95% KM (Percentile Bootstrap) UCL	1657.7143
Median	180	95% KM (Chebyshev) UCL	2869.3782
SD	1342.1689	97.5% KM (Chebyshev) UCL	3826.1815
k star	0.4296637	99% KM (Chebyshev) UCL	5705.6363
Theta star	1531.7628		
Nu star	6.0152917	Potential UCLs to Use	
AppChi2	1.6476853	97.5% KM (Chebyshev) UCL	3826.1815
95% Gamma Approximate UCL	2402.7169		
95% Adjusted Gamma UCL	3762.355		

Warning: Recommended UCL exceeds the maximum observation
Note: DL/2 is not a recommended method.

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
For additional insight, the user may want to consult a statistician.

APPENDIX C

Calculation of Chemical Concentrations in Air

Air concentrations of COPCs are calculated for particulate-bound forms of chemicals as well as volatile chemicals. Of the COPCs identified in soil, 8 chemicals are considered volatile (benzene, isopropylbenzene, methylene chloride, 1-methylnaphthalene, 2-methylnaphthalene, naphthalene, 1,2,4-trimethylbenzene, and 1,3,5-trimethylbenzene) by the USEPA. As determined in the exposure pathways analysis, these chemicals occur in soils deeper than 0.5 feet below ground surface and are therefore assumed to be chemicals of potential concern for construction workers. For the 8 VOCs in 0 to 10 feet bgs soils, it is necessary to calculate a volatilization factor for soil (VFs; m^3/kg) which relates the concentration in soil to the concentration that will result in outdoor air. Site-specific VFs were calculated for the 8 VOCs using meteorological data from the closest location available (Little Rock) and assume that up to 25 acres of the property may be affected. To calculate the concentration of a VOC in air emitted from soil, the chemical concentration in soil (in units of mg/kg) is divided by chemical-specific VF to calculate a chemical-specific air concentration in mg/m^3.

Several of the terms used in the calculation of the VFs are chemical-specific; they were derived from physical and chemical information obtained from the USEPA's *Soil Screening Guidance: Technical Background Document* (USEPA, 1996). Information regarding constant variables was obtained from Appendix D of the USEPA's *Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites* (2002). The closest city for which information was available was Little Rock, Arkansas.

Air concentrations of particulate-bound chemicals emitted from soil as the result of wind erosion or soil intrusive activity are calculated using a particulate emission factor (PEF; m^3/kg). PEFs for all receptors except the construction worker were assumed to be 1.4E+09 m^3/kg. The PEF for the construction worker was assumed to be 2.0E+06 m^3/kg. This is equivalent to a respirable dust concentration in air of 0.5 mg/m^3. To determine the particulate-bound chemical concentration in air (mg/m^3), the concentration in soil (mg/kg) is divided by the PEF (m^3/kg).

References

USEPA 1996. Soil Screening Guidance. Technical Background Document. Washington, DC: U.S. Environmental Protection Agency. Office of Solid Waste and Emergency Response.; 1996 May; EPA/540/R-95/128: OSWER 9355.4-17A; PB96-963502.

USEPA 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. . Washington, DC: U.S. Environmental Protection Agency. Office of Solid Waste and Emergency Response.; 2002 December; OSWER 9355.4-24

USEPA 2009. USEPA Generic Risk Screening Tables. Spring 2009. Online at http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/index.htm; accessed on July 24, 2009

Calculation of Soil Volatilization Factors (VFs)

$$VF = \frac{\frac{Q}{C_w} \times (3.14 \times D_A \times T)^{\frac{1}{2}} \times 10^{-4} \left(m^2/cm^2\right)}{2 \times \rho_b \times D_A}$$

where

$$\frac{Q}{C_w} = A \times \exp\left[\frac{(\ln A_s - B)^2}{C}\right] \text{ and}$$

$$D_A = \frac{\left[\left(\theta_a^{10/3} \times D_{ia} \times H' + \theta_w^{10/3} \times D_{iw}\right) / n^2\right]}{\rho_b \times K_d + \theta_w + \theta_a \times H'}$$

Where:

Variable	Definition	Construction Worker
Q/C_w	Site-specific dispersion factor which is the inverse of the ratio of the geometric mean air concentration to the emission flux at the center of the source or at the boundary of the source (g/m^2-sec per kg/m^3)	6.80
A	Constants based on air dispersion modeling for specific climate zones (dimensionless)	2.454
B		17.57
C		189
A_s	Area of extent of site soil contamination (acres)	25
K_d	Soil water partition coefficient (cm^3/g)	Chemical specific; calculated as $K_d = K_{oc}$ x f_{oc}; foc is assumed to be 0.006 (USEPA, 2009)
D_A	Apparent diffusivity (cm^2/s)	Chemical-specific; Refer to Table 1
$ø_a$	Air filled porosity (L_{air}/L_{soil})	0.284 (USEPA, 2009)
Di_a	Diffusivity in air (cm^2/sec)	Chemical-specific; Refer to Table 1
H'	Henry's Law Constant (dimensionless)	Chemical-specific; Refer to Table 1
$ø_w$	Water filled soil porosity (Lwater/Lsoil)	0.15 (USEPA, 2009)
D_{iw}	Diffusivity in water (cm^2/sec)	Chemical-specific; Refer to Table 1
n	Total soil porosity (Lpore/Lsoil) (1-(ρ_d/ρ_s)	0.434 (USEPA, 2009)
ρs	Soil particle density (g/cm^3)	2.65 (USEPA, 2009)
ρ_b	Dry soil bulk density (g/cm^3)	1.5 (USEPA, 2009)
D_A	Apparent diffusivity (cm^2/s)	Chemical-specific; Refer to Table 1
$ø_a$	Air filled porosity (Lair/Lsoil)	0.284
D_{ia}	Diffusivity in air (cm^2/sec)	Chemical-specific; Refer to Table 1
H'	Henry's Law Constant (dimensionless)	Chemical-specific; Refer to Table 1
$ø_w$	Water filled soil porosity (L_{water}/L_{soil})	0.15
D_{iw}	Diffusivity in water (cm^2/sec)	Chemical-specific; Refer to Table 1
n	Total soil porosity (Lpore/Lsoil) (1-(ρd/ρs)	0.434
ρ_s	Soil particle density (g/cm^3)	2.65 (USEPA, 2009)
ρ_d	Dry soil bulk density (g/cm^3)	1.5 (USEPA, 2009)
T	Exposure interval (seconds) [equal to the exposure duration expressed in second]	3.154E+07 (USEPA, 2009)

Table 1

Chemical-Specific Inputs for Calculating the Volatilization Factor

Chemical	D_A (cm^2/s)	D_{ia} (cm^2/s)	D_{iw} (cm^2/s)	H' (dimension-less)	K_{oc} (cm^3/g)	K_d (cm^3/g)	VF (m^3/kg)
Benzene	1.07E-03	0.0895	1.03E-05	2.27E-01	146	0.876	23.41
Isopropylbenzene	3.46E-04	0.0603	7.86E-06	4.70E-01	698	4.188	41.09
Methylene chloride	2.78E-03	0.0999	1.25E-05	1.33E-01	21.7	0.1302	14.49
1-Methylnaphthalene	3.89E-06	0.0528	7.85E-06	2.10E-02	2528	15.17	387.8
2-Methylnaphthalene	3.97E-06	0.0524	7.78E-06	2.12E-02	2478	14.87	383.7
Naphthalene	6.23E-06	0.0605	8.38E-06	1.80E-02	1544	9.264	306.5
1,2,4-Trimethylbenzene	2.14E-04	0.0607	7.92E-06	2.52E-01	614	3.684	52.32
1,3,5-Trimethylbenzene	3.06E-04	0.0602	7.84E-06	3.59E-01	602	3.612	43.72

