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Site Characterization Report for the Former Virginia-Carolina Chemical Company Phosphate/Fertilizer Plant, Wadesboro, North Carolina

(Revision 1)

Exxon Mobil Corporation
Fairfax, Virginia

December 2001

BBL
BLASLAND, BOUCK & LEE, INC.
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LIST OF ACRONYMS AND ABBREVIATIONS

AOC	Administrative Order of Consent
BBL	Blasland, Bouck & Lee, Inc.
bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
DO	dissolved oxygen
ExxonMobil	Exxon Mobil Corporation
FeS_2	iron pyrite ores
FSP	Field Sampling Plan
H_2O	water
H_2SO_4	sulfuric acid
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
NCDENR	North Carolina Department of Environment and Natural Resources
NCGS	North Carolina Geological Survey
O_2	oxygen
ORP	oxidation-reduction potential
PCBs	polychlorinated biphenyls
PRG	USEPA Region 9 Preliminary Remediation Goal
QC	quality control
QAPP	Quality Assurance Project Plan
SARA	Superfund Amendments and Reauthorization Act
SO_2	sulfur dioxide
SO_3	sulfur trioxide
SVOCs	semivolatile organic compounds
SW	surface water
TAL	Target Analyte List
TCLP	Toxicity Characteristic Leaching Procedure
µg/kg	micrograms per kilogram
υg/L	micrograms per liter
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
VCC	Virginia-Carolina Chemical Company
VOCs	volatile organic compounds
WB	Wadesboro, North Carolina

1. Introduction

1.1 Introduction

This report presents the results of the site characterization at the former Virginia-Carolina Chemical Company (VCC) phosphate/fertilizer plant located in Wadesboro, North Carolina (the Site). Figure 1-1 identifies the site location on the U.S. Geological Survey (USGS) 7.5-minute quadrangle for Wadesboro, North Carolina.

The site investigation was completed in accordance with, and subject to, the terms, conditions, reservations of rights, denial of any admission of liability, and all other provisions of the Administrative Order on Consent (AOC) for Removal Action for the Site entered into voluntarily by Exxon Mobil Corporation (ExxonMobil), the successor in interest to the former VCC plant listed above and the United States Environmental Protection Agency (USEPA) pursuant to the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) and the Superfund Amendments and Reauthorization Act of 1986 (SARA). The Docket Number for the AOC is 01-06-C. The effective date of the AOC is December 29, 2000. The site investigation was performed in accordance with the requirements of the AOC and as outlined in the USEPA-approved *Site Characterization Work Plan for the Former Virginia-Carolina Chemical Company Phosphate/Fertilizer Plant, Wadesboro, North Carolina* (Work Plan) (Blasland, Bouck, and Lee [BBL], 2001).

1.2 Project Objectives

The objective of the site characterization was to determine the nature and extent of potential environmental impacts from the operation of the former VCC phosphate/fertilizer facility at this property. All field activities were conducted as outlined in the approved Work Plan (BBL, 2001). This report summarizes the activities that were undertaken to complete the project objectives and presents the data collected in support of these objectives.

1.3 Description and History of the Former Phosphate/Fertilizer Plants

The Wadesboro VCC Site was a former phosphate/fertilizer plant. The following description and history of former phosphate/fertilizer plants in the southeast was originally presented by the USEPA (USEPA, 1997) and is included here to provide an understanding of the history and processes associated with the historical production of phosphate fertilizers.

Phosphorus is one of the major elements essential for normal plant growth. In the mid-1800s, patent fertilizers and superphosphates were unknown; rather, manure, guanos, ground-up bone, and other mineral-rich materials were used by farmers. The discovery of large deposits of phosphate rock, combined with the demand for superior fertilizers, resulted in the growth of the phosphate/fertilizer industry in the southeastern United States.

Naturally-occurring phosphorus in phosphate rock is largely insoluble. When properly dried, the phosphate rock can be easily ground and crushed. It was initially discovered in England that, when treated with sulfuric acid, ground phosphate rock is converted to phosphoric acid, which is more easily assimilated by plants. The production of phosphate-based fertilizers was generally divided into two general components: sulfuric acid production, and the storage/granulation/bagging. In most plants, sulfuric acid was generally manufactured on-site using the lead chamber process. Sulfur was burned in a combustion chamber at 1,800°F to 2,000°F to create sulfur dioxide (SO_2). In the early years of operation, pyrite ores (FeS_2) were used as the sulfur source. Elemental sulfur was later discovered in Texas and most plants switched to burning sulfur due to advantages in product purity and economics. Sulfur dioxide was reacted with oxygen of air (O_2) to form sulfur trioxide (SO_3). Water (H_2O) was passed over packing media in a Glover Tower to react with the sulfur trioxide gas. This reaction produced sulfuric acid (H_2SO_4).

Ground phosphate rock and sulfuric acid were then mixed in a reaction vessel to produce phosphoric acid, the building block for phosphate fertilizers. The resultant mixture was then held in a den area for solidification, and later transferred to a storage area for curing. This process produced a bulky phosphate mass that had to be mechanically crushed and screened to product size prior to shipment. Agricultural fertilizers differ in the amount and chemical form of three primary plant nutrients: nitrogen, phosphorus, and potassium. Super-phosphate contains only one nutrient, phosphorus. Therefore, processed phosphate rock was mixed with other components such as ammonia (for nitrogen) and potash (for potassium) to produce a three-component product. The finished product was bagged or otherwise prepared for distribution in the storage facility.

The acid chambers used in the fertilizer production process represent the most relevant feature of phosphate/fertilizer operations regarding the potential for adverse environmental impacts. During periodic cleaning of the lead chambers, it is believed washdown water containing acid and soluble lead was flushed onto the ground surface or into nearby drainage ditches. Pyrite cinders that did not burn completely in the combustion chambers were frequently used as on-site fill material. This slag material has a reddish/magenta appearance and has been found to contain elevated levels of inorganic constituents, primarily lead and arsenic.

1.4 Report Organization

The introduction provided in this section is followed in Section 2 by a site description and a discussion of previous investigations and activities performed at the Site. Section 3 describes the site characterization activities that were performed and Section 4 summarizes the data generated from the site characterization activities. Section 5 describes the conclusions and recommendations that can be made from the site characterization activities and the resulting data. Finally, Section 6 lists the references cited in this report.

This report has two appendices. Appendix A contains the soil borings logs collected from the Site. Appendix B contains a tabular summary of the validated data for the soil, sediment, and groundwater samples collected during the site investigation.

2. Site Description and History

2.1 Site Location

The Wadesboro VCC Site is located in Wadesboro, Anson County, North Carolina, on Stanback Ferry Road approximately 0.25 miles from Highway 74 (Figure 1-1). Specifically, the Site is located at 34°58'22" north latitude by 80°03'26" west longitude.

2.2 Facility Description and Operational Status

The Wadesboro VCC facility operated as a fertilizer manufacturing facility from 1908 to 1945. During that time, VCC used lead-lined acid chambers to store acid used in the production of super-phosphate fertilizers. The operational history of the Site is unknown from 1945 to 1980. In 1964, VCC merged with Socony Mobil Oil Corporation; the company name changed in 1966 to Mobil Oil Corporation. Mobil subsequently merged with Exxon in 1999 to form Exxon Mobil Corporation. The Site was purchased by Mr. Carl Weston (the current owner) in 1980, and has been abandoned for approximately 10 years.

2.3 Structures/Topography

Prior to the Phase I Removal Action performed by ExxonMobil in early 2001 (see Section 2.11.3), structures at the Site were located in two principal processing areas in the central and southern portions of the Site (Figure 2-1). The Central Processing Area consisted of a brick building, two tanks, a fire reservoir, and a concrete pad that was once apparently the foundation slab for a packaging and distribution warehouse. Two utility buildings and the former acid chambers comprised the Southern Processing Area. Buildings in both areas were in various stages of collapse. Mr. Weston apparently used the Central Processing Area as a small metal reclamation and parts fabrication plant. These structures were demolished in early 2001 as part of the Phase I Removal Action (see Section 2.11.3).

Abandoned railroad spurs define the northeastern and southwestern borders of the Site (Figure 2-1). The northeastern railroad spur is a prominent site feature. Elevated approximately 20 feet above the surrounding area, the northeastern spur's height was consistent with the height of on-site buildings. The southwestern spur initially slopes off site to the northeast and then gradually changes to a southerly direction toward the spur's northeastern margin. Concrete drainage channels are present perpendicular to the northeastern railroad spur. The drainage paths were apparently gutters used to channel water away from the roof of the distribution warehouse on the central portion of the Site.

2.4 Facility Size/Dimensions

According to recent survey of the Site (see Section 2.11.3), the area of the Wadesboro VCC Site is 10.42 acres.

2.5 Land Cover/Topography/Vegetation

The property is predominately wooded. The property slopes sharply downward from high points along the northern property boundary and along the northeastern railroad spur to the concrete pad and the Central Processing Area. The land then slopes downward gently from these areas to the south and west. The overall slope of the land is from high points in the north and east to low points in the south and west.

2.6 Drainage Channels and Surface Water Bodies

Three surface-water bodies drain the Site. The first is a small, unnamed stream located on the western side of the property that flows from the north to the south. It receives drainage from the concrete pad and processing area as well as from areas upstream of the Site. In addition, according to Tetra Tech EMI (2000) a concrete drainage path

flowed between the southwestern railroad spur and the former distribution warehouse from the northeast to the southwestern end of the building. At the southwestern end, a cast-iron pipe intersects the path as it turns 90 degrees and flows off site beneath the southwestern spur to the stream. Along the southeastern portion of the Site, a drainage ditch located adjacent to the former acid chambers flows away from the Site to the southeast along the southeastern railroad spur. Both of the latter drainage ditches were dry during recent site visits. The drainage ditch located in the southeastern portion of the Site was filled with vegetative debris and some mixed waste and debris (primarily white goods).

2.7 Surrounding Land Use

The tract is located in a mixed residential and industrial area. Two residences border the Site to the east, and one borders the Site to the south (Figure 2-1). The property to the west is undeveloped. An active railroad track is located along the northern boundary of the Site. The Site itself is zoned Heavy Industrial (HI) and all adjacent properties (including those with residences) are zoned Light Industrial (LI).

2.8 Description of Drinking Water Sources

According to the North Carolina Department of Environment and Natural Resources (NCDENR) (1999), groundwater is the primary source of drinking water in the immediate vicinity of the Site. However, based on the information on the Site hydrogeology (see Section 2.10) obtained during the monitoring well installation and groundwater sample collection activities, it is highly unlikely that the water table aquifer is used by nearby residents as a source of drinking water.

2.9 Site Geology

The former VCC site lies along the eastern margin of North Carolina's Piedmont Physiographic Province, with the Coastal Plain and Sandhills Region nearby to the east, and the Blue Ridge Physiographic Province to the west. Locally, the dominant geologic feature is the early Mesozoic Wadesboro Basin. The Wadesboro Basin formed as a result of faulting in the early Mesozoic Era and now consists of mudstone belonging to the Triassic Chatham Group (NCGS, 1985; USGS, 1997). This mudstone formed from sand, silt, and clay that filled in the basin during the Triassic Period of geologic time. The Wadesboro basin, whose long axis is oriented southwest to northeast, underlies approximately one-half of Anson County, including Wadesboro and the former VCC site.

The soil encountered during drilling at the former VCC site consisted primarily of stiff, orange-brown sandy and clayey silt. One well boring (WB-MW2/WB-SB15) contained a layer of stiff, light-brown sand and gravel from 26 feet to 36 feet below ground surface (bgs). Auger refusal was encountered at one well location (WB-MW3) at a depth of 38 feet bgs; however, refusal was not encountered at the other two well locations, where boreholes were augered to 30 feet (WB-MW1) and 40 feet (WB-MW2) bgs.

2.10 Site Hydrogeology

According to the *Groundwater Atlas of the United States* (USGS, 1997), the sedimentary rocks of the Wadesboro Basin are compact and tightly cemented and therefore do not yield sufficient quantities of water to be considered a principal aquifer. The upper 300 feet of the Wadesboro basin, consisting of mudstone of the Triassic Chatham Group, contains water sufficient only for domestic supplies.

During this investigation of the former VCC site, depth to water in the three overburden monitoring wells (WB-MW1, WB-MW2, and WB-MW3) varied from approximately 5.5 feet to 9.5 feet bgs. A potentiometric surface map was generated using water table elevation data from the three monitoring wells and surface water elevation

data from two stream gauges (WB-SG1 and WB-SG2) (Table 2-1). This map (Figure 2-2) indicates that the horizontal component of groundwater flow is from east to west, toward the unnamed stream and away from the residences on the southeast side of the property. Though formal testing has not been conducted, a number of factors suggest that the water table aquifer has low porosity and/or low hydraulic conductivity. These factors include the observed soil characteristics (compact, fine-grained) and the absence of water in the monitoring well boreholes during initial drilling. At each of the three monitoring wells, the static water level did not reach equilibrium until several days after the advancement of the borehole. Finally, a pumping rate of only 250 milliliters per minute resulted in significant drawdown of the water in the wells. The average drawdown in the three monitoring wells was 0.66 inches per minute at 250 milliliters per minute. Therefore, the water table aquifer at and in the immediate vicinity of the Site will likely be unable to produce sufficient amounts of water to support human use.

2.11 Summary of Previous Investigations

2.11.1 NCDENR Preliminary Assessment/Site Inspection

NCDENR collected samples of magenta-colored soils from the Site in July 1999 (NCDENR, 1999). While the specific locations of the samples were not specified in the letter report presenting the results of the sampling to the USEPA, it is assumed that the magenta-colored soils that were sampled were from the area shown as "discolored soil" on Figure 2-1. The samples were analyzed for metals. Lead concentrations in the four samples collected from the magenta-colored soils varied from 329 to 3,361 mg/kg; arsenic concentrations varied from 12 to 92 mg/kg. Three of the four samples collected from the discolored soils were also analyzed for Toxicity Characteristic Leaching Procedure (TCLP) arsenic and lead. No arsenic was detected in the TCLP leachate for any of the three samples; however, lead was present in the TCLP leachate of the three samples at concentrations that varied from 0.02 mg/L to 36.6 milligrams per liter (mg/L). The North Carolina State Laboratory of Public Health analyzed all samples.

In addition, NCDENR recently sampled the groundwater at the three residences adjacent to the Site and did not detect any elevated concentrations of metals or other compounds (NCDENR, 1999).

2.11.2 USEPA Site Investigation

Site reconnaissance and soil sampling was conducted in December 1999 by Tetra Tech EMI, Inc. on behalf of the USEPA (Tetra Tech EMI, 2000). During this reconnaissance it was noted that most of the Site did not show visual signs of contamination and that the occurrence of magenta-colored soils appeared to be localized within a small area on the southwestern portion of the property. Some magenta-colored soil was also present at the head of the southeastern drainage ditch that flows behind the southern residence.

Eight soil samples were collected and analyzed for metals, pesticides, polychlorinated biphenyls (PCBs), volatile organic compounds (VOCs), and semivolatile organic compounds (SVOCs). Most of the samples were of surficial soil collected within the area of discolored soil and nearby drainage ditches (Figure 2-3). Two deeper soil samples, sample VC-02-SB at 1.5 feet bgs and sample VC-03-SB at 2.5 feet bgs, were collected in the middle of the area of discolored soil at the location of surface soil sample VC-01-SS. In addition, two samples were collected outside the area of discolored soil: one (VC-07-SS) near the southeast corner of the former acid chambers and a second (VC-06-SS) at the end of a concrete drainage path that extends from the east side of the Central Processing Area to the far side of the northeastern railroad spur. Sampling locations are shown on Figure 2-3.

A variety of metals were detected in all samples; however, only lead and arsenic were detected at concentrations in excess of the Preliminary Remediation Goals (PRGs) for industrial soils developed by USEPA Region 9 and only antimony, arsenic, iron, lead, and thallium were detected at concentrations in excess of the USEPA Region 9 residential soil PRGs (USEPA, 2000) (Table 2-2). All samples collected in the Southern Processing Area (from in or near the discolored soil area and former acid chambers) contained lead and/or arsenic at concentrations exceeding PRGs. The highest lead concentration (29,700 milligrams per kilogram [mg/kg]) was detected in sample VC-04-SS, collected in the northwest corner of the discolored soil area. The highest arsenic concentration (965 mg/kg) was detected in sample VC-05-SS collected in a drainage ditch located near the pump house to the east of the discolored soil area. The single sample collected in the Central Processing Area (VC-06-SS) also contained lead and arsenic, but at much lower concentrations (below the PRGs). Finally, samples containing antimony, iron, and/or thallium at concentrations greater than the residential PRGs also contained arsenic and/or lead at concentrations greater than the residential PRGs.

Pesticides, VOCs, and SVOCs were detected in several samples at low concentrations that were below both the residential and industrial PRGs (Table 2-1). Pesticides were detected primarily in sample VC-07-SS, and SVOCs were detected primarily in sample VC-06-SB. These samples were collected near the southeast corner of the former acid chambers and along the eastern side of the northeastern railroad spur at the end of a concrete drainage path, respectively. VOCs were detected at two depth intervals from the hand auger sampling location: VC-02-SB (1.5 feet bgs) and VC-03-SB (2.5 feet bgs).

A complete summary of the analytes detected during the site reconnaissance and soil sampling is presented in Table 2-2. Lead and arsenic concentrations are shown on Figure 2-3.

2.11.3 Phase I Removal Action

ExxonMobil implemented a Phase I Removal Action at the Site in January and February 2001. Phase I Removal activities were initiated in January 2001 and completed in February 2001. Activities completed during the Phase I Removal Action included:

- Survey the property line;
- Install a chain-link fence at the property line to restrict unauthorized access to the Site;
- Demolish potentially unsafe structures such as buildings, the former acid chambers, and a trailer; and
- Backfill the reservoir with clean brick.

3. Site Characterization Data Collection Activities

3.1 Introduction

Soil, groundwater, surface water, and sediment samples were collected to provide data for the site characterization activities at the former VCC phosphate/fertilizer plant in Wadesboro, North Carolina. In addition, surface water elevation gauges were installed in the unnamed stream to the west of the Site and the drainage ditch to the southeast of the Site and surface water elevations were measured. Representatives of BBL implemented and oversaw all field activities in support of site characterization data collection, which took place on April 16, 17, 18, 25, and 26, 2001. All sampling and analysis activities were performed in accordance with the USEPA-approved Work Plan (BBL, 2001).

3.2 Soil Sample Collection

The Site is comprised of two principal processing areas located on the central and southern portions of the Site. The Central Processing Area was formerly comprised of a brick building, two tanks, a fire reservoir, and a concrete pad that was once apparently the foundation slab for a large packaging and distribution warehouse. The Southern Processing Area was formerly comprised of two utility buildings and the former acid chambers. As described in the approved Work Plan (BBL, 2001), different sampling strategies were utilized in the investigation for each area. Twenty soil borings were advanced at the site (10 in each area) to support the collection of soil samples (Figure 3-1). All soil samples were collected in accordance with the procedures outlined in the approved Work Plan (BBL, 2001).

In the Central Processing Area, soil borings WB-SB1 through WB-SB10 were advanced to a depth of 4 feet bgs. A five-point composite surficial sample (0-foot to 0.5-foot bgs interval) was collected at each soil boring location. Individual aliquots of the composite sample were collected from the central location and from four additional locations approximately 20 feet from the central location. The four perimeter locations were evenly spaced around the central location. Generally, a 3-inch-diameter stainless-steel bucket-type hand auger was used to collect the soil aliquots. In areas where the ground was impenetrable to the bucket-type hand auger (locations WB-SB5 and WB-SB6), the Geoprobe was used to collect the affected aliquots at those soil borings. Soil borings WB-SB5 and WB-SB6 were advanced through the concrete pad over the former central processing building. The central location for the five-point composite also served as the location for collection of the discrete subsurface soil samples. A discrete soil sample was obtained for the 2-foot to 4-foot bgs interval for the boring locations in the central processing area.

In the Southern Processing Area (over and adjacent to the former acid chambers), soil borings WB-SB11 through WB-SB20 were advanced to a depth of 10 feet bgs, except in the case where the boring location also served as a monitoring well location. In those cases, the boring was advanced to at least 26 feet bgs. A five-point composite surficial sample (0-foot to 0.5-foot bgs interval) was collected at each soil boring location using a 3-inch-diameter bucket-type hand auger. In areas where the ground was impenetrable to the bucket-type hand auger (i.e., soil boring locations WB-SB13, WB-SB14, and WB-SB19), the Geoprobe was used to collect the affected aliquots. Boring WB-SB13 was located within the footprint of the former acid chambers. Boring WB-SB19 was located to the southwest of the former acid chambers along a gravel access road constructed during the Phase 1 Removal Action. Soil boring WB-SB14 was located on the gravel access road near the gated entrance to the property. The central location for the five-point composite also served as the location for collection of the discrete subsurface soil samples.

Soil borings WB-SB11 through WB-SB20 were advanced to 10 feet bgs using the Geoprobe rig, and discrete soil samples were collected from the 2-foot to 4-foot, 4-foot to 6-foot, 6-foot to 8-foot, and 8-foot to 10-foot bgs

intervals. Soil borings WB-SB11, WB-SB15, and WB-SB16 were advanced concurrent with the installation of monitoring wells WB-MW1, WB-MW2, and WB-MW3, respectively. A B59 mobile drill rig and an 8-inch-diameter hollow-stem auger was used for monitoring well installation. Continuous split-spoon soil sampling was conducted ahead of the hollow-stem auger, with discrete samples collected from the 2-foot to 4-foot, 4-foot to 6-foot, 6-foot to 8-foot, and 8-foot to 10-foot bgs intervals.

Soil samples were analyzed for Target Analyte List (TAL) metals and pH by STL-Savannah Laboratories of Savannah, Georgia in accordance with the requirements of the Quality Assurance Project Plan (QAPP) contained in the approved Work Plan (BBL, 2001). Samples collected from the 0-foot to 0.5-foot bgs and 2-foot to 4-foot bgs intervals were analyzed and the data evaluated. Samples collected from the 4-foot to 6-foot, 6-foot to 8-foot, and 8-foot to 10-foot bgs intervals were held at the laboratory pending confirmation of the presence of contaminants in the 2-foot to 4-foot bgs interval. Only those samples from boring locations where the 2-foot to 4-foot bgs interval contained potentially elevated lead and/or arsenic concentrations were analyzed by the laboratory. The sample collection and analysis program is presented in Table 3-1. Logs for all soil borings are presented in Appendix A.

3.3 Groundwater Monitoring Well Installation

Three groundwater monitoring wells (WB-MW1, WB-MW2, and WB-MW3) were installed at the locations shown on Figure 3-1 to facilitate the collection of shallow groundwater samples and the measurement of groundwater elevations. All groundwater monitoring wells were installed and developed in accordance with the procedures specified in the approved Work Plan. The borings for monitoring wells WB-MW2 and WB-MW3 were drilled on April 16, 2001 and allowed to recover overnight. The static water level was then measured and recorded to aid in the determination of the elevation of the well screens. The water level in each well was measured on April 17, 2001 and used as the static water level. Well WB-MW2 had a static water level of 12.4 feet bgs; therefore, it was screened from 8 feet to 23 feet bgs. Well WB-MW3 had a static water level of 16.15 feet bgs and was screened from 9 feet to 26 feet bgs. On April 17, 2001, monitoring well WB-MW1 was drilled to 40 feet bgs, but did not produce any water for several hours after drilling. Water level measurements from monitoring wells WB-MW2 and WB-MW3 were used to guide the placement of the screened interval for monitoring well WB-MW1. Because of the uncertainty resulting from the absence of water from this well, a 25-foot interval from 10 feet to 35 feet bgs was screened at monitoring well WB-MW1 to minimize the chances of constructing a dry well. Well construction logs for all monitoring wells are presented in Appendix A.