APPENDIX D

IEUBK Outputs

LEAD MODEL FOR WINDOWS Version 1.1

==========
Model Version: 1.1 Build11
User Name:
Date:
Site Name:
Operable Unit:
Run Mode: Research
==========

****** Air ******

Indoor Air Pb Concentration: 30.000 percent of outdoor.
Other Air Parameters:

Age	Time Outdoors (hours)	Ventilation Rate (m^3/day)	Lung Absorption (%)	Outdoor Air Pb Conc (µg Pb/m^3)
.5-1	1.000	2.000	32.000	0.100
1-2	2.000	3.000	32.000	0.100
2-3	3.000	5.000	32.000	0.100
3-4	4.000	5.000	32.000	0.100
4-5	4.000	5.000	32.000	0.100
5-6	4.000	7.000	32.000	0.100
6-7	4.000	7.000	32.000	0.100

****** Diet ******

Age	Diet Intake(µg/day)
.5-1	2.260
1-2	1.960
2-3	2.130
3-4	2.040
4-5	1.950
5-6	2.050
6-7	2.220

****** Drinking Water ******

Water Consumption:

Age	Water (L/day)
.5-1	0.200
1-2	0.500
2-3	0.520
3-4	0.530
4-5	0.550
5-6	0.580
6-7	0.590

Drinking Water Concentration: 29.700 µg Pb/L

****** Soil & Dust ******

Multiple Source Analysis Used
Average multiple source concentration: 30.300 µg/g

Mass fraction of outdoor soil to indoor dust conversion factor: 0.700
Outdoor airborne lead to indoor household dust lead concentration: 100.000
Use alternate indoor dust Pb sources? No

Age	Soil (µg Pb/g)	House Dust (µg Pb/g)
.5-1	29.000	30.300
1-2	29.000	30.300
2-3	29.000	30.300
3-4	29.000	30.300
4-5	29.000	30.300
5-6	29.000	30.300
6-7	29.000	30.300

****** Alternate Intake ******

Age	Alternate (µg Pb/day)
.5-1	0.000
1-2	0.000
2-3	0.000
3-4	0.000
4-5	0.000
5-6	0.000
6-7	0.000

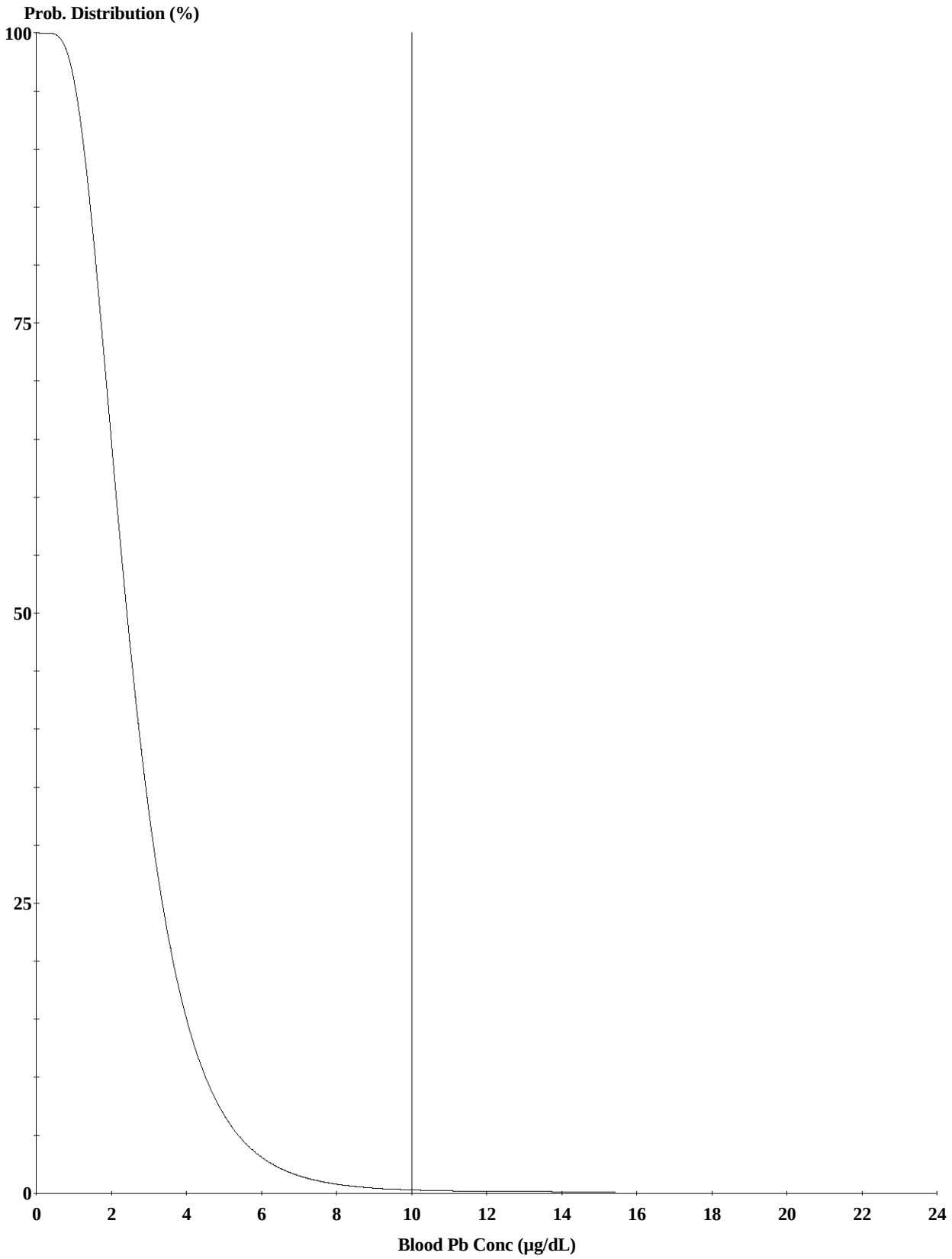
****** Maternal Contribution: Infant Model ******

Maternal Blood Concentration: 1.000 µg Pb/dL

****
CALCULATED BLOOD LEAD AND LEAD UPTAKES:
****

Year	Air (µg/day)	Diet (µg/day)	Alternate (µg/day)	Water (µg/day)
.5-1	0.021	1.072	0.000	2.818
1-2	0.034	0.906	0.000	6.867
2-3	0.062	0.993	0.000	7.203
3-4	0.067	0.960	0.000	7.409
4-5	0.067	0.925	0.000	7.752
5-6	0.093	0.977	0.000	8.206
6-7	0.093	1.061	0.000	8.373

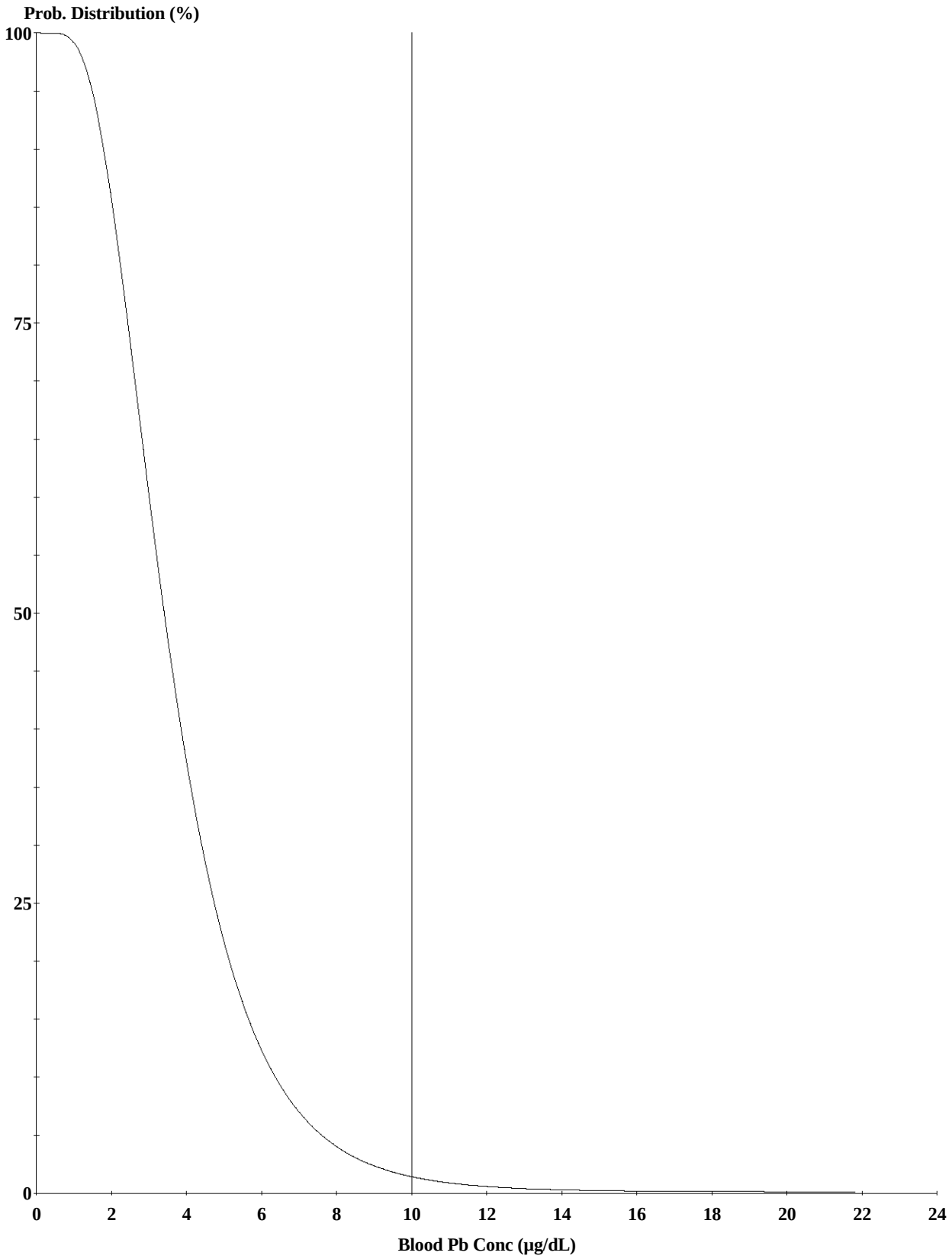
Year	Soil+Dust (µg/day)	Total (µg/day)	Blood (µg/dL)
.5-1	0.719	4.631	2.5
1-2	1.113	8.921	3.6
2-3	1.123	9.381	3.5
3-4	1.133	9.568	3.3
4-5	0.846	9.590	3.2
5-6	0.764	10.041	3.1
6-7	0.724	10.252	2.9