3.4 Groundwater Sample Collection

Groundwater samples were collected from the three monitoring wells (WB-MW1, WB-MW2, and WB-MW3) on April 25, 2001 and April 26, 2001. Sample collection was performed in accordance with the approved Work Plan (BBL, 2001); however, low-flow conditions could not be maintained at any of the three wells due to the inability of the aquifer to produce water even under low-flow sampling conditions. Therefore, three volumes of well water were purged from each well prior to sampling.

Field parameters (i.e., pH, dissolved oxygen [DO], oxidation-reduction potential [ORP], conductivity, temperature, and flow rate) were continuously monitored using a flow-through cell and a Hydrolab Quanta-G water quality meter. Upon purging three volumes of water from the well and stabilization of the field parameters (pH, DO, ORP, conductivity, and temperature), the groundwater samples were collected. The groundwater samples were analyzed for TAL metals by STL-Savannah Laboratories of Savannah, Georgia. The sample collection and analysis program is presented in Table 3-1.

3.5 Surface Water Sample Collection

Surface water samples were collected from two locations in the stream along the western border of the property (Figure 3-1). The downstream location is denoted as WB-SW1 and the upstream location is denoted as WB-SW2. Surface water sampling locations were also established in the drainage ditch along the southeast side of the property. The downstream location is denoted as WB-SW4 and the upstream location is denoted as WB-SW3; however, surface water samples were not collected from these locations due to the absence of water in the drainage ditch. All sampling was performed in accordance with procedures outlined in the approved Work Plan (BBL, 2001). The surface water samples were analyzed for TAL metals by STL-Savannah Laboratories of Savannah, Georgia. The sample collection and analysis program is presented in Table 3-1.

3.6 Sediment Sample Collection

Sediment samples were collected from two locations in the unnamed stream along the western border of the property and two locations in the drainage ditch along the southeast portion of the property (Figure 3-1). In the stream, the downstream location is denoted as WB-SD1 and the upstream location is denoted as WB-SD2. In the drainage ditch the downstream location is denoted as WB-SD4 and the upstream as WB-SD3. Sediment samples were collected from each of the four locations; however, the sediment samples collected in the drainage ditch are not true sediment samples due to the absence of water in the ditch. All sediment sampling was conducted in accordance with the procedures outlined in the USEPA-approved Work Plan (BBL, 2001). The sediment samples were analyzed for TAL metals and pH by STL-Savannah Laboratories of Savannah, Georgia. The sample collection and analysis program is presented in Table 3-1.

3.7 Stream Gauge Installation

Four stream gauges were installed to provide water elevation data for the development of a shallow groundwater potentiometric surface map for the Site. The stream gauges were installed in accordance with the procedures specified in the Field Sampling Plan (FSP). Two of the gauges were installed in the unnamed stream located to the west of the Site and two were placed in the drainage ditch to the southeast of the Site (Figure 3-1).

3.8 Surveying

Surveying was conducted by J.R. Harrington & Associates of Wadesboro, North Carolina, using standard instrument survey techniques. The location and elevation of each soil boring, monitoring well, sediment sampling point, and surface water sampling point were measured. The elevations of the inner and outer casings of the monitoring wells and the elevations of the tops of the stream gauges were also measured. In addition, the location of the property boundaries and the major physical features were surveyed.

3.9 Groundwater and Surface Water Elevation Measurements

Groundwater and surface water elevations were measured in accordance with the procedures outlined in the FSP on April 25, 2001.

3.10 Data Validation

Data validation entails a review of the QC data and the raw data to verify that the laboratory was operating within required limits, the analytical results are correctly transcribed from the instrument read outs, and which, if any, environmental samples are related to any deficient QC samples. The objective of data validation is to identify any questionable or invalid laboratory measurements and to determine if the quality is sufficient to meet the data quality objectives. All laboratory analytical data generated from the sample analysis were validated in accordance with the procedures outlined in the QAPP contained in the USEPA-approved Work Plan (BBL, 2001).

4. Summary of Results

4.1 Introduction

Soil, sediment, surface water, and groundwater samples were collected and analyzed as part of the site characterization activities at the former VCC phosphate/fertilizer plant in Wadesboro, North Carolina. All sampling and analyses were performed in accordance with the USEPA-approved Work Plan (BBL, 2001). All laboratory analytical data generated and reported herein were validated in accordance with the procedures specified in the QAPP contained in the USEPA-approved Work Plan (BBL, 2001).

4.2 Site Subsurface Lithology

The Site is underlain by approximately 2 feet of fine to medium sand and some gravel with sandy silt beneath it. The groundwater surface was encountered from approximately 7 feet to 11 feet bgs. Logs for the soil borings and monitoring wells are presented in Appendix A.

4.3 Summary of Soil Sample Analytical Results

Soil samples were collected in each of the 20 soil borings (Figure 2-1) and analyzed for TAL metals and pH. In the central processing area, soil samples were collected at the ground surface (0-foot to 0.5-foot bgs interval) and from the 2-foot to 4-foot bgs interval. In the southern processing area, soil samples were collected at the ground surface (0-foot to 0.5-foot bgs interval) and from the 2-foot to 4-foot, 4-foot to 6-foot, 6-foot to 8-foot, and 8-foot to 10-foot bgs intervals. All samples collected at the ground surface and from the 2-foot to 4-foot bgs interval were analyzed and the data evaluated. Samples from the deeper intervals were only analyzed where the 2-foot to 4-foot bgs interval contained lead and/or arsenic in concentrations exceeding the corresponding industrial PRGs. Thus, soil samples from the 4-foot to 6-foot bgs interval in soil boring locations WB-SB15, WB-SB19, and WB-SB20 were analyzed and the data evaluated. Table 4-1 presents the concentrations of analytes detected in the soil samples. Appendix B contains the complete set of validated data, along with a description of the data qualifiers, for the soil samples collected. Table 4-5 presents the concentrations of analytes detected in the associated field QC samples.

The results presented in Table 4-1 are compared to the USEPA Region 9 PRGs for both residential and industrial soils. Exceedence of the PRGs can be used as a preliminary indication that the detected concentration of an analyte may result in the calculation of an elevated risk to human health during a risk assessment. For arsenic, which has both cancer and non-cancer endpoint PRGs, the cancer endpoint PRG for residential soils (0.39 mg/kg) and industrial soil (2.7 mg/kg) were both lower than the regional soil arsenic background concentration of 4.1 mg/kg reported by Shacklette and Boerngen (1984). Therefore, the residential non-cancer PRG of 22 mg/kg, which is the next highest PRG for arsenic, was used for comparisons with site soils. The use of this PRG is appropriate because it still falls within the range of soil concentrations (0.39 mg/kg [the published residential cancer endpoint PRG based on a 10^{-6} cancer risk] to 39 mg/kg [the calculated residential cancer endpoint PRG based on a 10^{-4} cancer risk]) that equates to USEPA's acceptable cancer risk range of 10^{-6} to 10^{-4}.

4.3.1 Metals

As expected, numerous metals were detected in the collected soil samples collected from the soil borings and the dry drainage pathway. Samples collected from the dry drainage pathway (WB-SD03 and WB-SD04) in the southeast corner of the property are numbered with a sediment sample convention, but are actually soil samples due to the absence of water in the drainage ditch. In the Central Processing Area, lead was detected at concentrations in excess of both the residential and industrial soil PRGs in the surficial samples from boring WB-

SB09 (1,370 mg/kg) and in excess of the industrial soil PRG in the surficial sample from boring WB-SB10 (643 mg/kg). Neither of the 2 – 4 foot bgs samples these borings contained lead at concentrations greater than the PRGs.

In the Southern Processing Area, lead and/or arsenic concentrations exceeding the residential and/or industrial soil PRGs were detected in the soil samples collected from the ground surface (0-foot to 0.5-foot bgs interval) in nine of the ten borings. A lead concentration exceeding the PRGs was detected in the soil sample collected from the 2-foot to 4-foot bgs interval in boring WB-SB20. Lead was present at concentrations exceeding the PRG in both of the surficial soil samples collected from the southeastern drainage ditch. Detected lead concentrations above the PRGs varied from 408 to 32,100 mg/kg.

Concentrations of arsenic exceeding the PRG were also detected in the soil samples collected from the 2-foot to 4-foot bgs interval in borings WB-SB15, WB-SB19, and WB-SB20. Concentrations exceeding PRGs were not detected in the 2-foot to 4-foot bgs interval for the other borings or in the 4-foot to 6-foot bgs interval in borings WB-SB15, WB-SB19, and WB-SB20. Finally, arsenic was present at a concentration exceeding the PRG in one of the two surficial soil samples (WB-SD04) collected from the southeastern drainage ditch. Arsenic and lead concentrations in soil samples collected from the entire site are presented in Figure 4-1.

In addition to arsenic and lead, antimony was present at a concentration above the residential PRG in the soil sample collected from the ground surface (0-foot to 0.5-foot bgs interval) at boring WB-SB19. This boring also had arsenic and lead concentrations greater than the PRGs. Finally, one additional element not typically associated with historical activities at former phosphate/fertilizer plants was present in some soil samples at concentrations exceeding residential PRGs. Iron was present at concentrations above residential soil PRGs in samples from 5 of 10 borings advanced in samples from the Central Processing Area and in samples from all of the borings advanced in the Southern Processing Area. (Table 4-1).

4.3.2 Soil pH

Soil pH was measured in each of the analyzed soil samples from the 20 boring locations and the two sediment samples taken from the dry drainage pathway. Soil pH varied from slightly alkaline (pH = 7.85) at boring WB-SB5-0-0.5 ft bgs to acidic (pH = 2.91) in boring WB-SB19-2-4 ft bgs. The soil pH was below 5 in at least one sample from all 20 soil borings and the two sediment samples taken from the dry drainage ditch. The average soil pH was 4.44 for all of the analyzed soil samples. The pH of each soil sample is presented in Table 4-1 and shown on Figure 4-1.

4.4 Summary of Sediment Sample Analytical Results

Sediment samples were collected from the stream to the west of the Site (WB-SD1 and WB-SD2) and from the dry drainage pathway to the southeast of the acid chambers (WB-SD3 and WB-SD4). The drainage pathway to the southeast of the acid chambers is dry and, therefore, the "sediment" samples collected from this pathway are soil samples and were discussed previously in Section 4.3. Table 4-2 presents the concentrations of analytes detected in the sediment samples. Appendix B contains the complete set of validated data, along with a description of the data qualifiers, for the sediment samples. Table 4-5 presents the concentrations of analytes detected in the associated field QC samples.

4.4.1 Metals

As expected, numerous metals were detected in the sediment samples. None of the detected metals were present at concentrations exceeding the corresponding residential or industrial soil PRGs. Arsenic and lead concentrations for the sediment samples collected at the Site are presented on Figure 4-2.

4.4.2 Sediment pH

The pH of the sediment samples was near neutral. The pH of WB-SD02 (the upstream location) was 6.60. The pH in WB-SD99, the blind field duplicate of WB-SD02, was 6.43. The pH of WB-SD01 (the downstream location) was 6.81. The pH of each sediment sample is presented on Figure 4-2.

4.5 Summary of Groundwater Sample Analytical Results

Groundwater samples were collected from monitoring wells WB-MW1, WB-MW2, and WB-MW3 from a depth approximately in the middle of the screened interval and analyzed for TAL metals. Table 4-3 presents the concentrations of analytes detected in the groundwater samples. Appendix B contains the complete set of validated data, along with a description of the data qualifiers, for the groundwater samples. Table 4-5 presents the concentrations of analytes detected in the associated field QC samples.

4.5.1 Metals

As expected, numerous metals were detected in the groundwater samples. Arsenic was not detected in any sample; however, the analytical detection limit for arsenic was above the PRG (which is an extremely low 0.045 micrograms per liter [μg/L]). Lead was present in only one sample at the low concentration of 2.6 μg/L. Manganese was detected at a concentration exceeding the corresponding PRG in each sample including the field duplicate. Aluminum was also detected in sample WB-MW1 at a concentration exceeding the corresponding PRG. Aluminum, cadmium, and iron were also detected at concentrations exceeding the corresponding PRGs in sample WB-MW2. The concentrations of detected compounds exceeding PRGs is presented on Figure 4-3.

4.5.2 Groundwater pH

Groundwater pH was measured in each of the monitoring wells. The groundwater pH in monitoring wells WB-MW1 and WB-MW2 was 4.59 and 4.62, respectively. The groundwater pH in monitoring well WB-MW3 was 6.88. The average groundwater pH was 5.36. The pH of each groundwater sample is presented in Table 4-3.

4.6 Surface Water Sample Analytical Results

Surface water samples were collected from two locations (WB-SW01 and WB-SW02) in the unnamed stream to the west of the Site. Samples were analyzed for TAL metals. As expected, several metals were detected in the two surface water samples. Neither arsenic nor lead were detected in the samples and none of the detected metals were present at concentrations exceeding the corresponding PRGs. Table 4-4 presents the concentrations of analytes detected in the samples. Appendix B contains the complete set of validated data, along with a description of the data qualifiers, for the surface water samples. Table 4-5 presents the concentrations of analytes detected in the associated field QC samples.

5. Summary and Conclusions

5.1 Summary

This section summarizes the results of the site characterization activities at the former VCC phosphate/fertilizer plant located in Wadesboro, North Carolina. The summary is followed by conclusions drawn from the site characterization activities.

5.1.1 Soil

Lead was present at concentrations exceeding the PRG in samples from just 2 of 10 borings advanced in the Central Processing Area. The elevated lead concentrations were present in the 0-foot to 0.5-foot bgs intervals in these borings, which indicates that the lead is limited to the near-surface soils at these locations.

Arsenic and/or lead were present at concentrations exceeding PRGs in samples collected from 9 of the 10 borings advanced in the Southern Processing Area. Elevated arsenic and/or lead concentrations were limited to the 0-foot to 0.5-foot sample interval in six of those borings. In the remaining three borings, elevated arsenic and/or lead concentrations were limited to the top 4 feet of the boring.

Both soil samples collected from the drainage ditch southeast of the Site had an elevated lead concentrations, and one of the samples had an elevated arsenic concentration, which indicates that the drainage ditch has likely transported impacted soil approximately 300 feet away from (southeast) of the Site.

Finally, antimony was present at a concentration exceeding PRGs in 1 of 10 borings advanced in the Southern Processing Area. Elevated antimony concentrations were limited to the 0-foot to 0.5-foot sample interval. Samples from this boring also contained arsenic and lead concentrations that were greater than the PRGs.

5.1.2 Sediment

The two sediment samples collected from the unnamed stream west of the Site did not contain elevated concentrations of any metal, including arsenic and lead. This includes the sample (WB-SD1) that was collected just downstream of the outfall from the drainage ditch located along the western boundary of the site, where sediment contamination would be anticipated to be present. This indicates that the Site has not acted as a source of metals to the stream from either surface water runoff or the discharge of groundwater from the Site.

5.1.3 Surface Water

Sediment samples collected from the unnamed stream west of the Site did not contain arsenic or lead, nor did they contain elevated concentrations of any other metal. This indicates that the Site is not acting as a source of metals to the stream either via the discharge of groundwater from the Site or from overland transport of surface water.

5.1.4 Groundwater

Arsenic was not detected in any groundwater sample and lead was detected in one sample at the low concentration of 2.6 μg/L. Several other metals (aluminum, cadmium, iron, and/or manganese) were present in the groundwater samples at concentrations exceeding PRGs; however, these metals are not known to be typically associated with releases from former phosphate/fertilizer facilities. Groundwater pH is moderately acidic (pH = 4.6) in wells WB-MW1 and WB-MW2.

During sampling, the groundwater monitoring wells only produced small amounts of groundwater at very low flows. This indicates that the water table aquifer, which is the aquifer that could potentially be impacted, could not be used as a water source for nearby residents. Groundwater appears to discharge to the unnamed stream west of

the Site, away from the nearby residences to contribute to the base flow of the stream. The absence of elevated metals concentrations, and more importantly the absence of arsenic and lead, in the surface water samples (see Section 5.1.3) indicates that groundwater discharging to the stream from the Site is not contributing significant amounts of Site-related metals to the surface water. The absence of elevated metals concentrations, particularly arsenic and lead, from the sediments (see Section 5.1.2) indicates that the Site has not contributed metals to surface water.

5.2 Conclusions

The absence of elevated concentrations of Site-related metals, specifically arsenic and lead, in the groundwater, surface water, and stream sediments indicates that these matrices have not been adversely impacted by the activities of the former phosphate/fertilizer plant. No further action is recommended for these matrices.

Shallow (less than 4 feet bgs) soil has been impacted with arsenic and lead by activities of the former phosphate/fertilizer plant, primarily in the Southern Processing Area. This should be addressed by the evaluation, selection, and implementation of a remedial alternative that will prevent potential off-site migration of impacted soil that will also be protective of human health and the environment. An immediate removal action is not necessary at this time because ExxonMobil recently installed a fence around the property that restricts access to a vast majority of the impacted soils.

6. References

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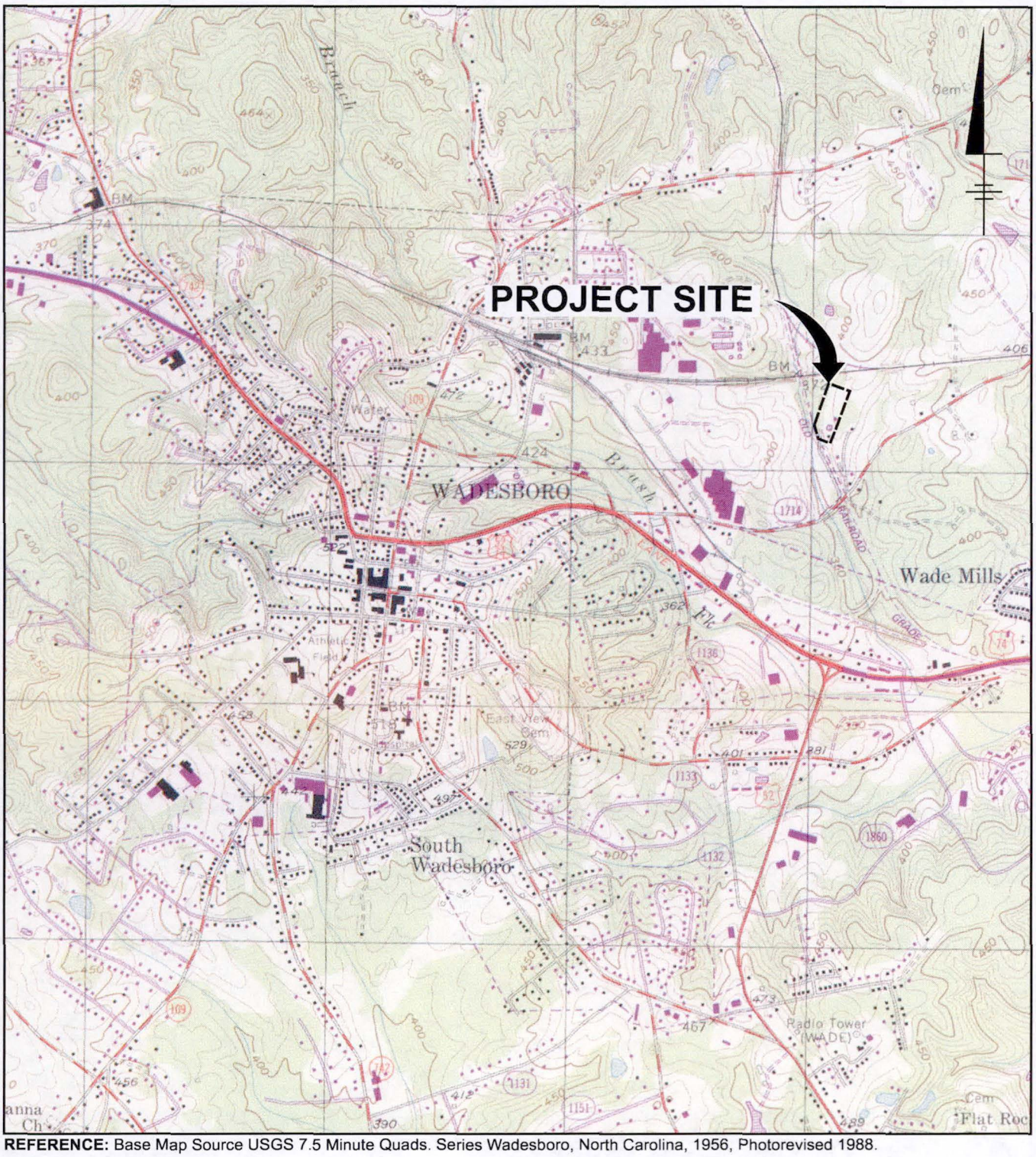
BLASLAND, BOUCK & LEE, INC.

engineers & scientists

Figures



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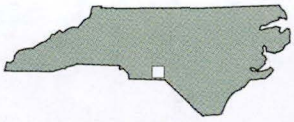
2000' 0 2000'

Approximate Scale: 1" = 2000'



AREA LOCATION

VIRGINIA-CAROLINA CHEMICAL CO. SITE
WADESBORO, NORTH CAROLINA

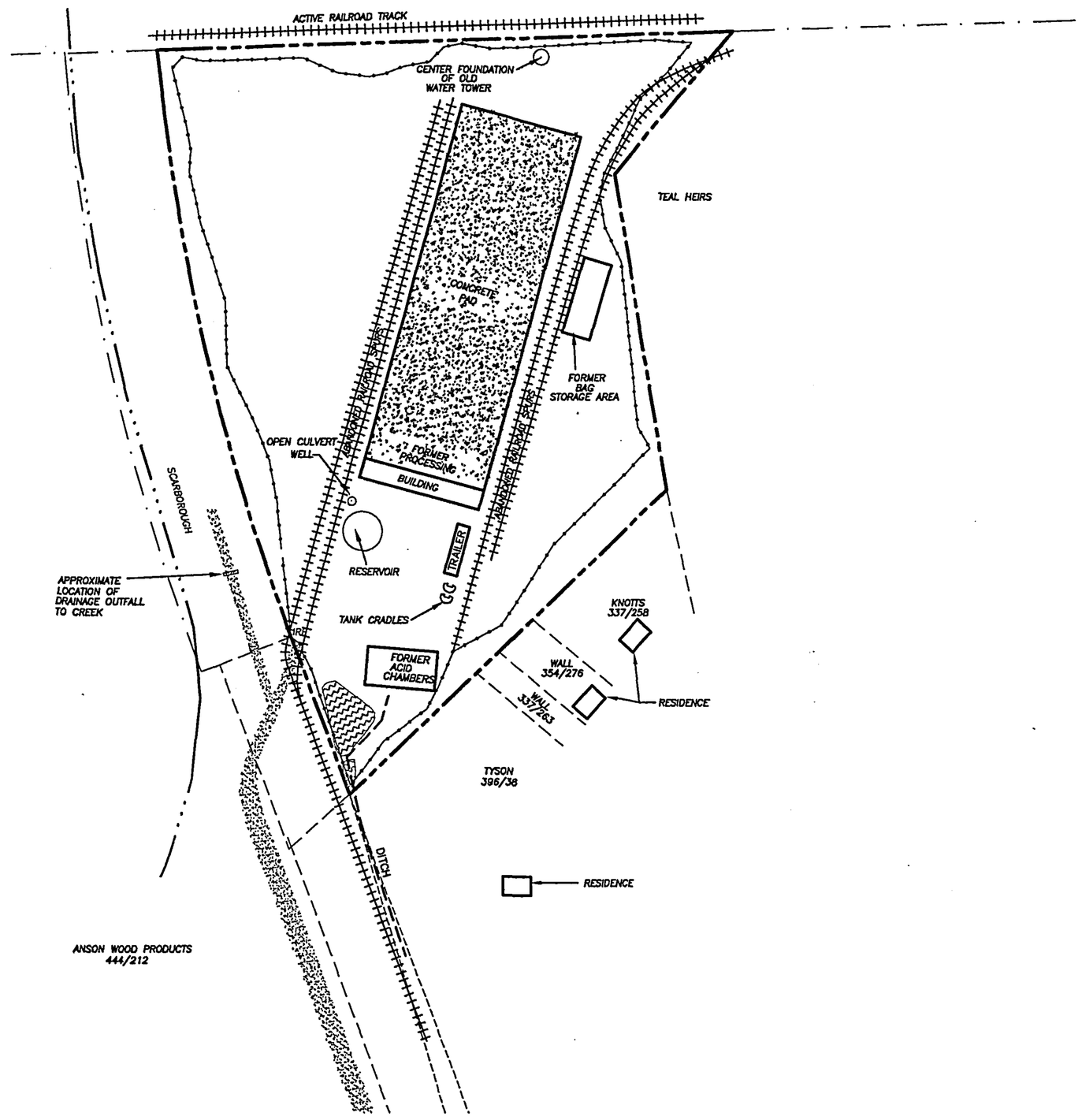
SITE CHARACTERIZATION REPORT

SITE LOCATION MAP

BBL BLASLAND, BOUCK & LEE, INC. *engineers & scientists*

FIGURE 1-1

06/01 SYR-D54-LBR
54626003/54626n02.cdr



LEGEND:

- BUILDING
- TANK
- ROAD
- RAILROAD
- DITCH
- STREAM
- PROPERTY LINE
- CHAIN LINK FENCE
- ACCESS ROAD
- DISCOLORED SOIL

NOTE:

1. BASE MAP BY JAMES R. HARRINGTON AND ASSOCIATES AT A SCALE OF 1" = 100' SUPPLEMENTED BY BBL WITH FEATURES DIGITIZED FROM A DRAWING ENTITLED "FIGURE 3 – SAMPLING LOCATION MAP" BY TETRA TECH EMI (2000).

0 150' 300'

GRAPHIC SCALE

VIRGINIA–CAROLINA CHEMICAL CO. SITE
WADESBORO, NORTH CAROLINA

SITE CHARACTERIZATION REPORT

SITE MAP

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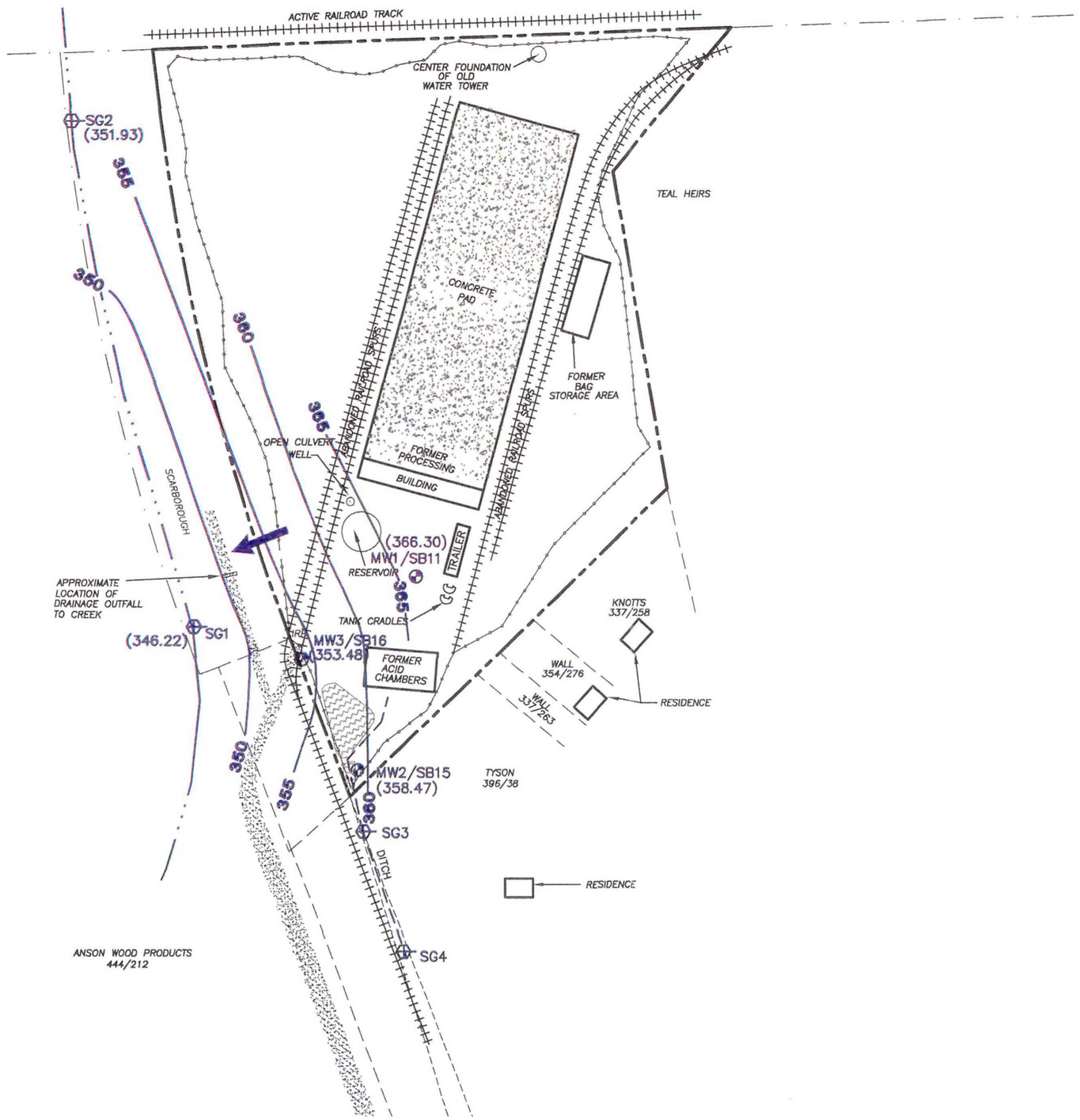
FIGURE 2-1

L: ON=*, OFF=REF, SP*
P: STD-PCP/BL @LEXMARK
7/13/01 SYR-54-PGL PGL RCA
54628008/54628B07.DWG



LEGEND:

- BUILDING
- TANK
- ROAD
- RAILROAD
- DITCH
- STREAM
- PROPERTY LINE
- CHAIN LINK FENCE
- ACCESS ROAD
- DISCOLORED SOIL
- MW1 MONITORING WELL LOCATION
- SG1 STREAM GAUGE LOCATION
- 360 SHALLOW GROUNDWATER POTENTIOMETRIC SURFACE CONTOUR
- (358.47) SHALLOW GROUNDWATER POTENTIOMETRIC ELEVATION (IN FEET AMSL)
- GROUNDWATER FLOW DIRECTION

NOTES:

1. BASE MAP BY JAMES R. HARRINGTON AND ASSOCIATES AT A SCALE OF 1" = 100' SUPPLEMENTED BY BBL WITH FEATURES DIGITIZED FROM A DRAWING ENTITLED "FIGURE 3 – SAMPLING LOCATION MAP" BY TETRA TECH EMI (2000).
2. ELEVATIONS IN FEET AMSL MEASURED ON 4/25/01.

0 150' 300'

GRAPHIC SCALE

VIRGINIA–CAROLINA CHEMICAL CO. SITE
WADESBORO, NORTH CAROLINA

SITE CHARACTERIZATION REPORT

SHALLOW GROUNDWATER POTENTIOMETRIC SURFACE MAP

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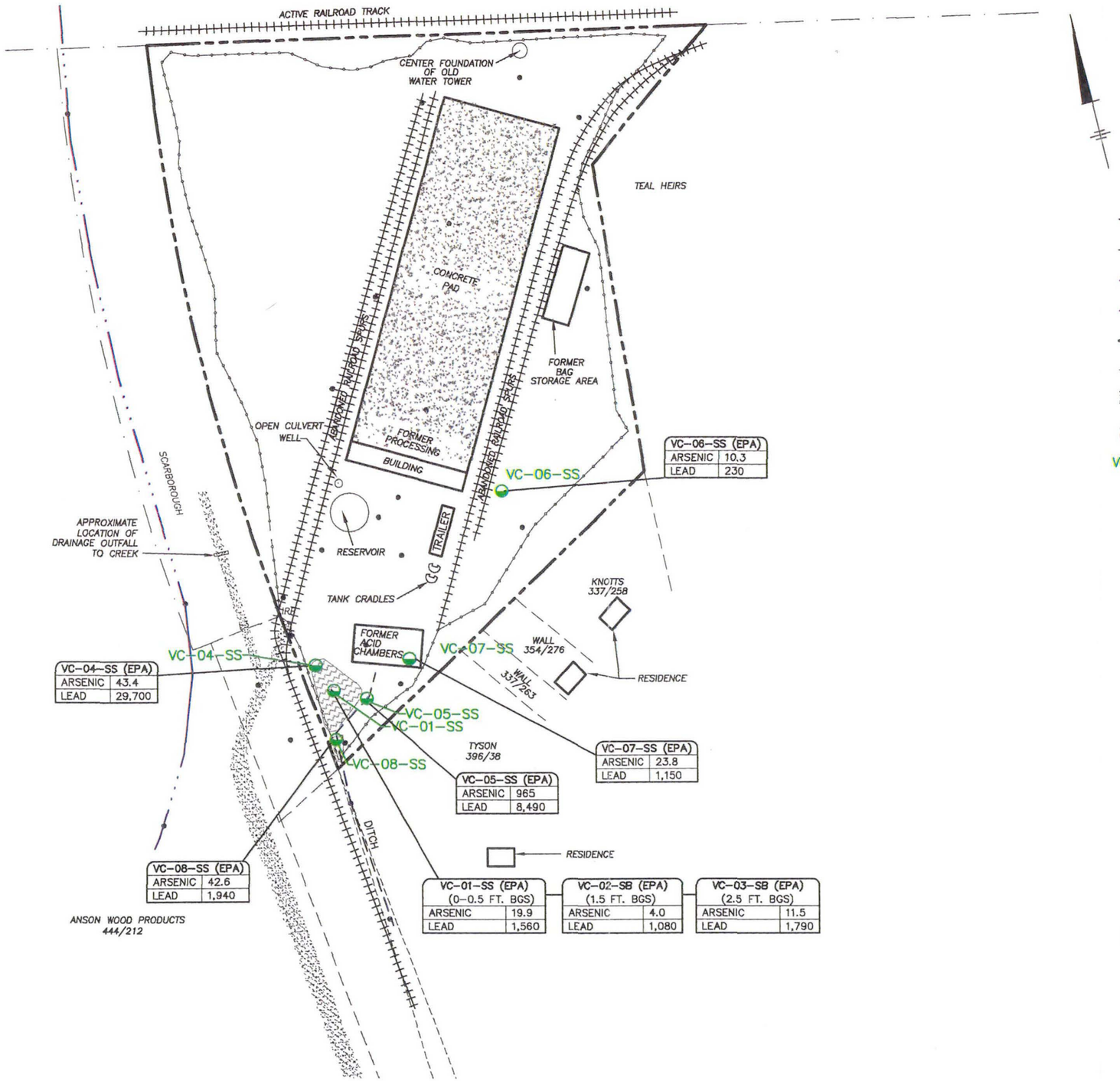
FIGURE 2-2

L: ON=*, OFF=REF, SP*
P: STD-PCP/BL GLEXMARK
7/13/01 SYR-54-PGL RCB RCA
54626006/54626B08.DWG



LEGEND:

- BUILDING
- TANK
- ROAD
- RAILROAD
- DITCH
- STREAM
- PROPERTY LINE
- CHAIN LINK FENCE
- ACCESS ROAD
- DISCOLORED SOIL
- VC-07-SS USEPA SURFACE (0-0.5 FT.) SOIL SAMPLE (12/99)

NOTES:

1. BASE MAP BY JAMES R. HARRINGTON AND ASSOCIATES AT A SCALE OF 1" = 100' SUPPLEMENTED BY BBL WITH FEATURES DIGITIZED FROM A DRAWING ENTITLED "FIGURE 3 – SAMPLING LOCATION MAP" BY TETRA TECH EMI (2000).
2. ALL SAMPLING DEPTHS ARE IN FEET BELOW GROUND SURFACE.
3. USEPA SAMPLE LOCATIONS ARE APPROXIMATE.
4. ALL CONCENTRATIONS IN mg/kg.

0 150' 300'

GRAPHIC SCALE

VIRGINIA-CAROLINA CHEMICAL CO. SITE
WADESBORO, NORTH CANOLINA

SITE CHARACTERIZATION REPORT

ARSENIC AND LEAD CONCENTRATIONS IN SURFACE AND SUBSURFACE SOIL SAMPLES FROM USEPA SITE INVESTIGATION

BBL®
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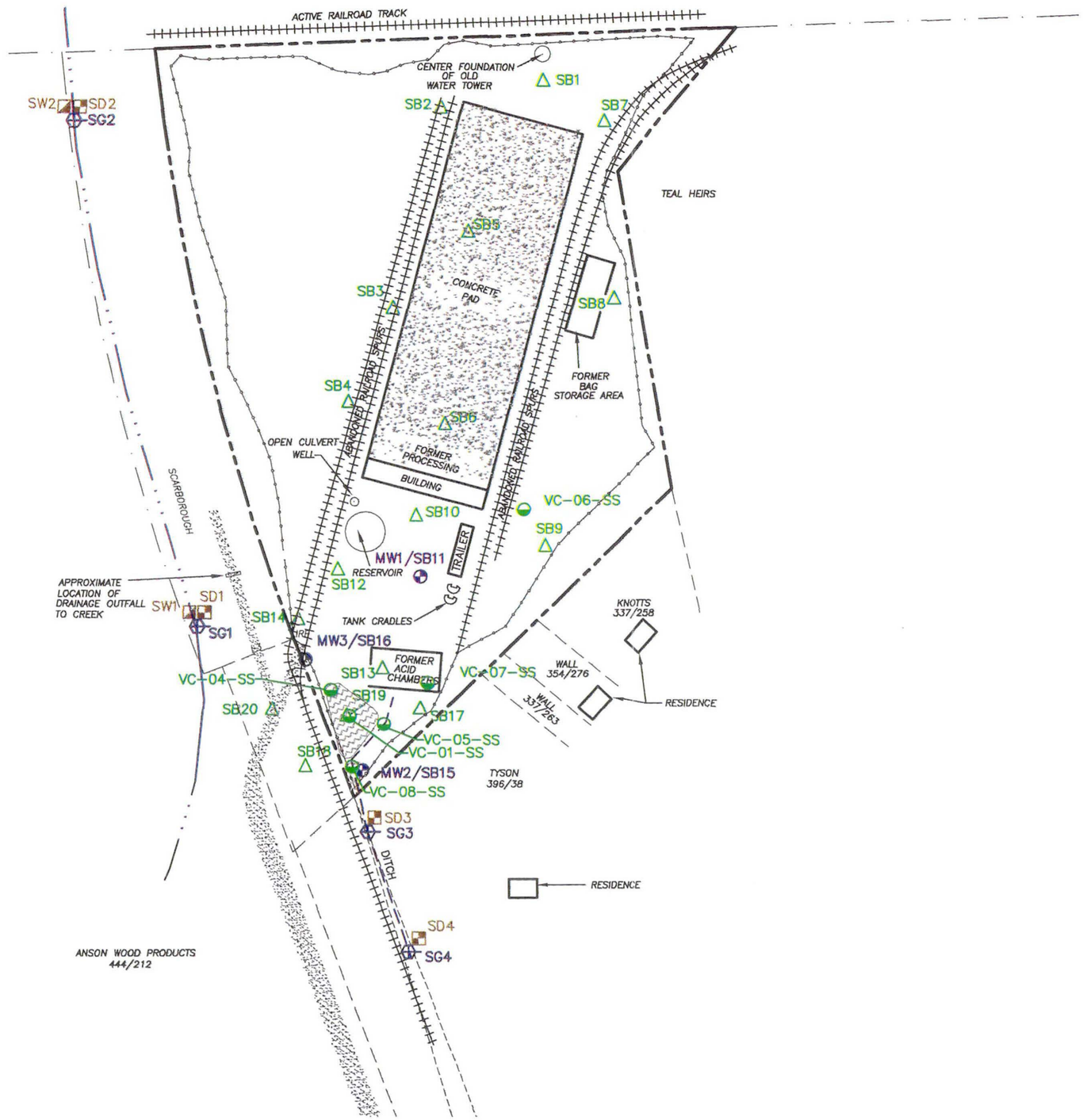
FIGURE 2-3

L: ON=*, OFF=REF, SP*
P: STD-PCP/BL QLEXMARK
7/13/01 SYR-54-PGL PGL RCA
54626006/54626C02.DWG



LEGEND:

- BUILDING
- TANK
- ROAD
- RAILROAD
- DITCH
- STREAM
- PROPERTY LINE
- CHAIN LINK FENCE
- ACCESS ROAD
- DISCOLORED SOIL
- SB1 SOIL BORING LOCATION
- MW1 MONITORING WELL LOCATION
- SD1 SEDIMENT SAMPLE LOCATION
- SW1 SURFACE WATER SAMPLE LOCATION
- SG1 STREAM GAUGE LOCATION
- VC-07-SS USEPA SURFACE (0-0.5 FT.) SOIL SAMPLE (12/99)

NOTE:

1. BASE MAP BY JAMES R. HARRINGTON AND ASSOCIATES AT A SCALE OF 1" = 100' SUPPLEMENTED BY BBL WITH FEATURES DIGITIZED FROM A DRAWING ENTITLED "FIGURE 3 – SAMPLING LOCATION MAP" BY TETRA TECH EMI (2000).

0 150' 300'

GRAPHIC SCALE

VIRGINIA-CAROLINA CHEMICAL CO. SITE
WADESBORO, NORTH CAROLINA

SITE CHARACTERIZATION REPORT

SITE CHARACTERIZATION SAMPLING LOCATIONS

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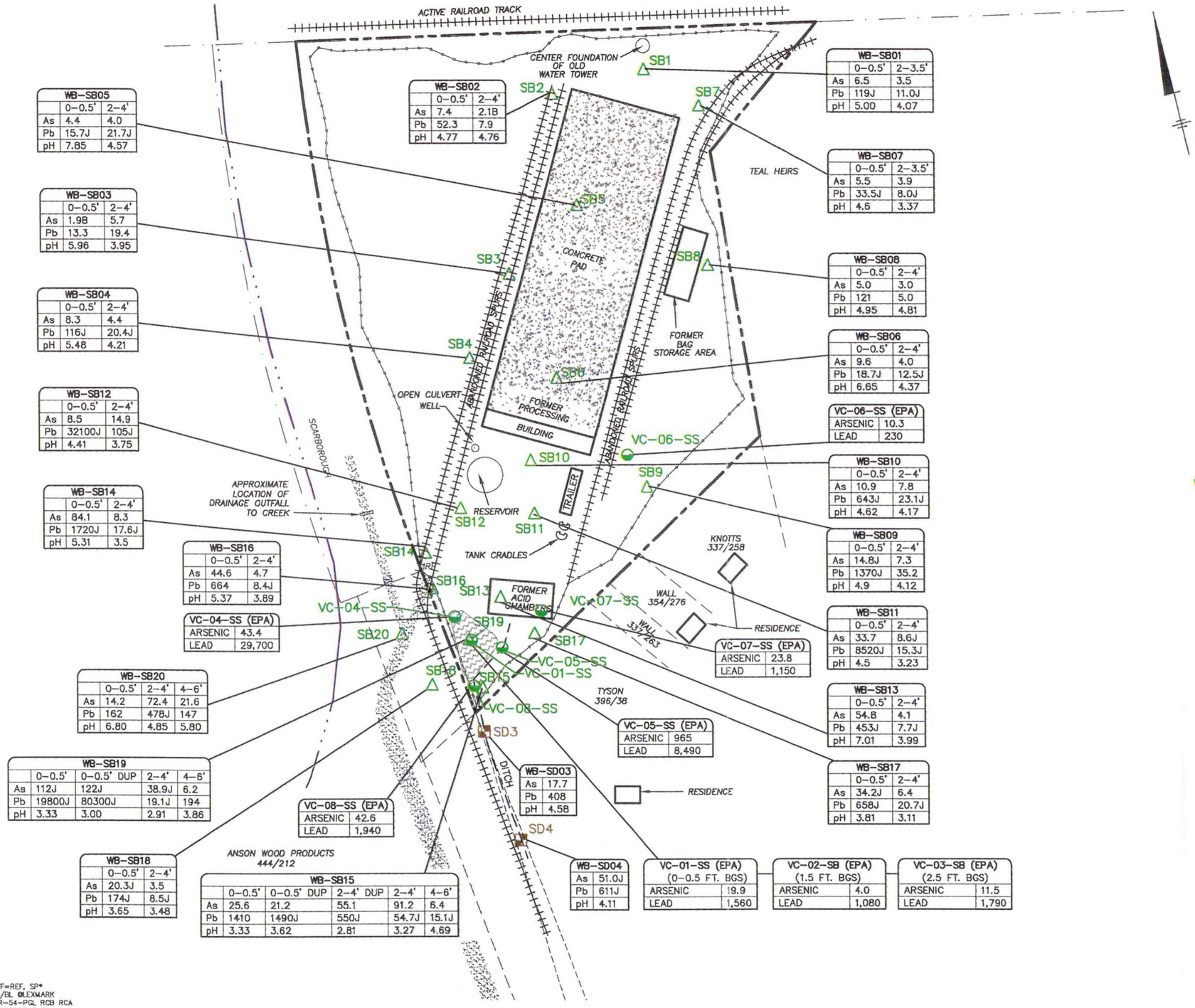
FIGURE 3-1

L: ON=*, OFF=REF, SP*
P: PAGESET/BL
7/17/01 SYR-54-PGL RCB RCA
54626006/54626B09.DWG



WB-SB01	0-0.5'	2-3.5'
As	6.5	3.5
Pb	119J	11.0J
pH	5.00	4.07

WB-SB02	0-0.5'	2-4'
As	7.4	2.1B
Pb	52.3	7.9
pH	4.77	4.76

WB-SB03	0-0.5'	2-4'
As	1.9B	5.7
Pb	13.3	19.4
pH	5.96	3.95

WB-SB04	0-0.5'	2-4'
As	8.3	4.4
Pb	116J	20.4J
pH	5.48	4.21

WB-SB05	0-0.5'	2-4'
As	4.4	4.0
Pb	15.7J	21.7J
pH	7.85	4.57

WB-SB06	0-0.5'	2-4'
As	9.6	4.0
Pb	18.7J	12.5J
pH	6.65	4.37

WB-SB07	0-0.5'	2-3.5'
As	5.5	3.9
Pb	33.5J	8.0J
pH	4.6	3.37

WB-SB08	0-0.5'	2-4'
As	5.0	3.0
Pb	121	5.0
pH	4.95	4.81

WB-SB09	0-0.5'	2-4'
As	14.8J	7.3
Pb	1370J	35.2
pH	4.9	4.12

WB-SB10	0-0.5'	2-4'
As	10.9	7.8
Pb	643J	23.1J
pH	4.62	4.17

WB-SB11	0-0.5'	2-4'
As	33.7	8.6J
Pb	8520J	15.3J
pH	4.5	3.23

WB-SB12	0-0.5'	2-4'
As	8.5	14.9
Pb	32100J	105J
pH	4.41	3.75

WB-SB13	0-0.5'	2-4'
As	54.8	4.1
Pb	453J	7.7J
pH	7.01	3.99

WB-SB14	0-0.5'	2-4'
As	84.1	8.3
Pb	1720J	17.6J
pH	5.31	3.5

WB-SB15	0-0.5'	0-0.5' DUP	2-4' DUP	2-4'	4-6'
As	25.6	21.2	55.1	91.2	6.4
Pb	1410	1490J	550J	54.7J	15.1J
pH	3.33	3.62	2.81	3.27	4.69

WB-SB16	0-0.5'	2-4'
As	44.6	4.7
Pb	664	8.4J
pH	5.37	3.89

WB-SB17	0-0.5'	2-4'
As	34.2J	6.4
Pb	658J	20.7J
pH	3.81	3.11

WB-SB18	0-0.5'	2-4'
As	20.3J	3.5
Pb	174J	8.5J
pH	3.65	3.48

WB-SB19	0-0.5'	0-0.5' DUP	2-4'	4-6'
As	112J	122J	38.9J	6.2
Pb	19800J	80300J	19.1J	194
pH	3.33	3.00	2.91	3.86

WB-SB20	0-0.5'	2-4'	4-6'
As	14.2	72.4	21.6
Pb	162	478J	147
pH	6.80	4.85	5.80

VC-04-SS (EPA)	
ARSENIC	43.4
LEAD	29,700

VC-05-SS (EPA)	
ARSENIC	965
LEAD	8,490

VC-06-SS (EPA)	
ARSENIC	10.3
LEAD	230

VC-07-SS (EPA)	
ARSENIC	23.8
LEAD	1,150

VC-08-SS (EPA)	
ARSENIC	42.6
LEAD	1,940

WB-SD03	
As	17.7
Pb	408
pH	4.58

WB-SD04	
As	51.0J
Pb	611J
pH	4.11

VC-01-SS (EPA) (0-0.5 FT. BGS)	
ARSENIC	19.9
LEAD	1,560

VC-02-SB (EPA) (1.5 FT. BGS)	
ARSENIC	4.0
LEAD	1,080

VC-03-SB (EPA) (2.5 FT. BGS)	
ARSENIC	11.5
LEAD	1,790

LEGEND:

- BUILDING
- TANK
- ROAD
- RAILROAD
- DITCH
- STREAM
- PROPERTY LINE
- CHAIN LINK FENCE
- ACCESS ROAD
- DISCOLORED SOIL
- △ SB1 SOIL BORING LOCATION
- SD3 SEDIMENT SAMPLE LOCATION
- VC-07-SS USEPA SURFACE (0-0.5 FT.) SOIL SAMPLE (12/99)

NOTES:

1. BASE MAP BY JAMES R. HARRINGTON AND ASSOCIATES AT A SCALE OF 1" = 100' SUPPLEMENTED BY BBL WITH FEATURES DIGITIZED FROM A DRAWING ENTITLED "FIGURE 3 – SAMPLING LOCATION MAP" BY TETRA TECH EMI (2000).
2. ALL SAMPLING DEPTHS ARE IN FEET BELOW GROUND SURFACE.
3. SD03 AND SD04 WERE TAKEN IN DRY DRAINAGE DITCH AND ARE ACTUALLY SOIL SAMPLES.
4. USEPA SAMPLE LOCATIONS ARE APPROXIMATE.
5. CONCENTRATIONS IN mg/kg.