Cutoff = 10.000 µg/dl
Geo Mean = 2.524
GSD = 1.600
% Above = 0.170

Age Range = 6 to 12 months

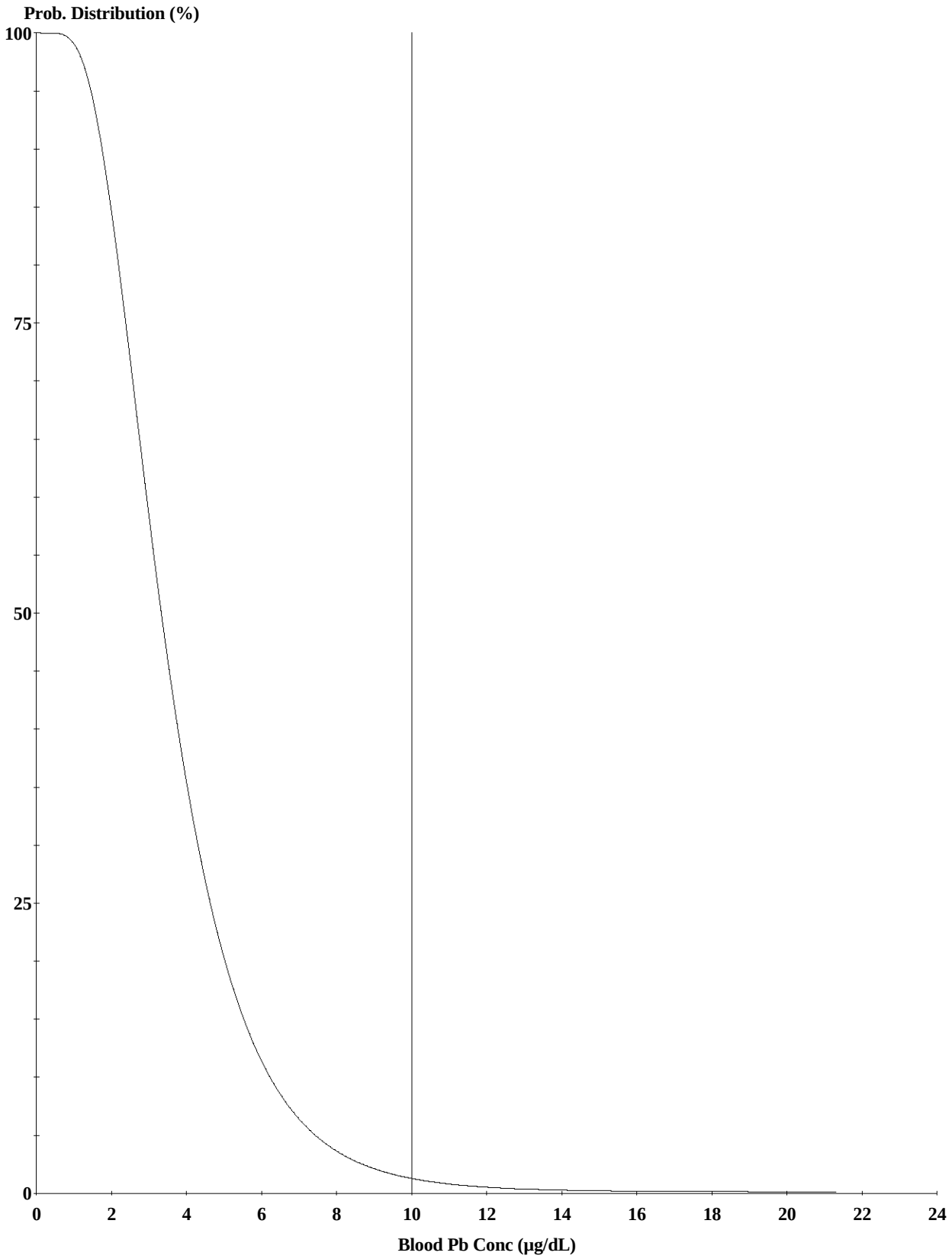
Run Mode = Research



Cutoff = 10.000 µg/dl
Geo Mean = 3.567
GSD = 1.600
% Above = 1.414

Age Range = 12 to 24 months

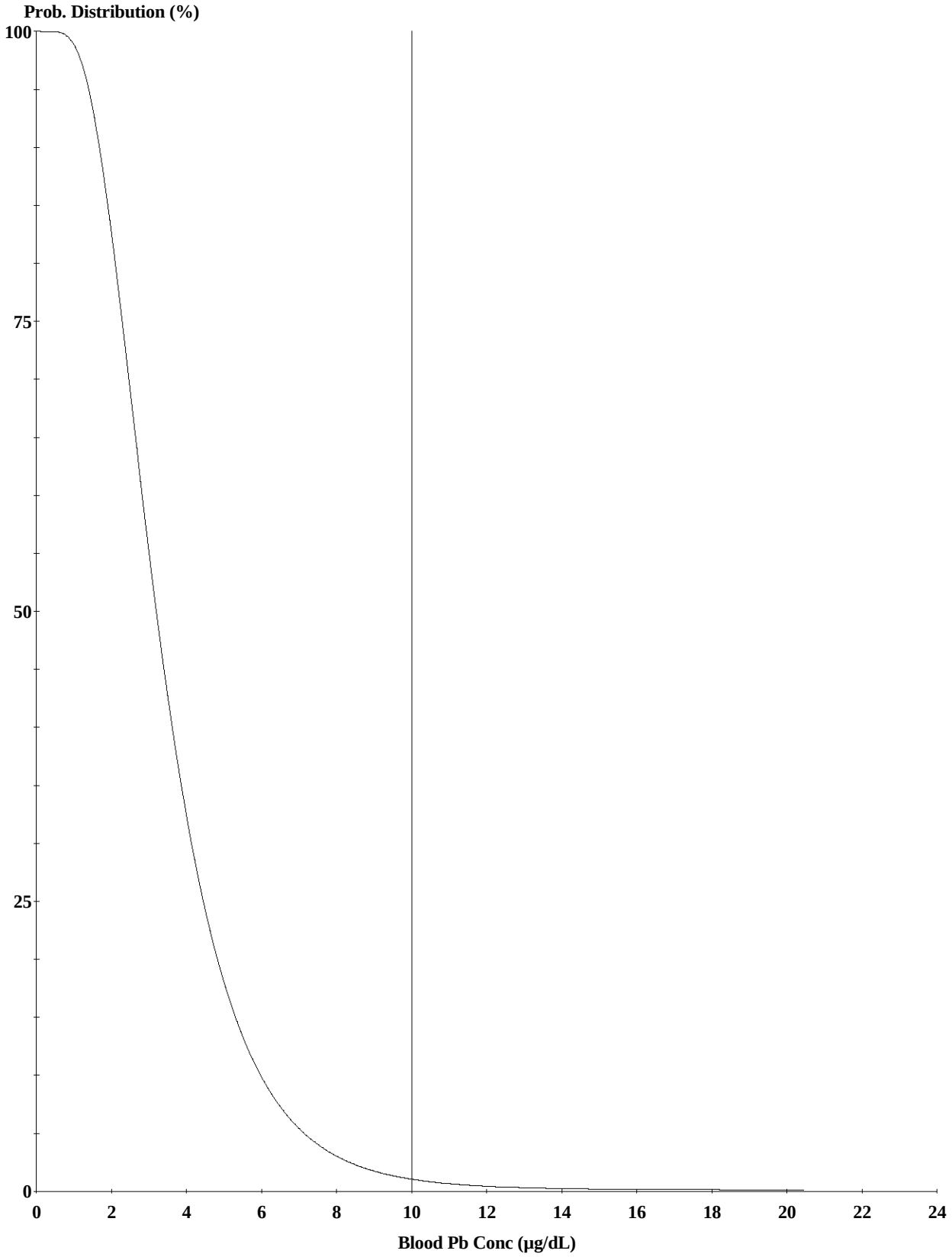
Run Mode = Research



Cutoff = 10.000 µg/dl
Geo Mean = 3.485
GSD = 1.600
% Above = 1.246

Age Range = 24 to 36 months

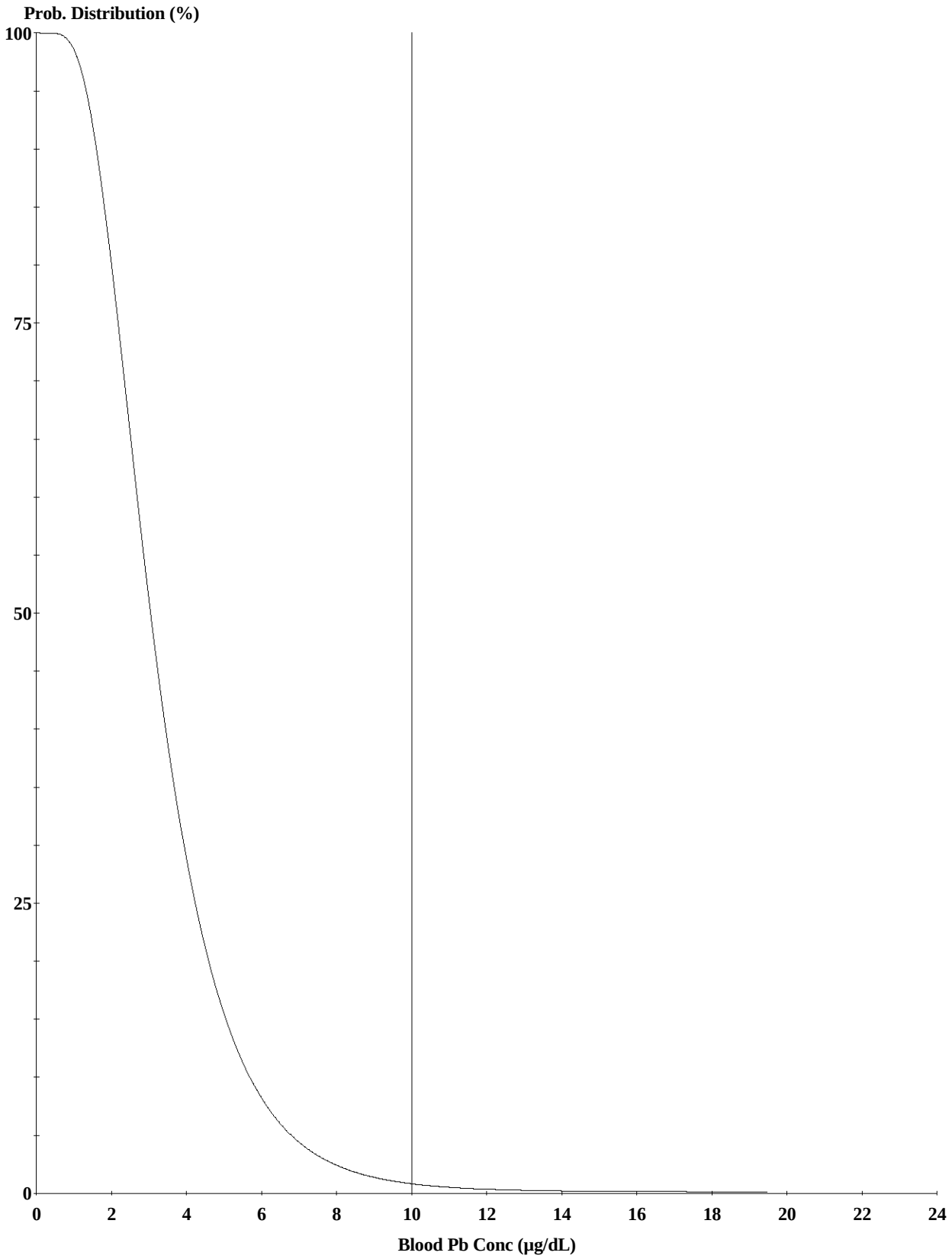
Run Mode = Research



Cutoff = 10.000 µg/dl
Geo Mean = 3.345
GSD = 1.600
% Above = 0.991

Age Range = 36 to 48 months

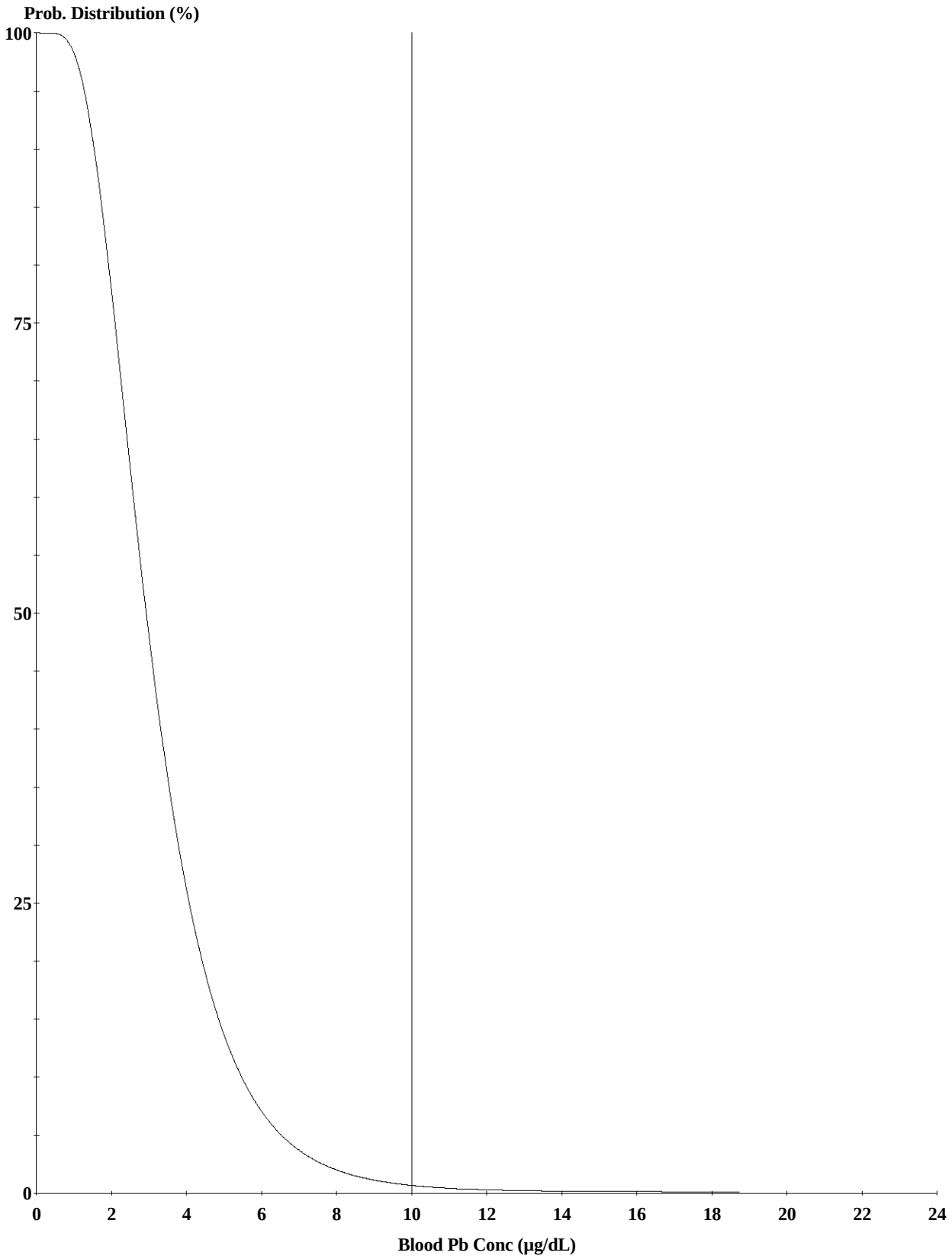
Run Mode = Research



Cutoff = 10.000 µg/dl
Geo Mean = 3.185
GSD = 1.600
% Above = 0.746

Age Range = 48 to 60 months

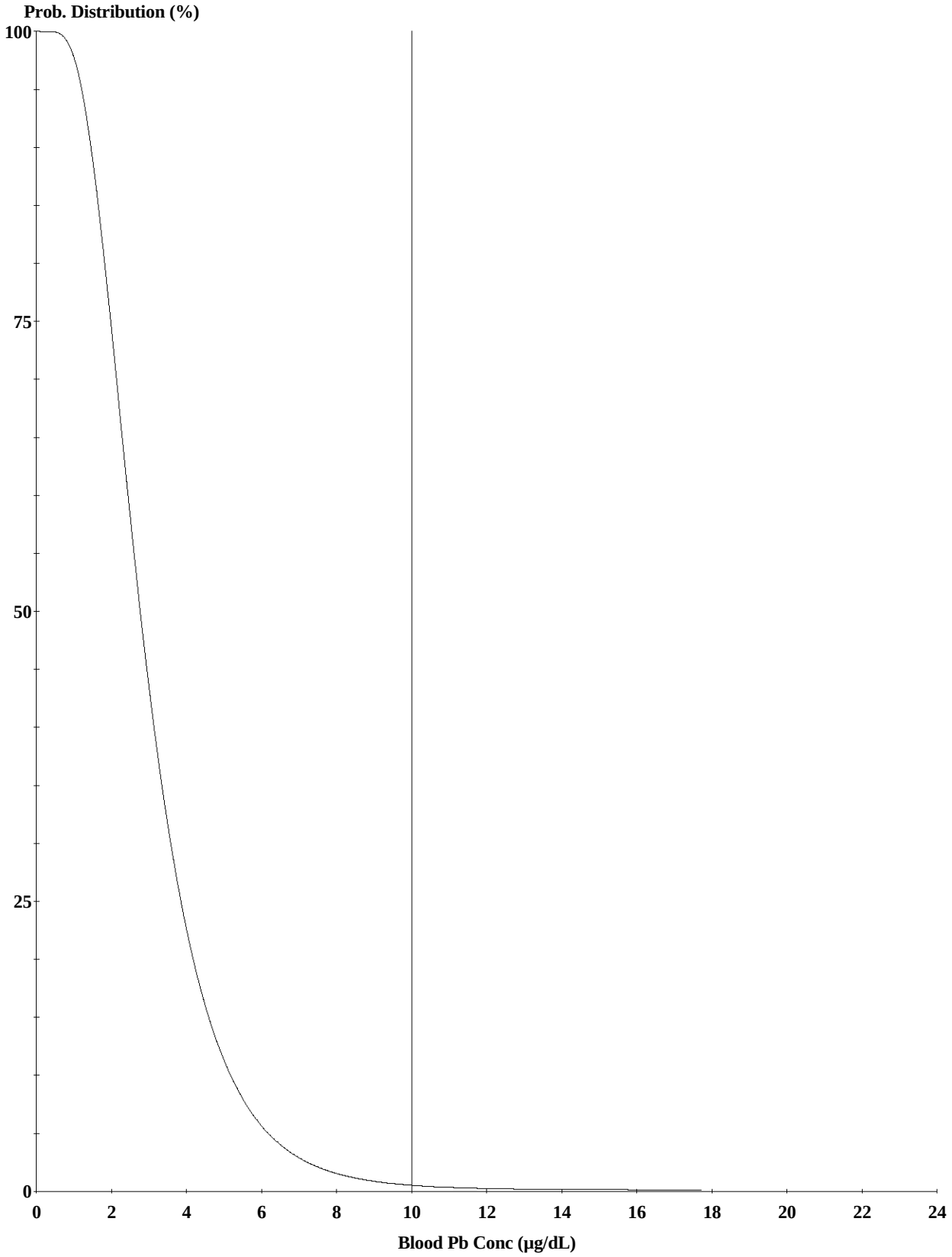
Run Mode = Research



Cutoff = 10.000 µg/dl
Geo Mean = 3.064
GSD = 1.600
% Above = 0.592

Age Range = 60 to 72 months

Run Mode = Research



Cutoff = 10.000 µg/dl
Geo Mean = 2.897
GSD = 1.600
% Above = 0.419

Age Range = 72 to 84 months

Run Mode = Research

APPENDIX E

Ecological Checklist & Photographs

CHECKLIST FOR ECOLOGICAL ASSESSMENT/SAMPLING

Introduction

The checklist that follows provides guidance in making observations for an ecological assessment. It is not intended for limited or emergency response actions (e.g., removal of a few drums) or for purely industrial settings with no discharges. The checklist is a screening tool for preliminary site evaluation and may also be useful in planning more extensive site investigations. It must be completed as thoroughly as time allows. The results of the checklist will serve as a staring point for the collection of appropriate biological data to be used in developing a response action. It is recognized that certain questions in this checklist are not universally applicable and that site-specific conditions will influence interpretation. Therefore, a site synopsis is requested to facilitate final review of the checklist by a trained ecologist.