0 150' 300'
GRAPHIC SCALE

VIRGINIA-CAROLINA CHEMICAL CO. SITE
WADESBORO, NORTH CAROLINA

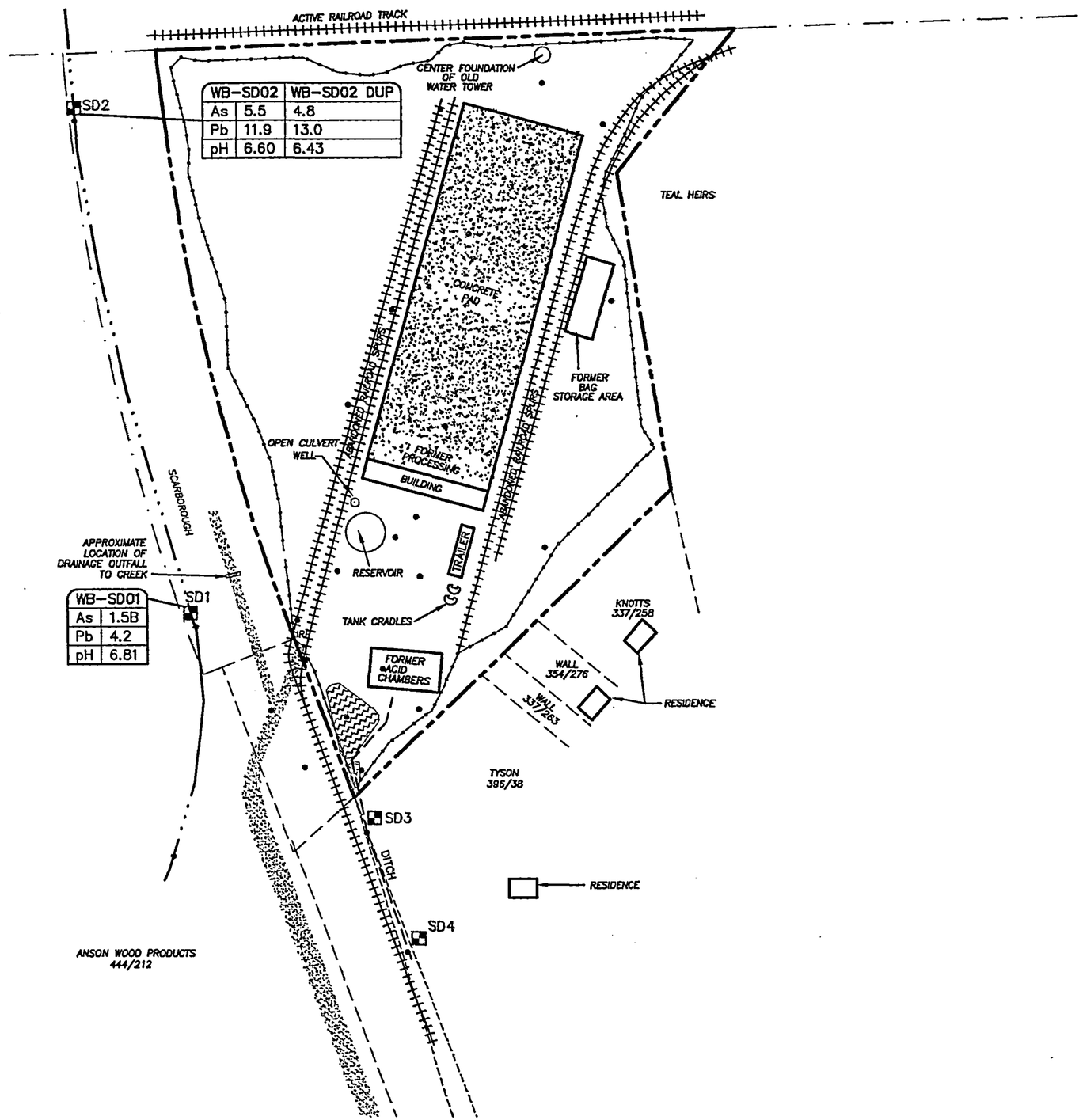
SITE CHARACTERIZATION REPORT

ARSENIC AND LEAD CONCENTRATIONS AND pH IN SOIL

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

FIGURE 4-1

L: ON=*, OFF=REF, SP*
P: STD-PCP/BL OLEXMARK
7/13/01 SYR-54-PGL RCB RCA
54626006/54626C01.DWG



WB-SD02		WB-SD02 DUP
As	5.5	4.8
Pb	11.9	13.0
pH	6.60	6.43

WB-SD01	
As	1.58
Pb	4.2
pH	6.81

LEGEND:

- BUILDING
- TANK
- ROAD
- RAILROAD
- DITCH
- STREAM
- PROPERTY LINE
- CHAIN LINK FENCE
- ACCESS ROAD
- DISCOLORED SOIL
- SD1 SEDIMENT SAMPLE LOCATION

NOTES:

1. BASE MAP BY JAMES R. HARRINGTON AND ASSOCIATES AT A SCALE OF 1" = 100' SUPPLEMENTED BY BBL WITH FEATURES DIGITIZED FROM A DRAWING ENTITLED "FIGURE 3 – SAMPLING LOCATION MAP" BY TETRA TECH EMI (2000).
2. SD03 AND SD04 WERE TAKEN IN DRY DRAINAGE DITCH AND ARE ACTUALLY SOIL SAMPLES.
3. ALL CONCENTRATIONS IN mg/kg.

0 150' 300'

GRAPHIC SCALE

VIRGINIA-CAROLINA CHEMICAL CO. SITE
WADESBORO, NORTH CAROLINA

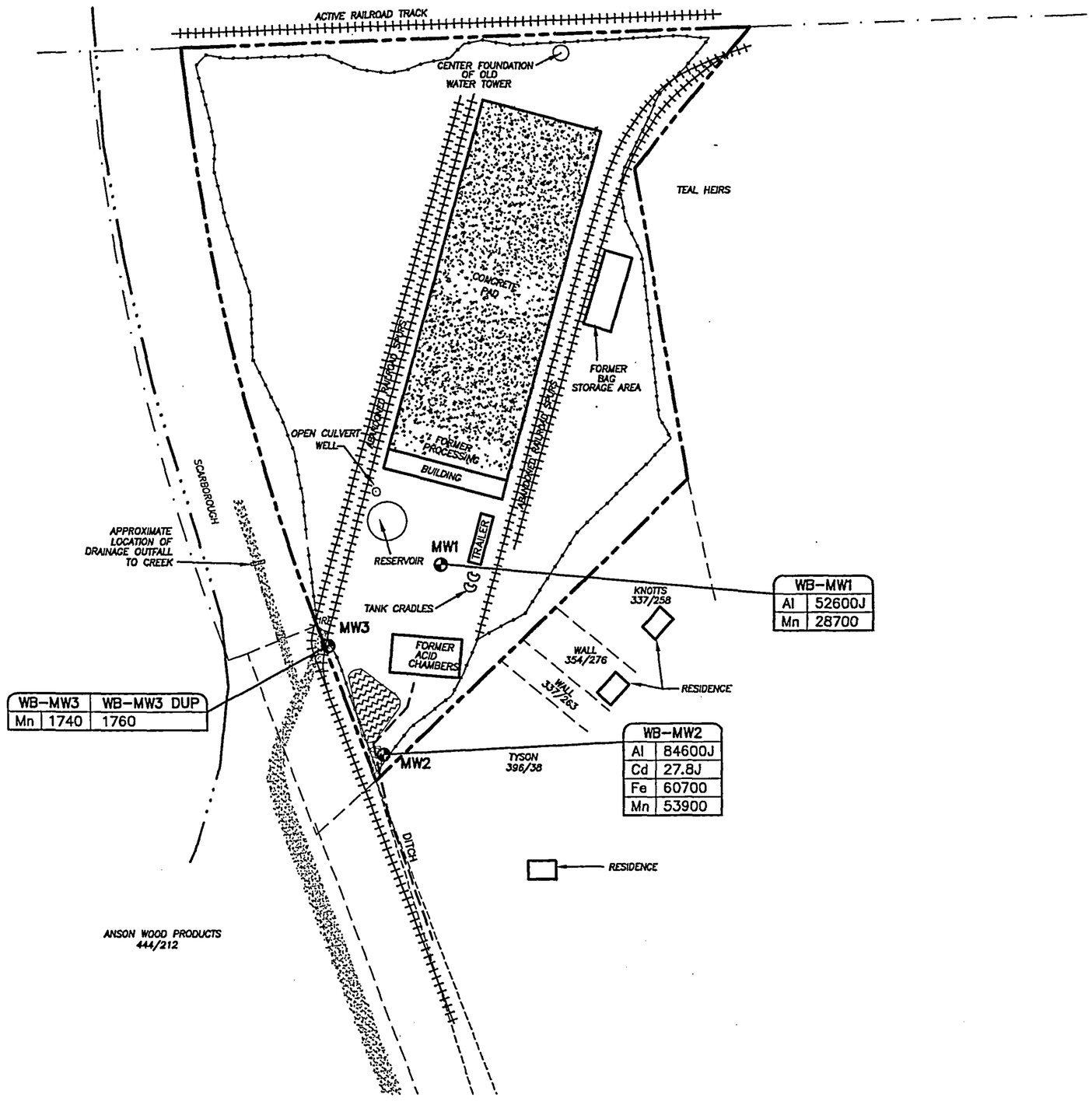
SITE CHARACTERIZATION REPORT

ARSENIC AND LEAD CONCENTRATIONS AND pH IN SEDIMENT

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

FIGURE 4-2

L: ON=*, OFF=REF, SP=
P: STD-PCP/BL @LEXMARK
7/13/01 SYR-S4-PGL RCB RCA
54628008/54628804.DWG



L: ON=*, OFF=REF, SP*
F: STD-PCP/BL @LEXMARK
7/13/01 SYR-54-PGL RCB RCA
54626D08/54626B06.DWG

LEGEND:

- BUILDING
- TANK
- ROAD
- RAILROAD
- DITCH
- STREAM
- PROPERTY LINE
- CHAIN LINK FENCE
- ACCESS ROAD
- DISCOLORED SOIL
- MW1 MONITORING WELL LOCATION

NOTES:

1. BASE MAP BY JAMES R. HARRINGTON AND ASSOCIATES AT A SCALE OF 1" = 100' SUPPLEMENTED BY BBL WITH FEATURES DIGITIZED FROM A DRAWING ENTITLED "FIGURE 3 – SAMPLING LOCATION MAP" BY TETRA TECH EMI (2000).
2. ALL CONCENTRATIONS IN ug/L.
3. PRGs ARE USEPA REGION IX PRELIMINARY REMEDIATION GOALS FOR TAP WATER.

0 150' 300'
GRAPHIC SCALE

VIRGINIA-CAROLINA CHEMICAL CO. SITE
WADESBORO, NORTH CAROLINA

SITE CHARACTERIZATION REPORT

ANALYTES EXCEEDING PRGs IN GROUNDWATER

BBL®
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

FIGURE 4-3

BLASLAND, BOUCK & LEE, INC.

engineers & scientists

Tables

Table 2-1
Summary of Groundwater and Surface Water Elevations
Wadesboro VCC - Site Characterization Report

Well/Stream Gauge ID	Top of Casing/Rod Elevation (Feet AMSL)	Depth To Water\1 (Feet)	Water Elevation (Feet AMSL)
MW-1	373.81	7.51	366.30
MW-2	367.40	8.93	358.47
MW-3	364.79	11.31	353.48
SG-1	348.31	2.09	346.22
SG-2	354.46	2.53	351.93

Notes:
\1 Measured on 4/25/01
AMSL = Above mean sea level

Table 2-2
Analytes Detected in Soil During USEPA Investigation, December 1999
Wadesboro VCC - Site Characterization Report

Analyte	USEPA Reg. IX Residential Preliminary Remediation Goals (mg/kg)	USEPA Reg. IX Industrial Preliminary Remediation Goals (mg/kg)	Sample Name, Description, and Depth (all results reported in mg/kg)							
			VC-01-SS discolored area; center (0.5 feet bgs)	VC-02-SB discolored area; center (1.5 feet bgs)	VC-03-SB discolored area; center (2.5 feet bgs)	VC-04-SS discolored area; NW corner (surficial)	VC-05-SS drainage ditch; pump house (surficial)	VC-06-SS concrete drainage path; NE RR spur (surficial)	VC-07-SS former acid chambers; SE corner (surficial)	VC-08-SS drainage ditch; 24" pipe (surficial)
Pesticides / Polychlorinated Biphenyls										
4,4'-DDT (p,p'-DDT)	1.7	12	ND	ND	ND	ND	ND	0.033	0.013	ND
alpha-BHC (HCH-alpha)	0.09	0.59	ND	ND	0.0046	ND	ND	ND	ND	ND
Dieldrin	0.03	0.15	ND	ND	ND	ND	ND	ND	0.0029	ND
Endosulfan I (alpha)	370	5,300	ND	ND	ND	ND	ND	ND	0.0029	ND
Endosulfan II (beta)	NP	NP	ND	ND	ND	ND	ND	ND	0.014	ND
Endosulfan Sulfate	NP	NP	ND	ND	ND	ND	ND	0.012	0.054	ND
Endrin	18	260	ND	ND	ND	ND	ND	ND	0.017	ND
Endrin Ketone	NP	NP	ND	ND	ND	ND	ND	ND	0.023	ND
Semivolatile Organic Compounds										
Fluoranthene	2,300	30,000	ND	ND	ND	ND	ND	0.5	ND	ND
Pyrene	2,300	54,000	ND	ND	ND	ND	ND	0.69	ND	ND
Bis (2-ethylhexyl) phthalate	35	180	0.82	ND	ND	ND	ND	ND	ND	ND
Chrysene	62	290	ND	ND	ND	ND	ND	0.53	ND	ND
Di-n-octylphthalate	1,200	10,000	ND	ND	ND	ND	ND	0.6	ND	ND
Benzo (b) fluoranthene	0.62	2.9	ND	ND	ND	ND	ND	0.48	ND	ND
Volatile Organic Compounds										
2-Butanone (MEK)	7,300	28,000	ND	0.12	0.026	ND	ND	ND	ND	ND
Carbon Disulfide	360	720	ND	0.034	ND	ND	ND	ND	ND	ND
Metals										
Aluminum	76,000	100,000	1,050	4,100	1,830	810	4,620	17,800	14,600	5,640
Antimony	31	820	11.1	139	11.3	22	8.4	ND	ND	2.7
Arsenic	22[1]	22[1]	19.9	4	11.5	43.4	965	10.3	23.8	42.6
Barium	5,400	100,000	599	374	1,060	659	359	86.4	110	229
Calcium	NP	NP	323	6,170	1,650	196	494	65,700	975	459
Chromium	210	450	1.9	6.8	5.5	0.98	7.7	34	37.1	9.7
Cobalt	4700	100,000	4.1	4.6	4.2	4.5	9.8	3.2	1.6	2
Copper	2,900	76,000	63.2	1,520	585	99.3	599	39.5	139	105
Iron	23,000	100,000	43,700	14,600	60,600	89,800	45,300	11,900	45,200	26,900
Lead	400	750	1,560	1,080	1,790	29,700	8,490	230	1,150	1,940
Magnesium	NP	NP	ND	ND	ND	ND	933	1,110	944	482
Manganese	1,800	32,000	12.6	26.4	8.9	22.3	65	169	85.2	33.3
Mercury	6.1	88	2.1	1.3	1.2	0.28	0.12	0.28	0.35	ND
Nickel	1600	41000	1.6	4.1	1.6	1.8	4	6.2	6	2.4
Potassium	NP	NP	491	ND	360	336	599	1,710	1,780	581
Selenium	390	10,000	3.9	20.6	17.8	8.1	3.4	ND	2.4	4.4
Silver	390	10,000	6.8	45.5	12.9	20.7	6.2	ND	ND	3

Table 2-2
Analytes Detected in Soil During USEPA Investigation, December 1999
Wadesboro VCC - Site Characterization Report

Analyte	USEPA Reg. IX Residential Preliminary Remediation Goals (mg/kg)	USEPA Reg. IX Industrial Preliminary Remediation Goals (mg/kg)	Sample Name, Description, and Depth (all results reported in mg/kg)							
			VC-01-SS discolored area; center (0.5 feet bgs)	VC-02-SB discolored area; center (1.5 feet bgs)	VC-03-SB discolored area; center (2.5 feet bgs)	VC-04-SS discolored area; NW corner (surficial)	VC-05-SS drainage ditch; pump house (surficial)	VC-06-SS concrete drainage path; NE RR spur (surficial)	VC-07-SS former acid chambers; SE corner (surficial)	VC-08-SS drainage ditch; 24" pipe (surficial)
Metals (continued)										
Sodium	NP	NP	1,040	ND	2,710	5,510	615	691	ND	582
Thallium	5.2	130	3.3	ND	3.7	5.6	6.8	ND	2	1.7
Vanadium	550	14,000	5.1	ND	4.7	5.9	21.9	34.2	58.3	15
Zinc	23,000	100,000	352	2,630	839	134	308	75.7	86.9	77.1

NOTES:

1. Compounds listed in Table 2-1 represent values that were not designated by the laboratory with the following qualifiers: J (estimated), U (not detected above specified value), B (blank contamination or between reported detection limit and instrument detection limit), and NJ (tentatively identified compound and estimated value).
2. ND = Not detected above reporting limit
3. NP = Not promulgated
4. bgs = below ground surface

/1 = Residential non-cancer endpoint (see Section 4.3)

Boxed values exceed residential soil PRG only

Double-boxed values exceed residential and industrial soil PRG

Table 3-1
Summary of Soil, Sediment, Groundwater, and Surface Water Samples Collected and Analyzed
Wadesboro VCC - Site Characterization Report

Sample ID	Matrix	Sample Depth Interval (ft bgs)	Sample Collection Date	Sample Analyses Performed: TAL Metals	Sample Analyses Performed: pH	Comments
WB-SB01-0-0.5 ft bgs	Soil	0 - 0.5	4/16/01	X	X	MS/MSD
WB-SB01-2-3.5 ft bgs	Soil	2 - 3.5	4/16/01	X	X	
WB-SB02-0-0.5 ft bgs	Soil	0 - 0.5	4/17/01	X	X	
WB-SB02-2-4 ft bgs	Soil	2 - 4	4/17/01	X	X	
WB-SB03-0-0.5 ft bgs	Soil	0 - 0.5	4/17/01	X	X	
WB-SB03-2-4 ft bgs	Soil	2 - 4	4/17/01	X	X	
WB-SB04-0-0.5 ft bgs	Soil	0 - 0.5	4/17/01	X	X	
WB-SB04-2-4 ft bgs	Soil	2 - 4	4/17/01	X	X	
WB-SB05-0-0.5 ft bgs	Soil	0 - 0.5	4/18/01	X	X	
WB-SB05-2-4 ft bgs	Soil	2 - 4	4/18/01	X	X	
WB-SB06-0-0.5 ft bgs	Soil	0 - 0.5	4/18/01	X	X	
WB-SB06-2-4 ft bgs	Soil	2 - 4	4/18/01	X	X	
WB-SB07-0-0.5 ft bgs	Soil	0 - 0.5	4/16/01	X	X	
WB-SB07-2-3.5 ft bgs	Soil	2 - 3.5	4/16/01	X	X	
WB-SB08-0-0.5 ft bgs	Soil	0 - 0.5	4/17/01	X	X	
WB-SB08-2-4 ft bgs	Soil	2 - 4	4/17/01	X	X	
WB-SB09-0-0.5 ft bgs	Soil	0 - 0.5	4/17/01	X	X	MS/MSD
WB-SB09-2-4 ft bgs	Soil	2 - 4	4/17/01	X	X	
WB-SB10-0-0.5 ft bgs	Soil	0 - 0.5	4/18/01	X	X	
WB-SB10-2-4 ft bgs	Soil	2 - 4	4/18/01	X	X	
WB-SB11-0-0.5 ft bgs	Soil	0 - 0.5	4/17/01	X	X	
WB-SB11-2-4 ft bgs	Soil	2 - 4	4/18/01	X	X	
WB-SB12-0-0.5 ft bgs	Soil	0 - 0.5	4/18/01	X	X	
WB-SB12-2-4 ft bgs	Soil	2 - 4	4/18/01	X	X	
SB-SB13-2-4 ft bgs	Soil	2 - 4	4/18/01	X	X	
WB-SB13-0-0.5 ft bgs	Soil	0 - 0.5	4/18/01	X	X	
WB-SB14-0-0.5 ft bgs	Soil	0 - 0.5	4/18/01	X	X	
WB-SB14-2-4 ft bgs	Soil	2 - 4	4/18/01	X	X	
WB-SB15-0-0.5 ft bgs	Soil	0 - 0.5	4/17/01	X	X	
WB-SB91-0-0.5 ft bgs	Soil	NA	4/17/01	X	X	Blind Field Duplicate of WB-SB15-0-0.5 ft bgs
WB-SB15-2-4 ft bgs	Soil	2 - 4	4/16/01	X	X	
WB-SB90-2-4 ft bgs	Soil	NA	4/16/01	X	X	Blind Field Duplicate of WB-SB15-2-4 ft bgs
WB-SB15-4-6 ft bgs	Soil	4 - 6	4/16/01	X	X	
WB-SB16-0-0.5 ft bgs	Soil	0 - 0.5	4/17/01	X	X	
WB-SB16-2-4 ft bgs	Soil	2 - 4	4/16/01	X	X	
WB-SB17-0-0.5 ft bgs	Soil	0 - 0.5	4/18/01	X	X	MS/MSD
WB-SB17-2-4 ft bgs	Soil	2 - 4	4/18/01	X	X	
WB-SB18-0-0.5 ft bgs	Soil	0 - 0.5	4/18/01	X	X	
WB-SB18-2-4 ft bgs	Soil	2 - 4	4/18/01	X	X	
WB-SB19-0-0.5 ft bgs	Soil	0 - 0.5	4/18/01	X	X	

Table 3-1
Summary of Soil, Sediment, Groundwater, and Surface Water Samples Collected and Analyzed
Wadesboro VCC - Site Characterization Report

Sample ID	Matrix	Sample Depth Interval (ft bgs)	Sample Collection Date	Sample Analyses Performed: TAL Metals	Sample Analyses Performed: pH	Comments
WB-SB92-0-0.5 ft bgs	Soil	NA	4/18/01	X	X	Blind Field Duplicate of WB-SB19-0-0.5 ft bgs
WB-SB19-2-4 ft bgs	Soil	2 - 4	4/18/01	X	X	
WB-SB19-4-6 ft bgs	Soil	4 - 6	4/18/01	X	X	
WB-SB20-0-0.5 ft bgs	Soil	0 - 0.5	4/17/01	X	X	
WB-SB20-2-4 ft bgs	Soil	2 - 4	4/18/01	X	X	
WB-SB20-4-6 ft bgs	Soil	4 - 6	4/18/01	X	X	
WB-SD01	Sediment	NA	4/16/01	X	X	MS/MSD
WB-SD02	Sediment	NA	4/16/01	X	X	
WB-SD99	Sediment	NA	4/16/01	X	X	Blind Field Duplicate of WB-SD02
WB-SD03	Sediment	NA	4/16/01	X	X	
WB-SD04	Sediment	NA	4/18/01	X	X	
WB-MW1	Aqueous	NA	4/26/01	X	X	MS/MSD
WB-MW2	Aqueous	NA	4/26/01	X	X	
WB-MW3	Aqueous	NA	4/25/01	X	X	
WB-MW90	Aqueous	NA	4/25/01	X	X	Blind Field Duplicate of WB-MW3
WB-SW01	Aqueous	NA	4/16/01	X		MS/MSD
WB-SW02	Aqueous	NA	4/16/01	X		
WB-SW99	Aqueous	NA	4/16/01	X		Blind Field Duplicate of WB-SW02
WB-EBSD-041601	Aqueous	NA	4/16/01	X		Sediment Equipment Blank
WB-EBSB-041601	Aqueous	NA	4/16/01	X		Soil Equipment Blank
WB-EBSB-041701	Aqueous	NA	4/17/01	X		Soil Equipment Blank
WB-EBSB-041801	Aqueous	NA	4/18/01	X		Soil Equipment Blank
WB-EBSD-041801	Aqueous	NA	4/18/01	X		Sediment Equipment Blank
WB-EBGW-042601	Aqueous	NA	4/26/01	X		Groundwater Equipment Blank

Notes:
bgs = below ground surface
ft = feet
MS/MSD = matrix spike/matrix spike duplicate
TAL = Target Analyte List Metals (excluding cyanide)

Table 4-1
Summary of Detected Analytes in Soil Samples
Wadesboro VCC - Site Characterization Report

Analyte	Residential PRG	Industrial PRG	Units	Concentration\1 in Sample: WB-SB01 0-0.5 ft bgs	WB-SB01 2-3.5 ft bgs	WB-SB02 0-0.5 ft bgs	WB-SB02 2-4 ft bgs
Aluminum	76,000	100,000	mg/kg	7370	9070	5930	3090
Antimony	31	820	mg/kg	1.0 UJ	0.96 U	0.90 U	1.0 U
Arsenic	22\6	22\6	mg/kg	6.5	3.5	7.4	2.1 B
Barium	5,400	100,000	mg/kg	38.5 B	29.0 B	37.2 B	28.0 B
Beryllium	150	2,200	mg/kg	0.17 U	0.13 B	0.19 U	0.11 U
Cadmium	37	810	mg/kg	0.13 U	0.13 U	0.25 B	0.14 U
Calcium	NP	NP	mg/kg	1280	91.0 B	2470	399 B
Chromium	210	450	mg/kg	30.1 J	15.3	30.2	5.8
Cobalt	4,700	100,000	mg/kg	2.3 B	2.1 B	5.8 B	3.0 B
Copper	2,900	76,000	mg/kg	11.4	10.0 J	18.5	5.1 U
Iron	23,000	100,000	mg/kg	21400	21900	16300	11400
Lead	400	750	mg/kg	119 J	11.0 J	52.3	7.9
Magnesium	NP	NP	mg/kg	774 B	1040 B	996 B	373 B
Manganese	1,800	32,000	mg/kg	138	94.2	208	319
Mercury	6.1	88	mg/kg	0.05 B	0.03 U	0.04 B	0.03 U
Nickel	1,600	41,000	mg/kg	10.6	5.3 B	19.6	3.5 B
Potassium	NP	NP	mg/kg	456 B	480 B	529 B	282 B
Selenium	390	10,000	mg/kg	0.96 U	0.92 U	0.86 U	0.99 U
Silver	390	10,000	mg/kg	0.18 U	0.17 U	0.16 U	0.18 U
Sodium	NP	NP	mg/kg	49.4 U	47.6 U	44.7 U	51.1 U
Thallium	5.2	130	mg/kg	1.1 U	1.1 B	0.98 U	1.1 U
Vanadium	550	14,000	mg/kg	22.4	23.1	15.0	10.9 B
Zinc	23,000	100,000	mg/kg	33.6 J	13.3 J	58.6 J	6.9
Field Measurements							
pH	--	--	S.U.	5.00	4.07	4.77	4.76

Notes:

\1 See Appendix B for a description of data qualifiers

\2 Blind field duplicate of sample WB-SB15 0-0.5 ft bgs

\3 Blind field duplicate of sample WB-SB15 2-4 ft bgs

\4 Blind field duplicate of sample WB-SB19 0-0.5 ft bgs

\5 Although these samples are numbered with a sediment sample convention, these samples were collected in a dry drainage ditch and are actually soil samples due to the absence of flow

\6 Residential non-cancer endpoint (see Section 4.3)

PRG = USEPA Region 9 Preliminary Remediation Goal

Boxed results exceed residential soil PRG

Double-boxed results exceed residential & ind. soil PRGs

Table 4-1
Summary of Detected Analytes in Soil Samples
Wadesboro VCC - Site Characterization Report

Analyte	Residential PRG	Industrial PRG	Units	Concentration\1 in Sample: WB-SB03 0-0.5 ft bgs	WB-SB03 2-4 ft bgs	WB-SB04 0-0.5 ft bgs	WB-SB04 2-4 ft bgs
Aluminum	76,000	100,000	mg/kg	2930	14700	15300	15300
Antimony	31	820	mg/kg	0.96 U	1.1 U	1.0 UJ	1.0 UJ
Arsenic	22\6	22\6	mg/kg	1.9 B	5.7	8.3	4.4
Barium	5,400	100,000	mg/kg	16.2 B	49.6	107	62.6
Beryllium	150	2,200	mg/kg	0.06 U	0.39 B	0.70 B	0.42 B
Cadmium	37	810	mg/kg	0.13 U	0.15 U	1.4	0.13 U
Calcium	NP	NP	mg/kg	2780	1950	67100	2450
Chromium	210	450	mg/kg	9.2	26.6	26.6 J	18.9 J
Cobalt	4,700	100,000	mg/kg	2.0 B	7.0 B	6.1 B	8.0 B
Copper	2,900	76,000	mg/kg	8.3	22.0	62.0	18.5
Iron	23,000	100,000	mg/kg	5430	28300	19800	24400
Lead	400	750	mg/kg	13.3	19.4	116 J	20.4 J
Magnesium	NP	NP	mg/kg	774 B	3520	2020	4100
Manganese	1,800	32,000	mg/kg	263	265	287	277
Mercury	6.1	88	mg/kg	0.04 B	0.03 U	0.08	0.03 U
Nickel	1,600	41,000	mg/kg	7.2 B	16.8	12.6	18.4
Potassium	NP	NP	mg/kg	348 B	1020 B	1450	816 B
Selenium	390	10,000	mg/kg	0.92 U	1.1 U	0.99 U	0.95 U
Silver	390	10,000	mg/kg	0.17 U	0.20 U	0.18 U	0.18 U
Sodium	NP	NP	mg/kg	47.6 U	116 B	485 B	49.3 U
Thallium	5.2	130	mg/kg	1.0 U	1.2 U	1.1 U	1.1 U
Vanadium	550	14,000	mg/kg	6.0 B	26.2	30.1	25.3
Zinc	23,000	100,000	mg/kg	27.4 J	47.4 J	88.5 J	38.7 J
Field Measurements							
pH	--	--	S.U.	5.96	3.95	5.48	4.21

Notes:

\1 See Appendix B for a description of data qualifiers

\2 Blind field duplicate of sample WB-SB15 0-0.5 ft bgs

\3 Blind field duplicate of sample WB-SB15 2-4 ft bgs

\4 Blind field duplicate of sample WB-SB19 0-0.5 ft bgs

\5 Although these samples are numbered with a sediment sample convention, these samples were collected in a dry drainage ditch and are actually soil samples due to the absence of flow

\6 Residential non-cancer endpoint (see Section 4.3)

PRG = USEPA Region 9 Preliminary Remediation Goal

Boxed results exceed residential soil PRG

Double-boxed results exceed residential & ind. soil PRGs

Table 4-1
Summary of Detected Analytes in Soil Samples
Wadesboro VCC - Site Characterization Report

Analyte	Residential PRG	Industrial PRG	Units	Concentration\1 in Sample: WB-SB05 0-0.5 ft bgs	WB-SB05 2-4 ft bgs	WB-SB06 0-0.5 ft bgs	WB-SB06 2-4 ft bgs
Aluminum	76,000	100,000	mg/kg	13100	12600	21600	12500
Antimony	31	820	mg/kg	1.1 UJ	1.0 UJ	1.2 UJ	1.1 UJ
Arsenic	22\6	22\6	mg/kg	4.4	4.0	9.6	4.0
Barium	5,400	100,000	mg/kg	71.5	54.0	65.5	48.9 B
Beryllium	150	2,200	mg/kg	0.48 B	0.61 B	0.37 B	0.24 B
Cadmium	37	810	mg/kg	0.14 U	0.14 U	0.16 U	0.15 U
Calcium	NP	NP	mg/kg	11200	665 B	15600	378 B
Chromium	210	450	mg/kg	16.5 J	14.3 J	29.0 J	15.7 J
Cobalt	4,700	100,000	mg/kg	10.6 B	16.5	4.3 B	4.4 B
Copper	2,900	76,000	mg/kg	14.8	15.9	16.0	7.6
Iron	23,000	100,000	mg/kg	16300	20500	34000	20200
Lead	400	750	mg/kg	15.7 J	21.7 J	18.7 J	12.5 J
Magnesium	NP	NP	mg/kg	4410	5280	2590	1270
Manganese	1,800	32,000	mg/kg	394	598	144	136
Mercury	6.1	88	mg/kg	0.03 U	0.03 U	0.05 B	0.04 B
Nickel	1,600	41,000	mg/kg	19.7	24.4	10.5 B	5.8 B
Potassium	NP	NP	mg/kg	1230	1250	1850	786 B
Selenium	390	10,000	mg/kg	1.0 U	0.99 U	1.1 U	1.1 U
Silver	390	10,000	mg/kg	0.19 U	0.18 U	0.21 U	0.20 U
Sodium	NP	NP	mg/kg	53.0 U	51.1 U	63.7 B	54.9 U
Thallium	5.2	130	mg/kg	1.2 U	1.1 U	1.3 U	1.2 U
Vanadium	550	14,000	mg/kg	17.8	19.7	43.4	25.5
Zinc	23,000	100,000	mg/kg	48.2 J	49.8 J	33.5 J	12.4 J
Field Measurements							
pH	--	--	S.U.	7.85	4.57	6.65	4.37

Notes:

\1 See Appendix B for a description of data qualifiers

\2 Blind field duplicate of sample WB-SB15 0-0.5 ft bgs

\3 Blind field duplicate of sample WB-SB15 2-4 ft bgs

\4 Blind field duplicate of sample WB-SB19 0-0.5 ft bgs

\5 Although these samples are numbered with a sediment sample convention, these samples were collected in a dry drainage ditch and are actually soil samples due to the absence of flow

\6 Residential non-cancer endpoint (see Section 4.3)

PRG = USEPA Region 9 Preliminary Remediation Goal

Boxed results exceed residential soil PRG

Double-boxed results exceed residential & ind. soil PRGs

Table 4-1
Summary of Detected Analytes in Soil Samples
Wadesboro VCC - Site Characterization Report

Analyte	Residential PRG	Industrial PRG	Units	Concentration\1 in Sample: WB-SB07 0-0.5 ft bgs	WB-SB07 2-3.5 ft bgs	WB-SB08 0-0.5 ft bgs	WB-SB08 2-4 ft bgs
Aluminum	76,000	100,000	mg/kg	5150	4810	5470	9170
Antimony	31	820	mg/kg	1.0 U	0.94 U	1.1 U	0.95 U
Arsenic	22\6	22\6	mg/kg	5.5	3.9	5.0	3.0
Barium	5,400	100,000	mg/kg	36.6 B	11.5 B	139	22.9 B
Beryllium	150	2,200	mg/kg	0.12 B	0.07 B	0.28 B	0.11 B
Cadmium	37	810	mg/kg	0.14 U	0.13 U	0.31 B	0.13 U
Calcium	NP	NP	mg/kg	1310	65.6 B	2410	124 B
Chromium	210	450	mg/kg	9.8	11.0	8.6	12.2
Cobalt	4,700	100,000	mg/kg	1.3 B	0.41 B	3.3 B	1.6 B
Copper	2,900	76,000	mg/kg	14.7 J	4.6 BJ	19.6	5.5
Iron	23,000	100,000	mg/kg	9520	18400	9000	13300
Lead	400	750	mg/kg	33.5 J	8.0 J	121	5.0
Magnesium	NP	NP	mg/kg	356 B	195 B	469 B	484 B
Manganese	1,800	32,000	mg/kg	48.3	56.3	142	17.2
Mercury	6.1	88	mg/kg	0.09	0.03 U	0.08	0.03 U
Nickel	1,600	41,000	mg/kg	4.0 B	1.7 B	4.9 B	2.5 B
Potassium	NP	NP	mg/kg	308 B	176 B	318 B	248 B
Selenium	390	10,000	mg/kg	1.0 U	0.90 U	1.2 B	0.91 U
Silver	390	10,000	mg/kg	0.19 U	0.17 U	0.19 U	0.17 U
Sodium	NP	NP	mg/kg	51.7 U	46.5 U	61.4 B	47.0 U
Thallium	5.2	130	mg/kg	1.1 U	1.0 U	1.2 U	1.0 U
Vanadium	550	14,000	mg/kg	14.0	25.7	11.6 B	22.6
Zinc	23,000	100,000	mg/kg	24.6 J	3.6 B	87.4 J	8.8
Field Measurements							
pH	--	--	S.U.	4.60	3.37	4.95	4.81

Notes:

\1 See Appendix B for a description of data qualifiers

\2 Blind field duplicate of sample WB-SB15 0-0.5 ft bgs

\3 Blind field duplicate of sample WB-SB15 2-4 ft bgs

\4 Blind field duplicate of sample WB-SB19 0-0.5 ft bgs

\5 Although these samples are numbered with a sediment sample convention, these samples were collected in a dry drainage ditch and are actually soil samples due to the absence of flow

\6 Residential non-cancer endpoint (see Section 4.3)

PRG = USEPA Region 9 Preliminary Remediation Goal

Boxed results exceed residential soil PRG

Double-boxed results exceed residential & ind. soil PRGs

Table 4-1
Summary of Detected Analytes in Soil Samples
Wadesboro VCC - Site Characterization Report

Analyte	Residential PRG	Industrial PRG	Units	Concentration\1 in Sample: WB-SB09 0-0.5 ft bgs	WB-SB09 2-4 ft bgs	WB-SB10 0-0.5 ft bgs	WB-SB10 2-4 ft bgs
Aluminum	76,000	100,000	mg/kg	9270 J	15900	11400	14400
Antimony	31	820	mg/kg	3.5 BJ	1.0 U	5.8 BJ	1.0 UJ
Arsenic	22\6	22\6	mg/kg	14.8 J	7.3	10.9	7.8
Barium	5,400	100,000	mg/kg	87.4	51.6	126	32.7 B
Beryllium	150	2,200	mg/kg	0.39 B	0.26 B	0.99 B	0.16 B
Cadmium	37	810	mg/kg	1.2 J	0.14 U	4.3	0.13 U
Calcium	NP	NP	mg/kg	81700 J	1320	139000	5140
Chromium	210	450	mg/kg	27.7 J	21.3	76.9 J	29.0 J
Cobalt	4,700	100,000	mg/kg	8.2 B	4.4 B	4.1 B	2.6 B
Copper	2,900	76,000	mg/kg	22.7	22.8	349	30.7
Iron	23,000	100,000	mg/kg	10700 J	31600	24100	36600
Lead	400	750	mg/kg	1370 J	35.2	643 J	23.1 J
Magnesium	NP	NP	mg/kg	787 B	2120	1120	1040 B
Manganese	1,800	32,000	mg/kg	279	236	620	65.2
Mercury	6.1	88	mg/kg	1.1 J	0.04 B	0.27	0.05 B
Nickel	1,600	41,000	mg/kg	40.6 J	9.6	18.3	4.6 B
Potassium	NP	NP	mg/kg	903 B	602 B	1410	626 B
Selenium	390	10,000	mg/kg	9.3 J	0.98 U	0.93 U	0.95 U
Silver	390	10,000	mg/kg	0.17 U	0.18 U	0.28 B	0.18 U
Sodium	NP	NP	mg/kg	189 B	50.5 U	826 B	49.3 U
Thallium	5.2	130	mg/kg	1.1 U	1.1 U	1.1 U	1.1 U
Vanadium	550	14,000	mg/kg	30.2 J	38.7	34.4	47.7
Zinc	23,000	100,000	mg/kg	88.8 J	27.7 J	276 J	56.3 J
Field Measurements							
pH	--	--	S.U.	4.90	4.12	4.62	4.17

Notes:

\1 See Appendix B for a description of data qualifiers

\2 Blind field duplicate of sample WB-SB15 0-0.5 ft bgs

\3 Blind field duplicate of sample WB-SB15 2-4 ft bgs

\4 Blind field duplicate of sample WB-SB19 0-0.5 ft bgs

\5 Although these samples are numbered with a sediment sample convention, these samples were collected in a dry drainage ditch and are actually soil samples due to the absence of flow

\6 Residential non-cancer endpoint (see Section 4.3)

PRG = USEPA Region 9 Preliminary Remediation Goal

Boxed results exceed residential soil PRG

Double-boxed results exceed residential & ind. soil PRGs

Table 4-1
Summary of Detected Analytes in Soil Samples
Wadesboro VCC - Site Characterization Report

Analyte	Resi-dential PRG	Indus-trial PRG	Units	Concentration\1 in Sample: WB-SB11 0-0.5 ft bgs	WB-SB11 2-4 ft bgs	WB-SB12 0-0.5 ft bgs	WB-SB12 2-4 ft bgs
Aluminum	76,000	100,000	mg/kg	15000	14400 J	12500	3740
Antimony	31	820	mg/kg	10.4 BJ	1.0 UJ	1.1 BJ	1.2 UJ
Arsenic	22\6	22\6	mg/kg	33.7	8.6 J	8.5	14.9
Barium	5,400	100,000	mg/kg	185	54.7	109	131
Beryllium	150	2,200	mg/kg	0.69 B	0.30 B	0.38 B	0.08 BU
Cadmium	37	810	mg/kg	1.5	R	0.74 B	0.23 B
Calcium	NP	NP	mg/kg	112000	1010 BJ	17700	2900
Chromium	210	450	mg/kg	34.8 J	20.3 J	16.0 J	3.6 J
Cobalt	4,700	100,000	mg/kg	4.8 B	6.3 B	6.8 B	0.59 B
Copper	2,900	76,000	mg/kg	80.6	24.6	106	8.5
Iron	23,000	100,000	mg/kg	30000	30300 J	23700	6710
Lead	400	750	mg/kg	8520 J	15.3 J	32100 J	105 J
Magnesium	NP	NP	mg/kg	2090	3470	2030	377 B
Manganese	1,800	32,000	mg/kg	168	303	149	57.0
Mercury	6.1	88	mg/kg	2.6	0.03 U	0.17	0.16
Nickel	1,600	41,000	mg/kg	15.3	14.0 J	11.7	1.1 B
Potassium	NP	NP	mg/kg	1730	1210	834 B	804 B
Selenium	390	10,000	mg/kg	6.8	0.97 UJ	0.93 U	6.5
Silver	390	10,000	mg/kg	0.84 B	0.18 U	2.1 B	0.21 U
Sodium	NP	NP	mg/kg	1590	49.9 U	48.1 U	58.5 U
Thallium	5.2	130	mg/kg	1.1 U	1.1 UJ	1.1 U	1.3 U
Vanadium	550	14,000	mg/kg	56.9	33.1 J	20.5	5.3 B
Zinc	23,000	100,000	mg/kg	366 J	40.9 J	134 J	67.2 J
Field Measurements							
pH	--	--	S.U.	4.50	3.23	4.41	3.75

Notes:
\1 See Appendix B for a description of data qualifiers
\2 Blind field duplicate of sample WB-SB15 0-0.5 ft bgs
\3 Blind field duplicate of sample WB-SB15 2-4 ft bgs
\4 Blind field duplicate of sample WB-SB19 0-0.5 ft bgs
\5 Although these samples are numbered with a sediment sample convention, these samples were collected in a dry drainage ditch and are actually soil samples due to the absence of flow
\6 Residential non-cancer endpoint (see Section 4.3)
PRG = USEPA Region 9 Preliminary Remediation Goal
Boxed results exceed residential soil PRG
Double-boxed results exceed residential & ind. soil PRGs

Table 4-1
Summary of Detected Analytes in Soil Samples
Wadesboro VCC - Site Characterization Report

Analyte	Residential PRG	Industrial PRG	Units	Concentration\1 in Sample: WB-SB13 0-0.5 ft bgs	WB-SB13 2-4 ft bgs	WB-SB14 0-0.5 ft bgs	WB-SB14 2-4 ft bgs
Aluminum	76,000	100,000	mg/kg	5880	13000	10000	14600
Antimony	31	820	mg/kg	1.9 BJ	1.0 UJ	10.8 BJ	0.99 UJ
Arsenic	22\6	22\6	mg/kg	54.8	4.1	84.1	8.3
Barium	5,400	100,000	mg/kg	73.3	50.9	672	44.1
Beryllium	150	2,200	mg/kg	0.07 BU	0.32 B	0.70 B	0.28 B
Cadmium	37	810	mg/kg	0.16 U	0.14 U	5.0	0.33 B
Calcium	NP	NP	mg/kg	19200	907 B	84500	900 B
Chromium	210	450	mg/kg	14.2 J	17.8 J	23.3 J	29.6 J
Cobalt	4,700	100,000	mg/kg	5.9 B	4.3 B	12.0	4.8 B
Copper	2,900	76,000	mg/kg	78.7	58.3	480	74.9
Iron	23,000	100,000	mg/kg	136000	23100	54200	35800
Lead	400	750	mg/kg	453 J	7.7 J	1720 J	17.6 J
Magnesium	NP	NP	mg/kg	794 B	1370	1400	1810
Manganese	1,800	32,000	mg/kg	627	87.6	159	122
Mercury	6.1	88	mg/kg	0.11	0.03 B	0.34	0.03 B
Nickel	1,600	41,000	mg/kg	7.4 B	7.3 B	8.3	7.7 B
Potassium	NP	NP	mg/kg	518 B	600 B	1150	682 B
Selenium	390	10,000	mg/kg	1.2 U	0.98 U	2.0	0.94 U
Silver	390	10,000	mg/kg	0.43 B	0.18 U	2.5	0.18 U
Sodium	NP	NP	mg/kg	203 B	50.5 U	813 B	48.7 U
Thallium	5.2	130	mg/kg	1.3 U	1.1 U	1.0 U	1.1 U
Vanadium	550	14,000	mg/kg	15.2	30.8	34.8	45.5
Zinc	23,000	100,000	mg/kg	111 J	61.7 J	638 J	309 J
Field Measurements							
pH	--	--	S.U.	7.01	3.99	5.31	3.50