Checklist

The checklist has been divided into sections that correspond to data collection methods and ecosystem types. These sections are:

I Site Description

- IA. Summary of Observations and Site Setting

II Terrestrial Habitat Checklist

- IIA. Wooded
- IIB. Shrub/Scrub
- IIC. Open Field
- IID. Miscellaneous

III Aquatic Habitat Checklist – Non-Flowing Systems

IV Aquatic Habitat Checklist – Flowing Systems

V Wetlands Habitat Checklist

Checklist for Ecological Assessment/Sampling

I. **SITE DESCRIPTION**

1. Site Name: Norphet Chemical

   Location: 600 Macmillan Road (State Hwy 335)

   County: Union City: Norphlet State: AK

2. Latitude: 33° 18' 37" Longitude: 92° 39' 28"

3. What is the approximate area of the site: 100 acres

4. Is this the first site visit? • (Yes) • No. If no, attach trip report of previous site visit(s), if available.

   Date(s) of previous site visit(s): _____

5. Please attach to the checklist USGS topographic map(s) of the site, if available.

6. Are aerial or other site photographs available? • (Yes) • No. If yes, please attach any available photo(s) to the site map at the conclusion of this section.

7. The land use of the site is:

_____ % Urban

_____ % Rural

_____ % Residential

100 % Industrial (___ light ___ heavy)

_____ % Agricultural

(Crops: _____)

_____ % Recreational

(Describe: note if it is a park etc.)

_____

_____

_____ % Undisturbed

_____ % Other

The area surrounding the site is:
2 mile radius

_____ % Urban

90 % Rural

10 % Residential

_____ % Industrial (___light ____heavy)

_____ % Agricultural

(Crops: _____)

_____ % Recreational

(Describe: note if it is a park, etc.)

Residence immediatly adjacent

Public School next to residence

_____ % Undisturbed

_____ % Other

8. Has any movement of soil taken place at the site? • • ___ Yes • • ___ No. If yes, please identify the most likely cause of this disturbance:

• •Agricultural Use • •Heavy Equipment • •Mining

• •Natural Events • •Erosion • •Other

Please describe:

9. Do any potential sensitive environmental areas exist adjacent to or in proximity to the site, e.g., Federal and State parks, National and State monuments, wetlands, prairie potholes? *Remember, flood plains and wetlands are not always obvious; do not answer "no" without confirming information.*

No

Please provide the source(s) of the information used to identify these sensitive areas, and indicate their general location on the site map.

United States Fish and Wildlife Wetland Mapper
FEMA Intranetix Viewer - Flood Plain Map

10. What type of facility is located at the site?

• •Chemical • •Manufacturing • •Mixing • •Waste disposal

• •Other (specify)_____

11. What are the suspected contaminants of concern at the site? If know, what are the maximum concentration levels?

fluorides, TPH, and TCE

12. Check any potential routes of off-site migration of contaminants observed at the site:

• •Swales • •Depressions • •Drainage ditches

• •Runoff • •Windblown particulates • •Vehicular traffic

• •Other (specify)_____

13. If known, what is the approximate depth to the water table? 16 ft bgs

14. Is the direction of surface runoff apparent from site observations? • •yes • •no. If yes, to which of the following does the surface runoff discharge? Indicate all that apply.

• •Surface water • •Groundwater • •Sewer • •Collection impoundment

15. Is there a navigable waterbody or tributary to a navigable waterbody? • •yes • •no

16. Is there a waterbody anywhere on or in the vicinity of the site? If yes, also complete Section III: Aquatic Habitat Checklist – Non-Flowing Systems and/or Section IV: Aquatic Habitat Checklist – Flowing Systems.

• •yes (approx. distance > 1 mile) • •no

17. Is there evidence of flooding? • •yes • •no *Wetlands and flood plains are not always obvious; do not answer "no" without confirming information.* If yes, complete Section V: Wetland Habitat Checklist.

18. If a field guide was used to aid any of the identifications, please provide a reference. Also, estimate the time spent identifying fauna. [Use a blank sheet if additional space is needed for text.]

19. Are any threatened and/or endangered species (plant or animal) known to inhabit the area of the site? • •yes • •no *If yes, you are required to verify this information with the U.S. Fish and Wildlife Service.* If species' identities are known, please list them next.

The Arkansas Natural Heritage Commission was contacted by CTEH. A review of their files indicates that there are no elements (plant or animal) of special concern within or near the Norphlet Chemical site.

20. Record weather conditions at the time this checklist was prepared:

Date: 11/30/10

41° F Temperature (• C/• F)

8 mph (West) Wind (direction/speed)

Cloudy Cloud cover

_____ Normal daily high temperature

0.0 Precipitation (rain,snow)

IA. SUMMARY OF OBSERVATIONS AND SITE SETTING

The property at 600 Macmillan Road in Norphlet, Arkansas is an abandoned chemical plant. As such several large tanks as well as equipment used in production remain at the property. The site is also comprised of large open areas where harden tar-like substance was observed. The property is surrounded by a fence however breaches in the fence was observed at several different locations. Pine trees were the dominant plant species observed. Only animal species observed were red breasted robins and hawks.

Completed by Tamara House-Knight Affiliation CTEH

Additional Preparers

Site Manager

Date 11/30/10

II TERRESTRIAL HABITAT CHECKLIST

IIA. WOODED

1. Are there any wooded areas at the site? • yes • no If no, go to Section IIB: Shrub/Scrub.

2. What percentage or area of the site is wooded? (50 % 100 acres). Indicate the wooded area on the site map which is attached to a copy of this checklist. Please identify what information was used to determine the wooded area of the site.

3. What is the dominant type of vegetation in the wooded area? (Circle one: Evergreen/Deciduous/Mixed) Provide a photograph, if available.

   Dominant plant, if known: Pine trees

4. What is the predominant size of the trees at the site? Use diameter at breast height.

   • 0 - 6 in. • 6 - 12 in. • >12 in.

5. Specify type of understory present, if known. Provide a photograph, if available.

   wild grasses

IIB. SCHRUB/SCRUB

1. Is shrub/scrub vegetation present at the site? • yes • no If no, go to Section IIC: Open Field.

2. What percentage of the site is covered by scrub/shrub vegetation? (1 % 100 acres). Indicate the areas of shrub/scrub on the site map. Please identify what information was used to determine this area.

3. What is the dominant type of scrub/shrub vegetation, if known? Provide a photograph, if available.

4. What is the approximate average height of the scrub/shrub vegetation?

   • 0 - 2 ft. • 2 - 5 ft. • > 5 ft.

5. Based on site observations, how dense is the scrub/shrub vegetation?

• •Dense • •Patchy • •Sparse

IIC. OPEN FIELD

1. Are there open (bare, barren) field areas present at the site? • •yes • •no If yes, please indicate the type below:

• •Prairie/plains • •Savannah • •Old field • •Other (specify) _____

2. What percentage of the site is open field? (5 % 100 acres). Indicate the open fields on the site map.

3. What is/are the dominant plant(s)? Provide a photograph, if available.

wild grasses

4. What is the approximate average height of the dominant plant? 2 ft

5. Describe the vegetation cover: • •Dense • •Sparse • •Patchy

IID. MISCELLANEOUS

1. Are other types of terrestrial habitats present at the site, other than woods, scrub/shrub, and open field? • •yes • •no If yes, identify and describe them below.

2. Describe the terrestrial miscellaneous habitat(s) and identify these area(s) on the site map.

3. What observations, if any, were made at the site regarding the presence and/or absence of insects, fish, birds, mammals, etc.?

During the site visit red breasted robins and hawks were observed. No insects or aquatic life was observed.

4. Review the questions in Section I to determine if any additional habitat checklists should be completed for this site.

III AQUATIC HABITAT CHECKLIST

Note: Aquatic systems are often associated with wetland habitats. Please refer to Section V, Wetland Habitat Checklist.

1. What type of open-water, non-flowing system is present at the site?

   - •Natural (pond, lake)
   - •Artificially created (lagoon, reservoir, canal, impoundment) pond

2. If known, what is the name(s) of the waterbody(ies) on or adjacent to the site?

   Fire water pond

3. If a waterbody is present, what are its known uses (e.g., recreation, navigation, etc.)?

   Industrial purposes

4. What is the approximate size of the waterbody(ies)? 0.5 acre(s).

5. Is any aquatic vegetation present? • •yes • •no If yes, please identify the type of vegetation present if known.

   - •Emergent
   - •Submergent
   - •Floating

6. If known, what is the depth of the water? _____

7. What is the general composition of the substrate? Check all that apply.

•Bedrock	•Sand (coarse)	•Muck (find/black)
•Boulder (>10 in.)	•Silt (fine)	•Debris
•Cobble (2.5 - 10 in.)	•Marl (shells)	•Detritus
•Gravel (0.1 - 2.5 in.)	•Clay (slick)	•Concrete

   - •Other (specify) _____

8. What is the source of water in the waterbody?

•River/Stream/Creek	•Groundwater	•Industrial discharge
•Surface runoff	•Other (specify) _____	

9. Is there a discharge from the site to the waterbody? • •yes • •no If yes, please describe this discharge and its path.

10. Is there a discharge from the waterbody? • •yes • •no If yes, and the information is available, identify from the list below the environment into which the waterbody discharges.

• •River/Stream/Creek	• •onsite	• •offsite	Distance _____
• •Groundwater	• •onsite	• •offsite	
• •Wetland	• •onsite	• •offsite	Distance _____
• •Impoundment	• •onsite	• •offsite	

11. Identify any field measurements and observations of water quality that were made. For those parameters for which data were collected provide the measurement and the units of measure below:

_____ Area

_____ Depth (average)

_____ Temperature (depth of the water at which the reading was taken) _____

_____ pH

_____ Dissolved oxygen

_____ Salinity

_____ Turbidity (clear, slightly turbid, turbid, opaque) (Seecchi disk depth _____)

_____ Other (specify)

12. Describe observed color and area of coloration.

The water appeared brown but not murky.

13. Mark the open-water, non-flowing system on the site map attached to this checklist.

14. What observations, if any, were made at the waterbody regarding the presence and/or absence of benthic macroinvertebrates, fish, birds, mammals, etc.?

No wildlife was observed at the pond.

IV AQUATIC HABITAT CHECKLIST – FLOWING SYSTEMS

Note: Aquatic systems are often associated with wetland habitats. Please refer to Section V, Wetland Habitat Checklist.

1. What type(s) of flowing water system(s) is (are) present at the site?

   • •River • •Stream • •Creek
   • •Dry wash • •Arroyo • •Brook
   • •Artificially created (ditch, etc.) • •Intermittent Stream • •Channeling
   • •Other (specify) _____

2. If known, what is the name of the waterbody? _____

3. For natural systems, are there any indicators of physical alteration (e.g. channeling, debris, etc.)? • •yes • •no If yes, please describe indicators that were observed.

4. What is the general composition of the substrate? Check all that apply.

   • •Bedrock • •Sand (coarse) • •Muck (find/black)
   • •Boulder (>10 in.) • •Silt (fine) • •Debris
   • •Cobble (2.5 - 10 in.) • •Marl (shells) • •Detritus
   • •Gravel (0.1 - 2.5 in.) • •Clay (slick) • •Concrete
   • •Other (specify) _____

5. What is the condition of the bank (e.g., height, slope, extent of vegetative cover)?

6. Is the system influenced by tides? • •yes • •no What information was used to make this determination?

7. Is the flow intermittent? • •yes • •no If yes, please note the information that was used in making this determination.

8. Is there a discharge from the site to the waterbody? • •yes • •no If yes, please describe the discharge and its path.

9. Is there a discharge from the waterbody? • •yes • •no If yes, and the information is available, please identify what the waterbody discharges to and whether the discharge is on site or off site.

10. Identify any field measurements and observations of water quality that were made. For those parameters for which data were collected, provide the measurement and the units of measure in the appropriate space below:

_____ Area

_____ Depth (average)

_____ Temperature (depth of the water at which the reading was taken) _____

_____ pH

_____ Dissolved oxygen

_____ Salinity

_____ Turbidity (clear, slightly turbid, turbid, opaque) (Seecchi disk depth _____)

_____ Other (specify)

11. Describe observed color and area of coloration.

12. Is any aquatic vegetation present? • •yes • •no If yes, please identify the type of vegetation present, if know.

• •Emergent • •Submergent • •Floating

13. Mark the flowing water system on the attached site map.

14. What observations were made at the waterbody regarding the presence and/or absence of benthic macroinvertebrates, fish, birds, mammals, etc.?

V. WETLAND HABITAT CHECKLIST

1. Based on observation and/or available information, are designated or known wetland definitely present at the site? • •yes • •no

   Please note the sources of observations and information used (e.g., USGS Topographic Maps, National Wetland Inventory, Federal or State Agency, etc.) To make this determination.

2. Based on the location of the site (e.g., along a waterbody, in a floodplain) and site conditions (e.g. standing water, dark, wet soils; mud cracks; debris line; water marks), are wetland habitats suspected? • •yes • •no If yes, proceed with the remainder of the wetland habitat identification checklist.

3. What type(s) of vegetation are present in the wetland?

   • •Submergent • •Emergent • •Scrub/Shrub • •Wooded
   • •Other (specify) _____

4. Provide a general description of the vegetation present in and around the wetland (height, color, etc.). Provide a photograph of the known or suspected wetlands, if available.

5. Is standing water present? • •yes • •no If yes, is water: • •Fresh • •Brackish
   What is the approximate area of the water (sq. ft.) _____
   Please complete questions 4, 11, 12 in Checklist III - Aquatic Habitat – Non-Flowing Systems.

6. Is there evidence of flooding at the site? What observations were noted?

   • •Buttressing • •Water marks • •Mud cracks

   • •Debris line • •Other (describe below)

7. If known, what is the source of the water in the wetland?

- •Stream/River/Creek/Lake/Pond
- •Groundwater
- •Flooding
- •Surface Runoff

8. Is there a discharge from the site to a known or suspected wetland? • •yes • •no If yes, please describe.

9. Is there a discharge from the wetland? • •yes • •no If yes, to what waterbody is discharge released?

- •Surface Stream/River
- •Groundwater
- •Lake/Pond
- •Marine

10. If a soil sample was collected, describe the appearance of the soil in the wetland area. Circle or write in the best response.