Notes:

\1 See Appendix B for a description of data qualifiers

\2 Blind field duplicate of sample WB-SB15 0-0.5 ft bgs

\3 Blind field duplicate of sample WB-SB15 2-4 ft bgs

\4 Blind field duplicate of sample WB-SB19 0-0.5 ft bgs

\5 Although these samples are numbered with a sediment sample convention, these samples were collected in a dry drainage ditch and are actually soil samples due to the absence of flow

\6 Residential non-cancer endpoint (see Section 4.3)

PRG = USEPA Region 9 Preliminary Remediation Goal

Boxed results exceed residential soil PRG

Double-boxed results exceed residential & ind. soil PRGs

Table 4-1
Summary of Detected Analytes in Soil Samples
Wadesboro VCC - Site Characterization Report

Analyte	Residential PRG	Industrial PRG	Units	Concentration[1] in Sample: WB-SB15 0-0.5 ft bgs	WB-SB91[2] 0-0.5 ft bgs	WB-SB15 2-4 ft bgs	WB-SB90[3] 2-4 ft bgs
Aluminum	76,000	100,000	mg/kg	4180	3940	3630	2600
Antimony	31	820	mg/kg	2.6 B	2.4 BJ	1.3 U	1.2 U
Arsenic	22[6]	22[6]	mg/kg	25.6	21.2	91.2	55.1
Barium	5,400	100,000	mg/kg	303	285	67.9	213
Beryllium	150	2,200	mg/kg	0.03 U	0.06 B	0.03 B	0.03 U
Cadmium	37	810	mg/kg	0.29 B	0.15 U	0.17 U	0.24 B
Calcium	NP	NP	mg/kg	525 B	1240 B	509 B	390 B
Chromium	210	450	mg/kg	5.7	5.9 J	6.4	4.2
Cobalt	4,700	100,000	mg/kg	3.8 B	3.7 B	1.1 B	2.0 B
Copper	2,900	76,000	mg/kg	81.3	86.4	12.8 J	28.8 J
Iron	23,000	100,000	mg/kg	33600	32100	54400	59200
Lead	400	750	mg/kg	1410	1490 J	54.7 J	550 J
Magnesium	NP	NP	mg/kg	296 B	264 B	446 B	254 B
Manganese	1,800	32,000	mg/kg	27.5	23.1	113	81.0
Mercury	6.1	88	mg/kg	0.18	0.13	0.03 U	0.04 U
Nickel	1,600	41,000	mg/kg	1.5 B	1.7 B	1.9 B	0.99 B
Potassium	NP	NP	mg/kg	498 B	418 B	2730	1740
Selenium	390	10,000	mg/kg	1.9	1.1 U	1.2 U	2.5
Silver	390	10,000	mg/kg	1.5 B	1.8 B	0.23 U	0.90 B
Sodium	NP	NP	mg/kg	501 B	427 B	4310	4110
Thallium	5.2	130	mg/kg	1.3 B	1.2 U	1.4 U	1.3 U
Vanadium	550	14,000	mg/kg	9.5 B	8.6 B	10.0 B	6.4 B
Zinc	23,000	100,000	mg/kg	105 J	49.7 J	38.3 J	108 J
Field Measurements							
pH	--	--	S.U.	3.33	3.62	3.27	2.81

Notes:

\1 See Appendix B for a description of data qualifiers

\2 Blind field duplicate of sample WB-SB15 0-0.5 ft bgs

\3 Blind field duplicate of sample WB-SB15 2-4 ft bgs

\4 Blind field duplicate of sample WB-SB19 0-0.5 ft bgs

\5 Although these samples are numbered with a sediment sample convention, these samples were collected in a dry drainage ditch and are actually soil samples due to the absence of flow

\6 Residential non-cancer endpoint (see Section 4.3)

PRG = USEPA Region 9 Preliminary Remediation Goal

Boxed results exceed residential soil PRG

Double-boxed results exceed residential & ind. soil PRGs

Table 4-1
Summary of Detected Analytes in Soil Samples
Wadesboro VCC - Site Characterization Report

Analyte	Residential PRG	Industrial PRG	Units	Concentration\1 in Sample: WB-SB15 4-6 ft bgs	WB-SB16 0-0.5 ft bgs	WB-SB16 2-4 ft bgs	WB-SB17 0-0.5 ft bgs
Aluminum	76,000	100,000	mg/kg	14500	14100	9840	10900
Antimony	31	820	mg/kg	1.1 UJ	4.9 B	0.97 U	1.8 BJ
Arsenic	22\6	22\6	mg/kg	6.4	44.6	4.7	34.2 J
Barium	5,400	100,000	mg/kg	42.2 B	280	32.8 B	114
Beryllium	150	2,200	mg/kg	0.27 B	0.50 B	0.17 B	0.22 B
Cadmium	37	810	mg/kg	0.44 B	2.8	0.20 B	0.16 U
Calcium	NP	NP	mg/kg	267 B	47600	265 B	620 B
Chromium	210	450	mg/kg	23.9	30.1	17.8	18.0
Cobalt	4,700	100,000	mg/kg	6.3 B	8.0 B	3.3 B	7.1 B
Copper	2,900	76,000	mg/kg	56.0	241	114 J	180
Iron	23,000	100,000	mg/kg	27300	43900	20700	40200
Lead	400	750	mg/kg	15.1 J	664	8.4 J	658 J
Magnesium	NP	NP	mg/kg	3930	1690	1290	1110 B
Manganese	1,800	32,000	mg/kg	237	268	93.6	132
Mercury	6.1	88	mg/kg	0.03 UJ	0.08	0.06	0.07
Nickel	1,600	41,000	mg/kg	14.5	10.8	5.7 B	6.3 B
Potassium	NP	NP	mg/kg	645 B	1400	481 B	680 B
Selenium	390	10,000	mg/kg	1.1 U	2.2	0.93 U	1.1 U
Silver	390	10,000	mg/kg	0.20 U	0.65 B	0.17 U	0.41 U
Sodium	NP	NP	mg/kg	1200 B	324 B	48.1 U	86.7 B
Thallium	5.2	130	mg/kg	1.2 U	1.1 U	1.1 U	2.0 B
Vanadium	550	14,000	mg/kg	38.3	40.9	28.0	32.8
Zinc	23,000	100,000	mg/kg	46.0 J	355 J	95.2 J	184 J
Field Measurements							
pH	--	--	S.U.	4.69	5.37	3.89	3.81

Notes:

\1 See Appendix B for a description of data qualifiers

\2 Blind field duplicate of sample WB-SB15 0-0.5 ft bgs

\3 Blind field duplicate of sample WB-SB15 2-4 ft bgs

\4 Blind field duplicate of sample WB-SB19 0-0.5 ft bgs

\5 Although these samples are numbered with a sediment sample convention, these samples were collected in a dry drainage ditch and are actually soil samples due to the absence of flow

\6 Residential non-cancer endpoint (see Section 4.3)

PRG = USEPA Region 9 Preliminary Remediation Goal

Boxed results exceed residential soil PRG

Double-boxed results exceed residential & ind. soil PRGs

Table 4-1
Summary of Detected Analytes in Soil Samples
Wadesboro VCC - Site Characterization Report

Analyte	Residential PRG	Industrial PRG	Units	Concentration\1 in Sample: WB-SB17 2-4 ft bgs	WB-SB18 0-0.5 ft bgs	WB-SB18 2-4 ft bgs	WB-SB19 0-0.5 ft bgs
Aluminum	76,000	100,000	mg/kg	11100	8110 J	8770	782 J
Antimony	31	820	mg/kg	1.0 UJ	1.1 BJ	1.0 UJ	32.3 J
Arsenic	22\6	22\6	mg/kg	6.4	20.3 J	3.5	112 J
Barium	5,400	100,000	mg/kg	65.4	138	19.1 B	450
Beryllium	150	2,200	mg/kg	0.30 B	0.43 B	0.17 B	0.02 U
Cadmium	37	810	mg/kg	0.14 U	0.41 BJ	0.13 U	0.97 BJ
Calcium	NP	NP	mg/kg	193 B	3220 J	375 B	218 BJ
Chromium	210	450	mg/kg	21.5 J	13.1 J	16.2 J	2.2 BJ
Cobalt	4,700	100,000	mg/kg	4.5 B	15.5	3.5 B	15.6
Copper	2,900	76,000	mg/kg	24.1	229	8.5	221
Iron	23,000	100,000	mg/kg	30400	31800 J	33800	162000 J
Lead	400	750	mg/kg	20.7 J	174 J	8.5 J	19800 J
Magnesium	NP	NP	mg/kg	1830	1000 B	1030 B	94.5 B
Manganese	1,800	32,000	mg/kg	182	263	81.7	29.5
Mercury	6.1	88	mg/kg	0.03 U	0.04 BJ	0.03 U	0.78 J
Nickel	1,600	41,000	mg/kg	8.2 B	9.8 J	3.9 B	1.3 BJ
Potassium	NP	NP	mg/kg	686 B	441 B	310 B	593 B
Selenium	390	10,000	mg/kg	1.0 U	1.0 BJ	0.97 U	4.9 J
Silver	390	10,000	mg/kg	0.19 U	0.46 B	0.18 U	12.1
Sodium	NP	NP	mg/kg	51.7 U	153 B	50.6 B	3920
Thallium	5.2	130	mg/kg	1.1 U	1.1 U	1.1 U	3.9
Vanadium	550	14,000	mg/kg	37.5	18.4 J	22.7	4.3 BJ
Zinc	23,000	100,000	mg/kg	28.5 J	362 J	43.6 J	624 J
Field Measurements							
pH	--	--	S.U.	3.11	3.65	3.48	3.33

Notes:

\1 See Appendix B for a description of data qualifiers

\2 Blind field duplicate of sample WB-SB15 0-0.5 ft bgs

\3 Blind field duplicate of sample WB-SB15 2-4 ft bgs

\4 Blind field duplicate of sample WB-SB19 0-0.5 ft bgs

\5 Although these samples are numbered with a sediment sample convention, these samples were collected in a dry drainage ditch and are actually soil samples due to the absence of flow

\6 Residential non-cancer endpoint (see Section 4.3)

PRG = USEPA Region 9 Preliminary Remediation Goal

Boxed results exceed residential soil PRG

Double-boxed results exceed residential & ind. soil PRGs

Table 4-1
Summary of Detected Analytes in Soil Samples
Wadesboro VCC - Site Characterization Report

Analyte	Residential PRG	Industrial PRG	Units	Concentration\1 in Sample: WB-SB92\4 0-0.5 ft bgs	WB-SB19 2-4 ft bgs	WB-SB19 4-6 ft bgs	WB-SB20 0-0.5 ft bgs
Aluminum	76,000	100,000	mg/kg	844 J	11000 J	12700	11100
Antimony	31	820	mg/kg	35.4 J	1.0 UJ	1.0 UJ	4.4 B
Arsenic	22\6	22\6	mg/kg	122 J	38.9 J	6.2	14.2
Barium	5,400	100,000	mg/kg	340	61.4	51.4	139
Beryllium	150	2,200	mg/kg	0.02 U	0.23 B	0.29 B	0.61 B
Cadmium	37	810	mg/kg	1.7 J	R	0.94 B	2.7
Calcium	NP	NP	mg/kg	284 BJ	283 BJ	281 B	68600
Chromium	210	450	mg/kg	3.1 J	22.9 J	19.1	32.4
Cobalt	4,700	100,000	mg/kg	17.4	4.3 B	5.6 B	5.4 B
Copper	2,900	76,000	mg/kg	258	933	229	104
Iron	23,000	100,000	mg/kg	158000 J	21100 J	20300	25400
Lead	400	750	mg/kg	80300 J	19.1 J	194	162
Magnesium	NP	NP	mg/kg	84.5 B	1430	1160	2590
Manganese	1,800	32,000	mg/kg	28.1	135	97.3	148
Mercury	6.1	88	mg/kg	0.90 J	0.03 U	0.03 UJ	0.05 B
Nickel	1,600	41,000	mg/kg	1.9 BJ	6.7 BJ	6.3 B	16.1
Potassium	NP	NP	mg/kg	735 B	1210	535 B	805 B
Selenium	390	10,000	mg/kg	5.9 J	0.95 UJ	0.99 U	1.1 B
Silver	390	10,000	mg/kg	12.7	0.18 U	0.21 B	0.18 U
Sodium	NP	NP	mg/kg	3730	1580	2620	504 B
Thallium	5.2	130	mg/kg	3.8	1.1 U	1.1 U	1.1 U
Vanadium	550	14,000	mg/kg	4.7 BJ	32.5 J	30.2	31.9
Zinc	23,000	100,000	mg/kg	686 J	58.6 J	103 J	242 J
Field Measurements							
pH	--	--	S.U.	3.00	2.91	3.86	6.80

Notes:

\1 See Appendix B for a description of data qualifiers

\2 Blind field duplicate of sample WB-SB15 0-0.5 ft bgs

\3 Blind field duplicate of sample WB-SB15 2-4 ft bgs

\4 Blind field duplicate of sample WB-SB19 0-0.5 ft bgs

\5 Although these samples are numbered with a sediment sample convention, these samples were collected in a dry drainage ditch and are actually soil samples due to the absence of flow

\6 Residential non-cancer endpoint (see Section 4.3)

PRG = USEPA Region 9 Preliminary Remediation Goal

Boxed results exceed residential soil PRG

Double-boxed results exceed residential & ind. soil PRGs

Table 4-1
Summary of Detected Analytes in Soil Samples
Wadesboro VCC - Site Characterization Report

Analyte	Residential PRG	Industrial PRG	Units	Concentration[1] in Sample: WB-SB20 2-4 ft bgs	WB-SB20 4-6 ft bgs	WB-SD03[5]	WB-SD04[5]
Aluminum	76,000	100,000	mg/kg	8220	9210	13100	17000 J
Antimony	31	820	mg/kg	6.8 BJ	4.0 BJ	2.1 B	2.5 UJ
Arsenic	22[6]	22[6]	mg/kg	72.4	21.6	17.7	51 J
Barium	5,400	100,000	mg/kg	403	159	47.6 B	40.0 B
Beryllium	150	2,200	mg/kg	0.55 B	0.61 B	0.23 B	0.26 B
Cadmium	37	810	mg/kg	3.6	3.2	0.18 U	R
Calcium	NP	NP	mg/kg	50500	55000	1100 B	1870 BJ
Chromium	210	450	mg/kg	17.0 J	24.4	11.4	25.1 J
Cobalt	4,700	100,000	mg/kg	19.8	8.9 B	1.9 B	3.7 B
Copper	2,900	76,000	mg/kg	650	243	263	316
Iron	23,000	100,000	mg/kg	71300	30600	12200	101000 J
Lead	400	750	mg/kg	478 J	147	408	611 J
Magnesium	NP	NP	mg/kg	1920	1140	614 B	757 B
Manganese	1,800	32,000	mg/kg	123	124	39.7	89.8
Mercury	6.1	88	mg/kg	0.10	0.04 BJ	0.09	0.13 J
Nickel	1,600	41,000	mg/kg	10.0	9.3	4 B	8.1 BJ
Potassium	NP	NP	mg/kg	871 B	681 B	588 B	606 B
Selenium	390	10,000	mg/kg	2.1	1.5	1.3 U	2.4 UJ
Silver	390	10,000	mg/kg	2.5	0.49 B	0.25 B	0.70 B
Sodium	NP	NP	mg/kg	410 B	486 B	65.2 U	124 U
Thallium	5.2	130	mg/kg	1.2 B	1.0 U	1.4 U	2.7 U
Vanadium	550	14,000	mg/kg	24.3	26.3	17.7	29.4 J
Zinc	23,000	100,000	mg/kg	652 J	300 J	88.2 J	157 J
Field Measurements							
pH	--	--	S.U.	4.85	5.80	4.58	4.11

Notes:

\1 See Appendix B for a description of data qualifiers

\2 Blind field duplicate of sample WB-SB15 0-0.5 ft bgs

\3 Blind field duplicate of sample WB-SB15 2-4 ft bgs

\4 Blind field duplicate of sample WB-SB19 0-0.5 ft bgs

\5 Although these samples are numbered with a sediment sample convention, these samples were collected in a dry drainage ditch and are actually soil samples due to the absence of flow

\6 Residential non-cancer endpoint (see Section 4.3)

PRG = USEPA Region 9 Preliminary Remediation Goal

Boxed results exceed residential soil PRG

Double-boxed results exceed residential & ind. soil PRGs

Table 4-2
Summary of Detected Analytes in Sediment Samples
Wadesboro VCC - Site Characterization Report

Analyte	Residential PRG	Industrial PRG	Units	Concentration\1 in Sample: WB-SD01	WB-SD02	WB-SD99\2
Aluminum	76,000	100,000	mg/kg	1740	7130	7370
Arsenic	22\3	22\3	mg/kg	1.5 B	5.5	4.8
Barium	5,400	100,000	mg/kg	21.2 B	75.0	76.0
Beryllium	150	2,200	mg/kg	0.15 B	0.29 B	0.32 B
Calcium	NP	NP	mg/kg	330 B	1240 B	1300 B
Chromium	210	450	mg/kg	4.4	13.0	14.7
Cobalt	4,700	100,000	mg/kg	1.9 B	6.6 B	6.9 B
Copper	2,900	76,000	mg/kg	2.8 B	14.3	14.0
Iron	23,000	100,000	mg/kg	6570	16300	17700
Lead	400	750	mg/kg	4.2	11.9	13.0
Magnesium	NP	NP	mg/kg	391 B	1190 B	1340 B
Manganese	1,800	32,000	mg/kg	66.4	247	258
Mercury	6.1	88	mg/kg	0.03 U	0.06 B	0.05 B
Nickel	1,600	41,000	mg/kg	2.7 B	8.9 B	9.0 B
Potassium	NP	NP	mg/kg	180 B	571 B	573 B
Thallium	5.2	130	mg/kg	1.2 U	1.8 B	1.9 U
Vanadium	550	14,000	mg/kg	8.7 B	21.1	23.4
Field Measurements						
pH	--	--	S.U.	6.81	6.60	6.43

Notes:

\1 See Appendix B for a description of data qualifiers

\2 Blind field duplicate of sample WB-SD02

\3 Residential non-cancer endpoint (see Section 4.3)

PRG = USEPA Region 9 Preliminary Remediation Goal

Boxed results exceed residential soil PRG

Double-boxed results exceed residential & ind. soil PRGs

Table 4-3
Summary of Detected Analytes in Groundwater Samples
Wadesboro VCC - Site Characterization Report

Analyte	PRG	Units	Concentration\1 in Sample: WB-MW1	WB-MW2	WB-MW3	WB-MW90\2
Aluminum	36,000	µg/L	52600 J	84600 J	400 J	377 J
Barium	2,600	µg/L	31.0 B	37.7 B	198 B	199 B
Beryllium	73	µg/L	10.8 B	11.5 B	0.10 U	0.10 U
Cadmium	18	µg/L	10.1 BJ	27.8 J	0.60 U	0.60 U
Calcium	NP	µg/L	565000	415000	260000	261000
Cobalt	2,200	µg/L	631	996	2.2 B	2.0 B
Copper	1,400	µg/L	54.5 B	998	2.5 U	1.8 B
Iron	11,000	µg/L	575	60700	469	403
Lead	NP	µg/L	11.5 U	10.3 U	2.6 B	1.9 U
Magnesium	NP	µg/L	277000	214000	48000	48100
Manganese	880	µg/L	28700	53900	1740	1760
Nickel	730	µg/L	498	505	5.1 B	4.2 B
Potassium	NP	µg/L	6320 B	7500 B	6290	6120
Selenium	180	µg/L	R	R	R	R
Sodium	NP	µg/L	57400	1350000	36400	36200
Thallium	NP	µg/L	24.5 UJ	24.5 UJ	6.0 BJ	4.9 UJ
Vanadium	260	µg/L	4.0 U	12.3 B	1.1 U	1.2 U
Zinc	11,000	µg/L	1480	4630	1.8 B	1.8 B
Field Measurements						
pH	--	S.U.	4.59	4.62	6.88	6.88
Temperature	--	°C	14.23	15.37	15.51	15.51
Conductivity	--	mS/cm	3.95	4.62	1.53	1.53
Dissolved Oxygen	--	mg/L	2.83	1.42	2.34	2.34
ORP	--	mV	520	353	305	305
Flow	--	mL/min	350	200	200	200
Turbidity	--	--	clear	v. slight	clear	clear

Notes:

\1 See Appendix B for a description of data qualifiers

\2 Blind field duplicate of sample WB-MW3

PRG = USEPA Region 9 Preliminary Remediation Goal for tap water

Boxed results exceed tap water PRG

Table 4-4
Summary of Detected Analytes in Surface Water Samples
Wadesboro VCC - Site Characterization Report

Analyte	PRG	Units	Concentration\1 in Sample: WB-SW01	WB-SW02	WB-SW99\2
Metals					
Aluminum	36,000	µg/L	265	344	353
Barium	2,600	µg/L	80.2 B	80.3 B	79.3 B
Calcium	NP	µg/L	18500	20500	21200
Cobalt	2,200	µg/L	0.70 U	0.90 B	0.89 B
Iron	11,000	µg/L	1250	1150	1200
Magnesium	NP	µg/L	5360	5580	5790
Manganese	880	µg/L	76.4	111	116
Nickel	730	µg/L	1.6 U	2.5 B	2.5 B
Potassium	NP	µg/L	1500 B	1560 B	1610 B
Sodium	NP	µg/L	12300	12700	13200
Zinc	11,000	µg/L	12.4 B	21.7	23.5
Water Quality Parameters					
pH	--	S.U.	8.27	7.90	NM
Temperature	--	°C	22.95	22.46	NM
Specific Conductance	--	mS/cm	0.184	0.189	NM
Dissolved Oxygen	--	mg/L	6.34	6.51	NM
Oxidation/Reduction Potential	--	mV	280	375	NM

Notes:

\1 See Appendix B for a description of data qualifiers

\2 Blind field duplicate of sample WB-SW02

PRG = USEPA Region 9 Preliminary Remediation Goal for tap water

NM = not measured

Boxed results exceed tap water PRG

Table 4-5
Summary of Detected Analytes in Field QC Samples
Wadesboro VCC - Site Characterization Report

		Concentration\1 in Sample:					
Analyte	Units	WB-EBSD 041601	WB-EBSB 041601	WB-EBSB 041701	WB-EBSB 041801	WB-EBSD 041801	WB-EBGW 042601
Aluminum	µg/L	38.8 U	215	387	292	209	25.1 BU
Calcium	µg/L	170 B	243 B	1040 B	151 B	273 B	212 B
Chromium	µg/L	0.50 U	8.7 B	17.0	2.2 U	45.9	0.50 U
Copper	µg/L	1.0 U	22.3 B	3.7 U	1.3 U	1.8 U	1.0 U
Iron	µg/L	22.4 U	392	777	223	796	10.8 U
Lead	µg/L	1.9 U	1.9 U	269	4.2 J	8.1	1.9 U
Magnesium	µg/L	18.8 B	19.1 U	87.0 B	12.0 U	33.0 U	34.0 U
Manganese	µg/L	8.9 B	40.6	28.9	11.2 B	89.6	0.88 U
Mercury	µg/L	0.10 U	0.10 U	0.20 B	0.10 U	0.10 U	0.10 U
Nickel	µg/L	1.6 U	11.0 B	16.1 B	4.4 B	6.1 B	1.6 U
Potassium	µg/L	17.1 U	27.2 B	77.9 B	17.4 B	40.0 B	17.1 U
Selenium	µg/L	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	R
Sodium	µg/L	296 B	507 B	485 B	281 B	456 B	428 B
Zinc	µg/L	2.2 B	128	267	3.9 B	8.6 B	1.1 U

Notes:

\1 See Appendix B for a description of data qualifiers

Appendices

BLASLAND, BOUCK & LEE, INC.

engineers & scientists

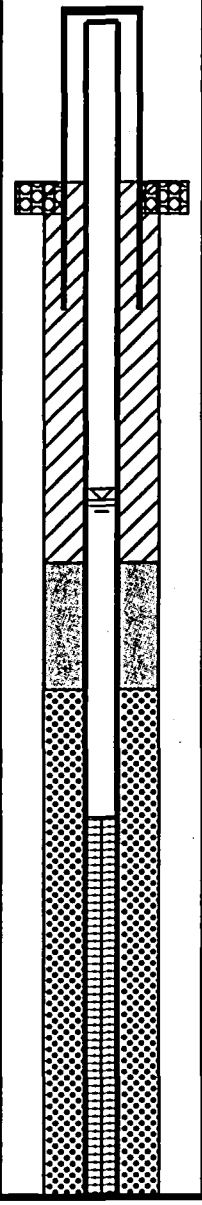
Appendix A – Soil Boring Logs

BLASLAND, BOUCK & LEE, INC.

engineers & scientists

Date Start/Finish: 4/17/01-4/17/01 **Drilling Company:** SAEDACCO **Driller's Name:** Rich Lemire **Drilling Method:** Hollow stem auger **Auger Size:** 8-inch diameter **Bit Size:** NA **Core Size:** NA **Rig Type:** B59 mobile drill rig **Sampling Method:** Split spoon	**Northing:** 7199.177 **Easting:** 3326.203 **Top of Casing Elevation:** 373.81 Feet **Surface Elevation:** 371.31 Feet **Borehole Depth:** 40 Feet **Corehole Depth:** NA **Well Depth:** 35 Feet **Field Supervisor:** Brian Lovgren	**Well/Boring ID: WB-MW1** **Client:** ExxonMobil **Site:** Former Virginia-Carolina Chem. Co. Phosphate/Fertilizer Plant Wadesboro, NC

Elevation (Feet MSL)	Depth (Feet BGS)	Sample / Run Number	Blows / 6 inches	N-Value	Recovery (Feet)	Stratigraphic Description	Lithology	Well/Boring Construction	Well Description
						ground surface			Protective Steel Casing With Lock
	0	1			1	orange/brown, fine to medium sand and silt with medium gravel			Concrete Pad
370									Cement/Bentonite Grout (0' - 6' bgs)
		2			1.5	orange/brown, sandy silt with trace of fine gravel			
	5	3			2	orange/brown, fine to medium sand and silt			2" diameter Schedule 40 PVC Well Casing (-2.5' - 10' bgs)
365		4			1	fine to medium sand and silt (trace of coal)			Bentonite (6' - 8' bgs)
		5			2	orange/brown/gray, fine to medium sand and silt with yellow/brown mottles			
	10					soil characteristics not logged			Top of Screen (10' bgs)
360									
	15	6			2	orange/brown, fine to medium sand and silt			



BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

Remarks: Depth to water 5.01 feet bgs, measured 4/25/01

Client: ExxonMobil

Site Location: Former Virginia-Carolina Chem. Co.
Phosphate/Fertilizer Plant
Wadesboro, NC

Well/Boring ID: WB-MW1

Borehole Depth: 40 Feet
Corehole Depth: NA
Well Depth: 35 Feet

Elevation (Feet MSL)	Depth (Feet BGS)	Sample/Run Number	Blows / 6 inches	N-Value	Recovery (Feet)	Stratigraphic Description	Lithology	Well/Boring Construction	Well Description
355						soil characteristics not logged			
	20	7			1	orange/brown, sandy silt			2" diameter Schedule 40 PVC 0.010" Slotted Screen (10' - 35' bgs)
350						soil characteristics not logged			
	25	8			1	orange/brown, sandy silt			
345						soil characteristics not logged			Sand Pack (8' - 40' bgs)
	30								
340									
	35								Bottom of Screen and Cap (35' bgs)

BBL
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engineers & scientists

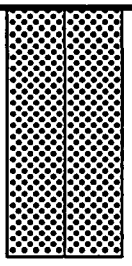
Remarks: Depth to water 5.01 feet bgs, measured 4/25/01

Client: ExxonMobil

Site Location: Former Virginia-Carolina Chem. Co.
Phosphate/Fertilizer Plant
Wadesboro, NC

Well/Boring ID: WB-MW1

Borehole Depth: 40 Feet
Corehole Depth: NA
Well Depth: 35 Feet

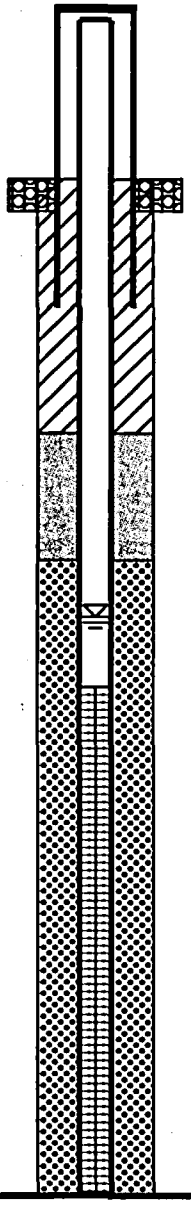
Elevation (Feet MSL)	Depth (Feet BGS)	Sample/Run Number	Blows / 6 inches	N-Value	Recovery (Feet)	Stratigraphic Description	Lithology	Well/Boring Construction	Well Description
335						soil characteristics not logged			
	40					boring terminated at 40 feet bgs			40

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

Remarks: Depth to water 5.01 feet bgs, measured 4/25/01

Date Start/Finish: 4/16/01-4/17/01 **Drilling Company:** SAEDACCO **Driller's Name:** Rich Lemire **Drilling Method:** Hollow stem auger **Auger Size:** 8-inch diameter **Bit Size:** NA **Core Size:** NA **Rig Type:** B59 mobile drill rig **Sampling Method:** Split spoon	**Northing:** 7092.510 **Easting:** 3178.100 **Top of Casing Elevation:** 367.40 Feet **Surface Elevation:** 365.36 Feet **Borehole Depth:** 40 Feet **Corehole Depth:** NA **Well Depth:** 23 Feet **Field Supervisor:** Brian Lovgren	**Well/Boring ID: WB-MW2** **Client:** ExxonMobil **Site:** Former Virginia-Carolina Chem. Co. Phosphate/Fertilizer Plant Wadesboro, NC

Elevation (Feet MSL)	Depth (Feet BGS)	Sample / Run Number	Blows / 6 inches	N-Value	Recovery (Feet)	Stratigraphic Description	Lithology	Well/Boring Construction	Well Description
						ground surface			Protective Steel Casing With Lock
365	0	1			1	orange/brown, fine to medium sand w/ trace of silt transition to fine to medium sand and silt			Concrete Pad Cement/Bentonite Grout (0' - 4' bgs)
		2			1.5	orange/brown, sandy silt			2" diameter Schedule 40 PVC Well Casing (-2.5' - 8' bgs)
360	5	3			1	orange/brown, sandy silt			Bentonite (4' - 6' bgs)
		4			1	orange/brown, sandy silt			Top of Screen (8' bgs)
		5			2	orange/brown, sandy silt			
355	10					soil characteristics not logged			
350	15	6			2	orange/brown, sandy silt			



BBL
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engineers & scientists

Remarks: Depth to water 6.89 feet bgs, measured 4/25/01

Client: ExxonMobil

Site Location: Former Virginia-Carolina Chem. Co.
Phosphate/Fertilizer Plant
Wadesboro, NC

Well/Boring ID: WB-MW2

Borehole Depth: 40 Feet
Corehole Depth: NA
Well Depth: 23 Feet

Elevation (Feet MSL)	Depth (Feet BGS)	Sample/Run Number	Blows / 6 inches	N-Value	Recovery (Feet)	Stratigraphic Description	Lithology	Well/Boring Construction	Well Description
						soil characteristics not logged			2" diameter Schedule 40 PVC 0.010" Slotted Screen (8' - 23' bgs)
345	20	7			1	orange/brown, sandy silt			20
						soil characteristics not logged			Bottom of Screen and Cap (23' bgs)
340	25	8			1.5	light brown/gray, fine to medium sand and fine to medium gravel			25
						soil characteristics not logged			Sand Pack (6' - 40' bgs)
335	30	9			1	light brown/gray, fine to medium sand and fine to medium gravel			30
						soil characteristics not logged			
330	35	10			1	light brown/gray, fine to medium sand and fine gravel			35

BBL
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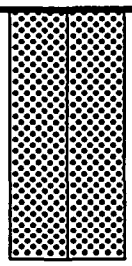
Remarks: Depth to water 6.89 feet bgs, measured 4/25/01

Client: ExxonMobil

Site Location: Former Virginia-Carolina Chem. Co.
Phosphate/Fertilizer Plant
Wadesboro, NC

Well/Boring ID: WB-MW2

Borehole Depth: 40 Feet
Corehole Depth: NA
Well Depth: 23 Feet

Elevation (Feet MSL)	Depth (Feet BGS)	Sample/Run Number	Blows / 6 inches	N-Value	Recovery (Feet)	Stratigraphic Description	Lithology	Well/Boring Construction	Well Description
						soil characteristics not logged			
325	40					boring terminated at 40 feet bgs			40

BBL
BLASLAND, BOUCK & LEE, INC.
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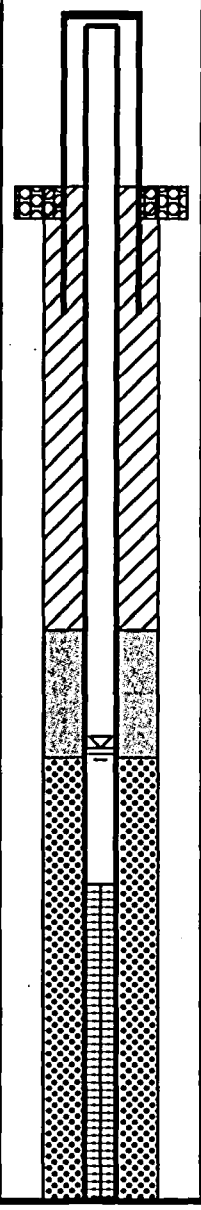
Remarks: Depth to water 6.89 feet bgs, measured 4/25/01

Date Start/Finish: 4/16/01-4/17/01 **Drilling Company:** SAEDACCO **Driller's Name:** Rich Lemire **Drilling Method:** Hollow stem auger **Auger Size:** 8-inch diameter **Bit Size:** NA **Core Size:** NA **Rig Type:** B59 mobile drill rig **Sampling Method:** Split spoon	**Northing:** 6950.353 **Easting:** 3250.780 **Top of Casing Elevation:** 364.79 Feet **Surface Elevation:** 362.33 Feet **Borehole Depth:** 38 Feet **Corehole Depth:** NA **Well Depth:** 26 Feet **Field Supervisor:** Brian Lovgren	**Well/Boring ID: WB-MW3** **Client:** ExxonMobil **Site:** Former Virginia-Carolina Chem. Co. Phosphate/Fertilizer Plant Wadesboro, NC

Elevation (Feet MSL)	Depth (Feet BGS)	Sample / Run Number	Blows / 6 inches	N-Value	Recovery (Feet)	Stratigraphic Description	Lithology	Well/Boring Construction	Well Description
365									Protective Steel Casing With Lock
	0					ground surface			
		1			1	orange/brown, sandy silt with trace of fine gravel			Concrete Pad
360		2			1.5	orange/brown, sandy silt with trace of fine gravel transition to light brown, fine to medium sand			Cement/Bentonite Grout (0' - 7' bgs)
	5	3			2	light brown/brown/yellow, fine to medium sand to sandy silt			2" diameter Schedule 40 PVC Well Casing (-2.5' - 11' bgs)
355		4			2	orange/brown/gray, clayey silt with some fine sand			
		5			2	orange/brown/gray, clayey silt			Bentonite (7' - 9' bgs)
	10	6			2	orange/brown/black, clayey silt transition to fine sand and silt			Top of Screen (11' bgs)
350						soil characteristics not logged			
	15	7			0.5	orange/brown, fine sand and silt			



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Remarks: Depth to water 8.85 feet bgs, measured 4/25/01

Client: ExxonMobil

Site Location: Former Virginia-Carolina Chem. Co.
Phosphate/Fertilizer Plant
Wadesboro, NC

Well/Boring ID: WB-MW3

Borehole Depth: 38 Feet
Corehole Depth: NA
Well Depth: 26 Feet

Elevation (Feet MSL)	Depth (Feet BGS)	Sample/Run Number	Blows / 6 inches	N-Value	Recovery (Feet)	Stratigraphic Description	Lithology	Well/Boring Construction	Well Description
						soil characteristics not logged			2" diameter Schedule 40 PVC 0.010" Slotted Screen (11' - 26' bgs)
345									
	20	8			0.5	orange/brown, silt			20
						soil characteristics not logged			
340									
	25	9			0.4	orange/brown, silt			25
						soil characteristics not logged			Bottom of Screen and Cap (26' bgs)
335									
	30	10			0.3	orange/brown, silt			30
						soil characteristics not logged			Sand Pack (9' - 38' bgs)
330									
	35								35

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Remarks: Depth to water 8.85 feet bgs, measured 4/25/01

Client: ExxonMobil Site Location: Former Virginia-Carolina Chem. Co. Phosphate/Fertilizer Plant Wadesboro, NC	**Well/Boring ID: WB-MW3** Borehole Depth: 38 Feet Corehole Depth: NA Well Depth: 26 Feet

Elevation (Feet MSL)	Depth (Feet BGS)	Sample/Run Number	Blows / 6 inches	N-Value	Recovery (Feet)	Stratigraphic Description	Lithology	Well/Boring Construction	Well Description
325						soil characteristics not logged			
						boring terminated at 38 feet bgs			

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Remarks: Depth to water 8.85 feet bgs, measured 4/25/01

Date Start/Finish: 4-16-01 **Drilling Company:** BBL **Driller's Name:** Brian Lovgren **Sampling Method:** Bucket-type hand auger **Auger Size:** 3-inch diameter	**Northing:** 7832.987 **Easting:** 3485.914 **Surface Elevation:** 389.04 feet **Borehole Depth:** 3.5 feet **Field Supervisor:** Brian Lovgren	**Boring ID:SB-01** **Client:** ExxonMobil **Site:** Former Virginia-Carolina Chem. Co. Phosphate/Fertilizer Plant Wadesboro, NC

Elevation (Feet AMSL)	Depth (Feet BGS)	Sample Run Number	Recovery (Feet)	Stratigraphic Description	Lithology	Comments
390						
	0			ground surface		
		1	0.5	brown, fine to medium sand and some silt with fine characteristics not logged		5 point composite sample
		2	1.5	orange/brown, silt and fine sand		
385				boring terminated at 3.5 feet bgs (auger refusal)		

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Remarks: refusal at 3.5 feet bgs

Date Start/Finish: 4-17-01 **Drilling Company:** BBL **Driller's Name:** Brian Lovgren **Sampling Method:** Bucket-type hand auger **Auger Size:** 3-inch diameter	**Northing:** 7797.842 **Easting:** 3354.126 **Surface Elevation:** 371.87 Feet **Borehole Depth:** 4 Feet **Field Supervisor:** Brian Lovgren	**Boring ID:WB-SB02** **Client:** ExxonMobil **Site:** Former Virginia-Carolina Chem. Co. Phosphate/Fertilizer Plant Wadesboro, NC

Elevation (Feet AMSL)	Depth (Feet BGS)	Sample Run Number	Recovery (Feet)	Stratigraphic Description	Lithology	Comments
				ground surface		
	0	1	0.5	orange/brown, sandy silt		5-point composite sample
				soil characteristics not logged		
370				orange/brown, silty sand		
		2	2			
				boring terminated at 4 feet bgs		
	5					

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Remarks:

Date Start/Finish: 4-17-01 **Drilling Company:** BBL **Driller's Name:** Brian Lovgren **Sampling Method:** Bucket-type hand auger **Auger Size:** 3-inch diameter	**Northing:** 7540.939 **Easting:** 3291.355 **Surface Elevation:** 371.11 Feet **Borehole Depth:** 4 Feet **Field Supervisor:** Brian Lovgren	**Boring ID:WB-SB03** **Client:** ExxonMobil **Site:** Former Virginia-Carolina Chem. Co. Phosphate/Fertilizer Plant Wadesboro, NC

Elevation (Feet AMSL)	Depth (Feet BGS)	Sample Run Number	Recovery (Feet)	Stratigraphic Description	Lithology	Comments
				ground surface		
	0	1	0.5	light-brown/brown, fine to coarse sand and some silt		5-point composite sample
370				characteristics not logged		
		2	2	orange/brown, sandy silt		
				boring terminated at 4 feet bgs		
	5					

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Remarks:

Date Start/Finish: 4-17-01 **Drilling Company:** BBL **Driller's Name:** Brian Lovgren **Sampling Method:** Bucket-type hand auger **Auger Size:** 3-inch diameter	**Northing:** 7420.762 **Easting:** 3233.583 **Surface Elevation:** 370.71 Feet **Borehole Depth:** 4 Feet **Field Supervisor:** Brian Lovgren	**Boring ID:WB-SB04** **Client:** ExxonMobil **Site:** Former Virginia-Carolina Chem. Co. Phosphate/Fertilizer Plant Wadesboro, NC

Elevation (Feet AMSL)	Depth (Feet BGS)	Sample Run Number	Recovery (Feet)	Stratigraphic Description	Lithology	Comments
				ground surface		
	0	1	0.5	brown, sandy silt		5-point composite sample
370				soil characteristics not logged		
		2	2	orange/brown, sandy silt		
				boring terminated at 4 feet bgs		
	5					

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Remarks:

Date Start/Finish: 4-18-01 **Drilling Company:** SAEDACCO **Driller's Name:** Tim Thomas **Sampling Method:** Geoprobe **Auger Size:** 2-inch diameter	**Northing:** 7638.947 **Easting:** 3388.674 **Surface Elevation:** 375.26 Feet **Borehole Depth:** 4 Feet **Field Supervisor:** Brian Lovgren	**Boring ID:WB-SB05** **Client:** ExxonMobil **Site:** Former Virginia-Carolina Chem. Co. Phosphate/Fertilizer Plant Wadesboro, NC

Elevation (Feet AMSL)	Depth (Feet BGS)	Sample Run Number	Recovery (Feet)	Stratigraphic Description	Lithology	Comments
				ground surface		
375	0	1	0.5	orange/brown, sandy silt		5-point composite sample
				soil characteristics not logged		
		2	2	orange/brown, sandy silt		
				boring terminated at 4 feet bgs		
	5					

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Remarks:

Date Start/Finish: 4-18-01 **Drilling Company:** SAEDACCO **Driller's Name:** Tim Thomas **Sampling Method:** Geoprobe **Auger Size:** 2-inch diameter	**Northing:** 7392.317 **Easting:** 3358.305 **Surface Elevation:** 370.42 Feet **Borehole Depth:** 4 Feet **Field Supervisor:** Brian Lovgren	**Boring ID:WB-SB06** **Client:** ExxonMobil **Site:** Former Virginia-Carolina Chem. Co. Phosphate/Fertilizer Plant Wadesboro, NC

Elevation (Feet AMSL)	Depth (Feet BGS)	Sample Run Number	Recovery (Feet)	Stratigraphic Description	Lithology	Comments
				ground surface		
370	0	1	0.5	orange/brown, sandy silt		5-point composite sample
				soil characteristics not logged		
		2	2	orange/brown, sandy silt		
				gray, sandy silt		
				boring terminated at 4 feet bgs		
	5					

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Remarks:

Date Start/Finish: 4-16-01 **Drilling Company:** BBL **Driller's Name:** Brian Lovgren **Sampling Method:** Bucket-type hand auger **Auger Size:** 3-inch diameter	**Northing:** 7780.614 **Easting:** 3564.627 **Surface Elevation:** 387.42 Feet **Borehole Depth:** 3.5 Feet **Field Supervisor:** Brian Lovgren	**Boring ID:** WB-SB07 **Client:** ExxonMobil **Site:** Former Virginia-Carolina Chem. Co. Phosphate/Fertilizer Plant Wadesboro, NC

Elevation (Feet AMSL)	Depth (Feet BGS)	Sample Run Number	Recovery (Feet)	Stratigraphic Description	Lithology	Comments
390						
	0			ground surface		
		1	0.5	soil characteristics not logged		5-point composite sample
				soil characteristics not logged		
385		2	1.5	yellow/brown to orange/brown, silt		
				boring terminated at 3.5 feet bgs (auger refusal)		

0

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Remarks: First attempt refusal at 3 feet bgs, moved over 2 feet
Second attempt refusal at 3.5 feet bgs

Date Start/Finish: 4-17-01 **Drilling Company:** BBL **Driller's Name:** Brian Lovgren **Sampling Method:** Bucket-type hand auger **Auger Size:** 3-inch diameter	**Northing:** 7553.237 **Easting:** 3576.010 **Surface Elevation:** 381.54 Feet **Borehole Depth:** 4 Feet **Field Supervisor:** Brian Lovgren	**Boring ID:WB-SB08** **Client:** ExxonMobil **Site:** Former Virginia-Carolina Chem. Co. Phosphate/Fertilizer Plant Wadesboro, NC

Elevation (Feet AMSL)	Depth (Feet BGS)	Sample Run Number	Recovery (Feet)	Stratigraphic Description	Lithology	Comments
				ground surface		
	0	1	0.5	brown, fine to medium sand and silt		5-point composite sample
				soil characteristics not logged		
380						
		2	2	yellow/brown, silt		
				boring terminated at 4 feet bgs		
	5					

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Remarks:

Date Start/Finish: 4-17-01 **Drilling Company:** BBL **Driller's Name:** Brian Lovgren **Sampling Method:** Bucket-type hand auger **Auger Size:** 3-inch diameter	**Northing:** 7236.946 **Easting:** 3487.371 **Surface Elevation:** 378.43 Feet **Borehole Depth:** 4 Feet **Field Supervisor:** Brian Lovgren	**Boring ID:WB-SB09** **Client:** ExxonMobil **Site:** Former Virginia-Carolina Chem. Co. Phosphate/Fertilizer Plant Wadesboro, NC

Elevation (Feet AMSL)	Depth (Feet BGS)	Sample Run Number	Recovery (Feet)	Stratigraphic Description	Lithology	Comments
380						
	0			ground surface		
		1	0.5	brown to orange/brown, sandy silt		5-point composite sample
				soil characteristics not logged		
		2	2	orange/brown, sandy silt		
375						
				boring terminated at 4 feet bgs		
	5					

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Remarks:

Date Start/Finish: 4-18-01 **Drilling Company:** BBL **Driller's Name:** Brian Lovgren **Sampling Method:** Bucket-type hand auger **Auger Size:** 3-inch diameter	**Northing:** 7274.733 **Easting:** 3321.345 **Surface Elevation:** 371.34 Feet **Borehole Depth:** 4 Feet **Field Supervisor:** Brian Lovgren	**Boring ID:WB-SB10** **Client:** ExxonMobil **Site:** Former Virginia-Carolina Chem. Co. Phosphate/Fertilizer Plant Wadesboro, NC

Elevation (Feet AMSL)	Depth (Feet BGS)	Sample Run Number	Recovery (Feet)	Stratigraphic Description	Lithology	Comments
				ground surface		
	0	1	0.5	orange/brown, sandy silt		5-point composite sample
370				soil characteristics not logged		
		2	2	orange/brown, sandy silt		
				boring terminated at 4 feet bgs		
	5					

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Remarks:

Date Start/Finish: 4-17-01 **Drilling Company:** SAEDACCO **Driller's Name:** Rich Lemire **Sampling Method:** Split spoon **Auger Size:** 2-inch diameter macrocore	**Northing:** 7199.177 **Easting:** 3326.203 **Surface Elevation:** 371.31 Feet **Borehole Depth:** 40 Feet **Field Supervisor:** Brian Lovgren	**Boring ID:WB-SB11** **Client:** ExxonMobil **Site:** Former Virginia-Carolina Chem. Co. Phosphate/Fertilizer Plant Wadesboro, NC