Color (blue/grey, brown, black, mottled) _____

Water content (dry, wet, saturated/unsaturated) _____

11. Mark the observed area(s) on the attached site map.

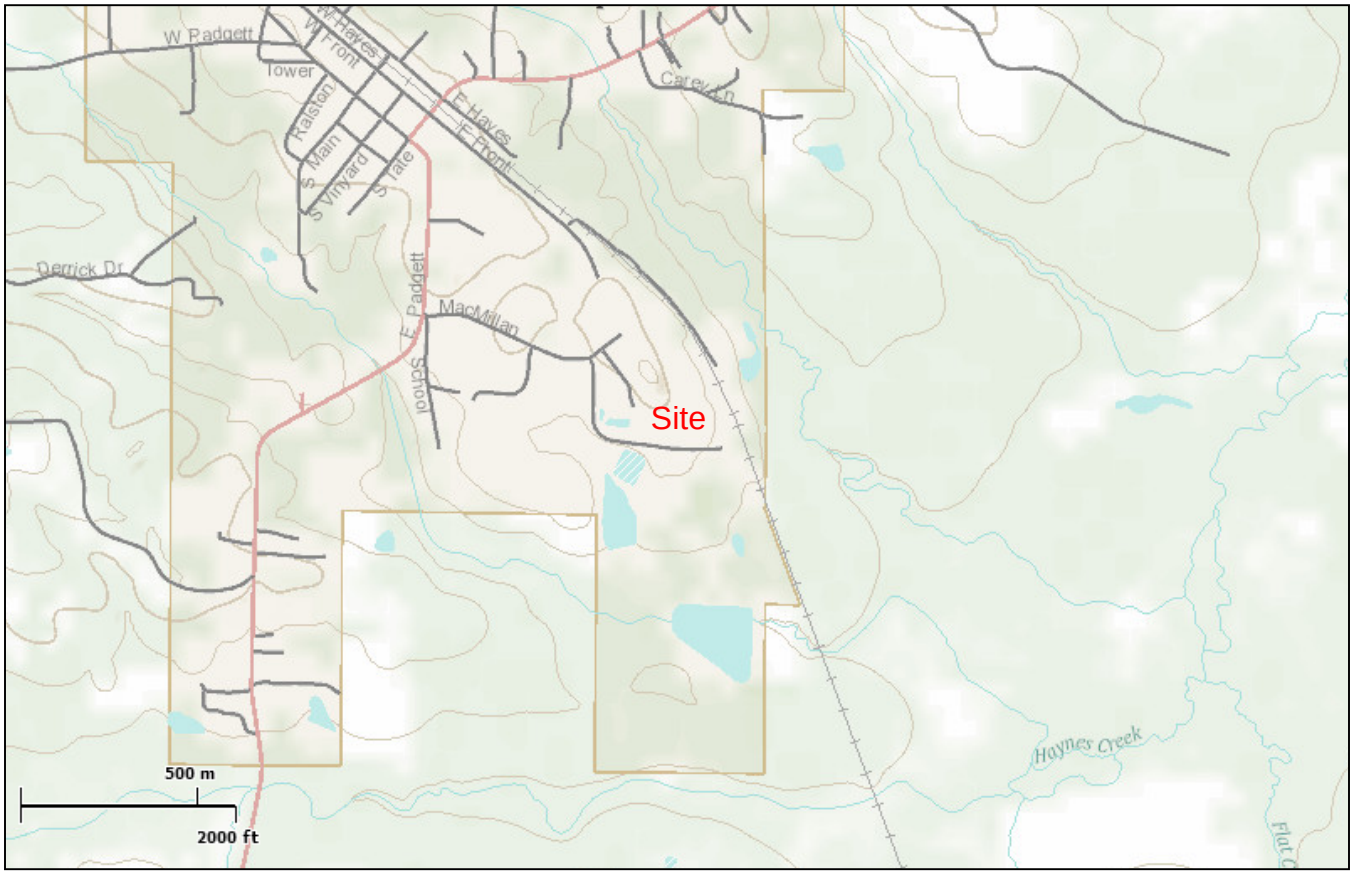
Aerial - Norphlet Chemical (December 1, 2010)

U.S. Fish and Wildlife Service

National Wetlands Inventory

Norphlet Chemical

Dec 1, 2010



Wetlands

- Freshwater Emergent
- Freshwater Forested/Shrub
- Estuarine and Marine Deepwater
- Estuarine and Marine
- Freshwater Pond
- Lake
- Riverine
- Other

Riparian

- Herbaceous
- Forested/Shrub

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

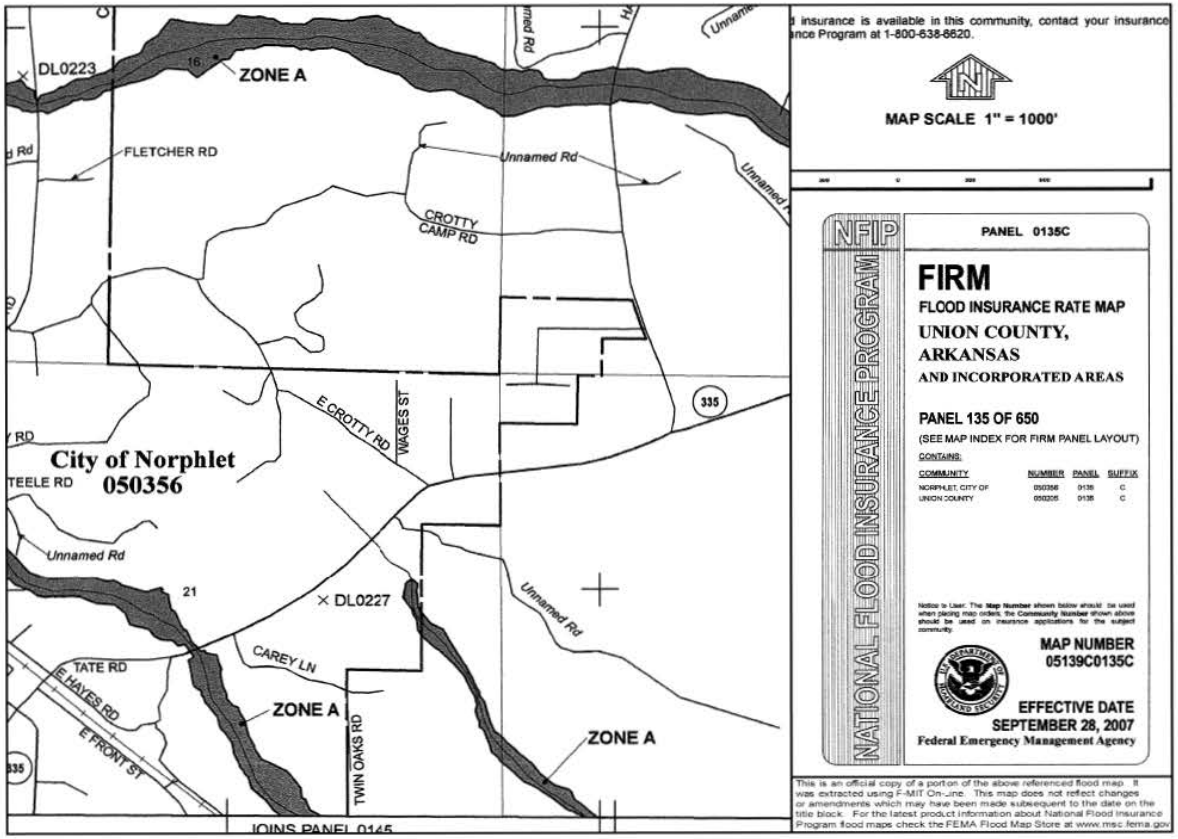
User Remarks:

Tamara House-Knight **CTEH L.L.C.**

FEMA

Save your FIRMette

Back



insurance is available in this community, contact your insurance
nce Program at 1-800-638-6620.

MAP SCALE 1" = 1000'

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0135C

FIRM

FLOOD INSURANCE RATE MAP

UNION COUNTY, ARKANSAS

AND INCORPORATED AREAS

PANEL 135 OF 650

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
NORPHLET, CITY OF	050356	0135	C
UNION COUNTY	050205	0135	C

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
05139C0135C

EFFECTIVE DATE
SEPTEMBER 28, 2007

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

Photograph 1 Norphlet Chemical Site – Shrubbery on north end of site. December 2010.

Photograph 2 Norphlet Chemical Site – Standing water near large tanks. December 2010.

Photograph 3 Norphlet Chemical Site – Forested area and grasses on north end of site. December 2010.

Photograph 4 Norphlet Chemical Site – Open area on north end of site. December 2010.

Photograph 5 Norphlet Chemical Site – On-site fresh water pond. December 2010.