Elevation (Feet AMSL)	Depth (Feet BGS)	Sample Run Number	Recovery (Feet)	Stratigraphic Description	Lithology	Comments
				ground surface		
	0	1	1	orange/brown, fine to medium sand and silt with medium gravel		
370		2	1.5	orange/brown, sandy silt with trace of fine gravel		
	5	3	2	orange/brown, fine to medium sand and silt		
365		4	1	orange/brown, fine to medium sand and silt (trace of coal)		
		5	2	orange/brown/gray, fine to medium sand and silt with yellow/brown mottles		
	10			soil characteristics not logged		
360						
	15	6	2	orange/brown, fine to medium sand and silt		

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Remarks:

Client: ExxonMobil

Site Location: Former Virginia-Carolina Chem. Co.
Phosphate/Fertilizer Plant
Wadesboro, NC

Boring ID: WB-SB11

Borehole Depth: 40 Feet

Elevation (Feet AMSL)	Depth (Feet BGS)	Sample Run Number	Recovery (Feet)	Stratigraphic Description	Lithology	Comments
355				soil characteristics not logged		
	20	7	1	orange/brown, sandy silt		20
350				soil characteristics not logged		
	25	8	1	orange/brown, sandy silt		25
345				soil characteristics not logged		
	30					30
340						
	35					35

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Remarks:

Client: ExxonMobil

Site Location: Former Virginia-Carolina Chem. Co.
Phosphate/Fertilizer Plant
Wadesboro, NC

Boring ID: WB-SB11

Borehole Depth: 40 Feet

Elevation (Feet AMSL)	Depth (Feet BGS)	Sample Run Number	Recovery (Feet)	Stratigraphic Description	Lithology	Comments
335				soil characteristics not logged		
	40			boring terminated at 40 feet bgs		

40

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Remarks:

Date Start/Finish: 4-18-01 **Drilling Company:** BBL/SAEDACCO **Driller's Name:** Brian Lovgren/Tim Thomas **Sampling Method:** Bucket-type hand auger/Geoprobe **Auger Size:** 2-inch diameter/3-inch diameter	**Northing:** 7206.298 **Easting:** 3220.027 **Surface Elevation:** 369.45 Feet **Borehole Depth:** 10 Feet **Field Supervisor:** Brian Lovgren	**Boring ID:WB-SB12** **Client:** ExxonMobil **Site:** Former Virginia-Carolina Chem. Co. Phosphate/Fertilizer Plant Wadesboro, NC

Elevation (Feet AMSL)	Depth (Feet BGS)	Sample Run Number	Recovery (Feet)	Stratigraphic Description	Lithology	Comments
370	0			ground surface		5-point composite sample
		1	0.5	soil characteristics not logged		
				soil characteristics not logged		
		2	2	gray/orange/brown, sandy silt		
365	5	3	2	gray/orange/brown, sandy silt		
		4	2	gray/orange/brown, sandy silt		
		5	2	yellow/brown to light brown, sandy silt		
360	10			boring terminated at 10 feet bgs		

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Remarks:

Date Start/Finish: 4-18-01 **Drilling Company:** SAEDACCO **Driller's Name:** Tim Thomas **Sampling Method:** Geoprobe **Auger Size:** 2-inch diameter	**Northing:** 7079.153 **Easting:** 3277.155 **Surface Elevation:** 365.98 feet **Borehole Depth:** 10 Feet **Field Supervisor:** Brian Lovgren	**Boring ID:WB-SB13** **Client:** ExxonMobil **Site:** Former Virginia-Carolina Chem. Co. Phosphate/Fertilizer Plant Wadesboro, NC

Elevation (Feet AMSL)	Depth (Feet BGS)	Sample Run Number	Recovery (Feet)	Stratigraphic Description	Lithology	Comments
				ground surface		
	0	1	0.5	brown, fine to coarse sand with debris (bricks, shale)		5-point composite sample (w/ Geoprobe)
365				soil characteristics not logged		
		2	2	gray/orange/brown, sandy silt		
	5	3	2	orange/brown, sandy silt		
360		4	2	orange/brown, sandy silt		
		5	2	orange/brown, sandy silt		
	10			boring terminated at 10 feet bgs		
355						

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Remarks:

Date Start/Finish: 4-18-01 **Drilling Company:** BBL/SAEDACCO **Driller's Name:** Brian Lovgren/Tim Thomas **Sampling Method:** Bucket-type hand auger/Geoprobe **Auger Size:** 3-inch diameter/2-inch diameter	**Northing:** 7142.329 **Easting:** 3168.550 **Surface Elevation:** 364.50 Feet **Borehole Depth:** 10 Feet **Field Supervisor:** Brian Lovgren	**Boring ID:WB-SB14** **Client:** ExxonMobil **Site:** Former Virginia-Carolina Chem. Co. Phosphate/Fertilizer Plant Wadesboro, NC

Elevation (Feet AMSL)	Depth (Feet BGS)	Sample Run Number	Recovery (Feet)	Stratigraphic Description	Lithology	Comments
365	0			ground surface		5-point composite sample (3 on road collected w/ Geoprobe)
		1	0.5	soil characteristics not logged (magenta soil on road)		
				soil characteristics not logged		
		2	2	orange/brown, sandy silt		
360	5	3	2	orange/brown, sandy silt		
		4	2	orange/brown, sandy silt		
		5	2	light-brown, sandy silt		
355	10			boring terminated at 10 feet bgs		

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Remarks:

Date Start/Finish: 4-16-01 **Drilling Company:** SAEDACCO **Driller's Name:** Rich Lemire **Sampling Method:** Split spoon **Auger Size:** 2-inch diameter macrocore	**Northing:** 6950.353 **Easting:** 3250.780 **Surface Elevation:** 365.36 Feet **Borehole Depth:** 40 Feet **Field Supervisor:** Brian Lovgren	**Boring ID:WB-SB15** **Client:** ExxonMobil **Site:** Former Virginia-Carolina Chem. Co. Phosphate/Fertilizer Plant Wadesboro, NC

Elevation (Feet AMSL)	Depth (Feet BGS)	Sample Run Number	Recovery (Feet)	Stratigraphic Description	Lithology	Comments
				ground surface		
365	0	1	1	orange/brown, fine to medium sand w/ trace of silt and magenta soil transition to fine to medium sand and silt		trace of magenta from 0 to 0.8 feet bgs
		2	1.5	orange/brown, sandy silt lense of magenta soil from 3.3 to 3.4 feet bgs		
360	5	3	1	orange/brown, sandy silt		
		4	1	orange/brown, sandy silt		
		5	2	orange/brown, sandy silt		
355	10			soil characteristics not logged		
350	15	6	2	orange/brown, sandy silt		

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Remarks:

Client: ExxonMobil

Site Location: Former Virginia-Carolina Chem. Co.
Phosphate/Fertilizer Plant
Wadesboro, NC

Boring ID: WB-SB15

Borehole Depth: 40 Feet

Elevation (Feet AMSL)	Depth (Feet BGS)	Sample Run Number	Recovery (Feet)	Stratigraphic Description	Lithology	Comments
				soil characteristics not logged		
345	20	7	1	orange/brown, sandy silt		
				soil characteristics not logged		
340	25	8	1.5	light-brown/gray, fine to medium sand and fine to medium gravel		rock present from 24 to 25 feet bgs
				soil characteristics not logged		
335	30	9	1	light-brown/gray, fine to medium sand and fine to medium gravel		
				soil characteristics not logged		
330	35	10	1	light-brown/gray, fine to medium sand and fine gravel		

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Remarks:

Client: ExxonMobil

Site Location: Former Virginia-Carolina Chem. Co.
Phosphate/Fertilizer Plant
Wadesboro, NC

Boring ID: WB-SB15

Borehole Depth: 40 Feet

Elevation (Feet AMSL)	Depth (Feet BGS)	Sample Run Number	Recovery (Feet)	Stratigraphic Description	Lithology	Comments
				soil characteristics not logged		
325	40			boring terminated at 40 feet bgs		

40

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Remarks:

Date Start/Finish: 4-16-01 **Drilling Company:** SAEDACCO **Driller's Name:** Rich Lemire **Sampling Method:** Split spoon **Auger Size:** 2-inch diameter macrocore	**Northing:** 7092.510 **Easting:** 3178.100 **Surface Elevation:** 362.33 Feet **Borehole Depth:** 38 Feet **Field Supervisor:** Brian Lovgren	**Boring ID:** WB-SB16 **Client:** ExxonMobil **Site:** Former Virginia-Carolina Chem. Co. Phosphate/Fertilizer Plant Wadesboro, NC

Elevation (Feet AMSL)	Depth (Feet BGS)	Sample Run Number	Recovery (Feet)	Stratigraphic Description	Lithology	Comments
365						
	0			ground surface		
		1	1	orange/brown, sandy silt with trace of fine gravel		
360		2	1.5	orange/brown, sandy silt with trace of fine gravel transition to light brown, fine to medium sand		
	5	3	2	light brown/brown/yellow, fine to medium sand to sandy silt		
355		4	2	orange/brown/grey, clayey silt with some fine sand		
		5	2	orange/brown/grey, clayey silt		
	10	6	2	orange/brown/black, clayey silt transition to fine sand and silt		
350				soil characteristics not logged		
	15	7	0.5	orange/brown, fine sand and silt		

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Remarks:

Client: ExxonMobil
Site Location: Former Virginia-Carolina Chem. Co.
Phosphate/Fertilizer Plant
Wadesboro, NC

Boring ID: WB-SB16

Borehole Depth: 38 Feet

Elevation (Feet AMSL)	Depth (Feet BGS)	Sample Run Number	Recovery (Feet)	Stratigraphic Description	Lithology	Comments
				soil characteristics not logged		
345						
	20	8	0.5	orange/brown, silt		20
				soil characteristics not logged		
340						
	25	9	0.4	orange/brown, silt		25
				soil characteristics not logged		
335						
	30	10	0.3	orange/brown, silt		30
				soil characteristics not logged		
330						
	35					35

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Remarks:

Client: ExxonMobil

Site Location: Former Virginia-Carolina Chem. Co.
Phosphate/Fertilizer Plant
Wadesboro, NC

Boring ID: WB-SB16

Borehole Depth: 38 Feet

Elevation (Feet AMSL)	Depth (Feet BGS)	Sample Run Number	Recovery (Feet)	Stratigraphic Description	Lithology	Comments
325				soil characteristics not logged		
				boring terminated at 38 feet bgs (auger refusal)		

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Remarks:

Date Start/Finish: 4-18-01 **Drilling Company:** BBL/SAEDACCO **Driller's Name:** Brian Lovgren/Tim Thomas **Sampling Method:** Bucket-type hand auger/Geoprobe **Auger Size:** 3-inch diameter/2-inch diameter	**Northing:** 7027.598 **Easting:** 3325.619 **Surface Elevation:** 366.22 Feet **Borehole Depth:** 10 Feet **Field Supervisor:** Brian Lovgren	**Boring ID:WB-SB17** **Client:** ExxonMobil **Site:** Former Virginia-Carolina Chem. Co. Phosphate/Fertilizer Plant Wadesboro, NC

Elevation (Feet AMSL)	Depth (Feet BGS)	Sample Run Number	Recovery (Feet)	Stratigraphic Description	Lithology	Comments
				ground surface		
	0	1	0.5	orange/brown, sandy silt		5-point composite sample
365				soil characteristics not logged		
		2	2	orange/brown, sandy silt		
	5	3	2	orange/brown, sandy silt		
360		4	2	orange/brown, sandy silt		
		5	2	orange/brown, sandy silt		
	10			boring terminated at 10 feet bgs		

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Remarks:

Date Start/Finish: 4-18-01 **Drilling Company:** BBL/SAEDACCO **Driller's Name:** Brian Lovgren/Tim Thomas **Sampling Method:** Bucket-type hand auger/Geoprobe **Auger Size:** 3-inch diameter/2-inch diameter	**Northing:** 6953.871 **Easting:** 3177.673 **Surface Elevation:** 357.55 Feet **Borehole Depth:** 10 Feet **Field Supervisor:** Brian Lovgren	**Boring ID:** WB-SB18 **Client:** ExxonMobil **Site:** Former Virginia-Carolina Chem. Co. Phosphate/Fertilizer Plant Wadesboro, NC

Elevation (Feet AMSL)	Depth (Feet BGS)	Sample Run Number	Recovery (Feet)	Stratigraphic Description	Lithology	Comments
360						
	0			ground surface		
		1	0.5	orange/brown, sandy silt		5-point composite sample
355		2	2	orange/brown, sandy silt		
	5	3	2	orange/brown, sandy silt		
350		4	2	orange/brown, sandy silt		
		5	2	orange/brown, sandy silt		
	10			boring terminated at 10 feet bgs		

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engineers & scientists

Remarks:

Date Start/Finish: 4-18-01 **Drilling Company:** SAEDACCO **Driller's Name:** Tim Thomas **Sampling Method:** Geoprobe **Auger Size:** 2-inch diameter	**Northing:** 7018.949 **Easting:** 3231.103 **Surface Elevation:** 365.94 Feet **Borehole Depth:** 10 Feet **Field Supervisor:** Brian Lovgren	**Boring ID:WB-SB19** **Client:** ExxonMobil **Site:** Former Virginia-Carolina Chem. Co. Phosphate/Fertilizer Plant Wadesboro, NC

Elevation (Feet AMSL)	Depth (Feet BGS)	Sample Run Number	Recovery (Feet)	Stratigraphic Description	Lithology	Comments
				ground surface		
	0	1	0.5	pure magenta soil		5-point composite sample
365				soil characteristics not logged		
		2	2	gray/orange/brown, sandy silt		
	5	3	2	gray/orange/brown, sandy silt, magenta soil at 4 to 4.5 feet bgs		
360		4	2	orange/brown, sandy silt		
		5	2	orange/brown, sandy silt		
	10			boring terminated at 10 feet bgs		
355						

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Remarks:

Date Start/Finish: 4/17/01-4/18/01 **Drilling Company:** BBL/SAEDACCO **Driller's Name:** Brian Lovgren/Tim Thomas **Sampling Method:** Bucket-type hand auger/Geoprobe **Auger Size:** 3-inch diameter/2-inch diameter	**Northing:** 7026.745 **Easting:** 3134.360 **Surface Elevation:** 359.87 Feet **Borehole Depth:** 10 Feet **Field Supervisor:** Brian Lovgren	**Boring ID:WB-SB20** **Client:** ExxonMobil **Site:** Former Virginia-Carolina Chem. Co. Phosphate/Fertilizer Plant Wadesboro, NC

Elevation (Feet AMSL)	Depth (Feet BGS)	Sample Run Number	Recovery (Feet)	Stratigraphic Description	Lithology	Comments
360	0			ground surface		
		1	0.5	black/brown, fine to medium sand and silt with gravel		5-point composite sample
				soil characterisitics not logged		
		2	2	orange/brown, sand and silt, magenta soil from 3.5 to 4 feet bgs		
355	5	3	2	orange/brown, sandy silt, magenta soil from 4 to 6 feet bgs		
		4	2	orange/brown, sandy silt		
		5	2	light-brown/brown/orange, sandy silt		
350	10			boring terminated at 10 feet bgs		

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Remarks:

Appendix B – Analytical Data Summary Tables

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Table B-1
Summary of Analytical Results for Soil Samples
Wadesboro VCC - Site Characterization Report

		Concentration in Sample:			
Analyte	Units	WB-SB01 0-0.5 ft bgs	WB-SB01 2-3.5 ft bgs	WB-SB02 0-0.5 ft bgs	WB-SB02 2-4 ft bgs
Aluminum	mg/kg	7370	9070	5930	3090
Antimony	mg/kg	1.0 UJ	0.96 U	0.90 U	1.0 U
Arsenic	mg/kg	6.5	3.5	7.4	2.1 B
Barium	mg/kg	38.5 B	29.0 B	37.2 B	28.0 B
Beryllium	mg/kg	0.17 U	0.13 B	0.19 U	0.11 U
Cadmium	mg/kg	0.13 U	0.13 U	0.25 B	0.14 U
Calcium	mg/kg	1280	91.0 B	2470	399 B
Chromium	mg/kg	30.1 J	15.3	30.2	5.8
Cobalt	mg/kg	2.3 B	2.1 B	5.8 B	3.0 B
Copper	mg/kg	11.4	10.0 J	18.5	5.1 U
Iron	mg/kg	21400	21900	16300	11400
Lead	mg/kg	119 J	11.0 J	52.3	7.9
Magnesium	mg/kg	774 B	1040 B	996 B	373 B
Manganese	mg/kg	138	94.2	208	319
Mercury	mg/kg	0.05 B	0.03 U	0.04 B	0.03 U
Nickel	mg/kg	10.6	5.3 B	19.6	3.5 B
Potassium	mg/kg	456 B	480 B	529 B	282 B
Selenium	mg/kg	0.96 U	0.92 U	0.86 U	0.99 U
Silver	mg/kg	0.18 U	0.17 U	0.16 U	0.18 U
Sodium	mg/kg	49.4 U	47.6 U	44.7 U	51.1 U
Thallium	mg/kg	1.1 U	1.1 B	0.98 U	1.1 U
Vanadium	mg/kg	22.4	23.1	15.0	10.9 B
Zinc	mg/kg	33.6 J	13.3 J	58.6 J	6.9
Field Measurements					
pH	S.U.	5.00	4.07	4.77	4.76

Notes:

\1 Blind field duplicate of sample WB-SB15 0-0.5 ft bgs

\2 Blind field duplicate of sample WB-SB15 2-4 ft bgs

\3 Blind field duplicate of sample WB-SB19 0-0.5 ft bgs

\4 Although these samples are labelled with a sediment sample labelling convention, these samples were collected in a dry drainage ditch and are actually soil samples and not sediment samples

Table B-1
Summary of Analytical Results for Soil Samples
Wadesboro VCC - Site Characterization Report

		Concentration in Sample:			
Analyte	Units	WB-SB03 0-0.5 ft bgs	WB-SB03 2-4 ft bgs	WB-SB04 0-0.5 ft bgs	WB-SB04 2-4 ft bgs
Aluminum	mg/kg	2930	14700	15300	15300
Antimony	mg/kg	0.96 U	1.1 U	1.0 UJ	1.0 UJ
Arsenic	mg/kg	1.9 B	5.7	8.3	4.4
Barium	mg/kg	16.2 B	49.6	107	62.6
Beryllium	mg/kg	0.06 U	0.39 B	0.70 B	0.42 B
Cadmium	mg/kg	0.13 U	0.15 U	1.4	0.13 U
Calcium	mg/kg	2780	1950	67100	2450
Chromium	mg/kg	9.2	26.6	26.6 J	18.9 J
Cobalt	mg/kg	2.0 B	7.0 B	6.1 B	8.0 B
Copper	mg/kg	8.3	22.0	62.0	18.5
Iron	mg/kg	5430	28300	19800	24400
Lead	mg/kg	13.3	19.4	116 J	20.4 J
Magnesium	mg/kg	774 B	3520	2020	4100
Manganese	mg/kg	263	265	287	277
Mercury	mg/kg	0.04 B	0.03 U	0.08	0.03 U
Nickel	mg/kg	7.2 B	16.8	12.6	18.4
Potassium	mg/kg	348 B	1020 B	1450	816 B
Selenium	mg/kg	0.92 U	1.1 U	0.99 U	0.95 U
Silver	mg/kg	0.17 U	0.20 U	0.18 U	0.18 U
Sodium	mg/kg	47.6 U	116 B	485 B	49.3 U
Thallium	mg/kg	1.0 U	1.2 U	1.1 U	1.1 U
Vanadium	mg/kg	6.0 B	26.2	30.1	25.3
Zinc	mg/kg	27.4 J	47.4 J	88.5 J	38.7 J
Field Measurements					
pH	S.U.	5.96	3.95	5.48	4.21

Notes:
\1 Blind field duplicate of sample WB-SB15 0-0.5 ft bgs
\2 Blind field duplicate of sample WB-SB15 2-4 ft bgs
\3 Blind field duplicate of sample WB-SB19 0-0.5 ft bgs
\4 Although these samples are labelled with a sediment sample labelling convention, these samples were collected in a dry drainage ditch and are actually soil samples and not sediment samples

Table B-1
Summary of Analytical Results for Soil Samples
Wadesboro VCC - Site Characterization Report

Analyte	Units	Concentration in Sample: WB-SB05 0-0.5 ft bgs	WB-SB05 2-4 ft bgs	WB-SB06 0-0.5 ft bgs	WB-SB06 2-4 ft bgs
Aluminum	mg/kg	13100	12600	21600	12500
Antimony	mg/kg	1.1 UJ	1.0 UJ	1.2 UJ	1.1 UJ
Arsenic	mg/kg	4.4	4.0	9.6	4.0
Barium	mg/kg	71.5	54.0	65.5	48.9 B
Beryllium	mg/kg	0.48 B	0.61 B	0.37 B	0.24 B
Cadmium	mg/kg	0.14 U	0.14 U	0.16 U	0.15 U
Calcium	mg/kg	11200	665 B	15600	378 B
Chromium	mg/kg	16.5 J	14.3 J	29.0 J	15.7 J
Cobalt	mg/kg	10.6 B	16.5	4.3 B	4.4 B
Copper	mg/kg	14.8	15.9	16.0	7.6
Iron	mg/kg	16300	20500	34000	20200
Lead	mg/kg	15.7 J	21.7 J	18.7 J	12.5 J
Magnesium	mg/kg	4410	5280	2590	1270
Manganese	mg/kg	394	598	144	136
Mercury	mg/kg	0.03 U	0.03 U	0.05 B	0.04 B
Nickel	mg/kg	19.7	24.4	10.5 B	5.8 B
Potassium	mg/kg	1230	1250	1850	786 B
Selenium	mg/kg	1.0 U	0.99 U	1.1 U	1.1 U
Silver	mg/kg	0.19 U	0.18 U	0.21 U	0.20 U
Sodium	mg/kg	53.0 U	51.1 U	63.7 B	54.9 U
Thallium	mg/kg	1.2 U	1.1 U	1.3 U	1.2 U
Vanadium	mg/kg	17.8	19.7	43.4	25.5
Zinc	mg/kg	48.2 J	49.8 J	33.5 J	12.4 J
Field Measurements					
pH	S.U.	7.85	4.57	6.65	4.37

Notes:

\1 Blind field duplicate of sample WB-SB15 0-0.5 ft bgs

\2 Blind field duplicate of sample WB-SB15 2-4 ft bgs

\3 Blind field duplicate of sample WB-SB19 0-0.5 ft bgs

\4 Although these samples are labelled with a sediment sample labelling convention, these samples were collected in a dry drainage ditch and are actually soil samples and not sediment samples

Table B-1
Summary of Analytical Results for Soil Samples
Wadesboro VCC - Site Characterization Report

		Concentration in Sample:			
Analyte	Units	WB-SB07 0-0.5 ft bgs	WB-SB07 2-3.5 ft bgs	WB-SB08 0-0.5 ft bgs	WB-SB08 2-4 ft bgs
Aluminum	mg/kg	5150	4810	5470	9170
Antimony	mg/kg	1.0 U	0.94 U	1.1 U	0.95 U
Arsenic	mg/kg	5.5	3.9	5.0	3.0
Barium	mg/kg	36.6 B	11.5 B	139	22.9 B
Beryllium	mg/kg	0.12 B	0.07 B	0.28 B	0.11 B
Cadmium	mg/kg	0.14 U	0.13 U	0.31 B	0.13 U
Calcium	mg/kg	1310	65.6 B	2410	124 B
Chromium	mg/kg	9.8	11.0	8.6	12.2
Cobalt	mg/kg	1.3 B	0.41 B	3.3 B	1.6 B
Copper	mg/kg	14.7 J	4.6 BJ	19.6	5.5
Iron	mg/kg	9520	18400	9000	13300
Lead	mg/kg	33.5 J	8.0 J	121	5.0
Magnesium	mg/kg	356 B	195 B	469 B	484 B
Manganese	mg/kg	48.3	56.3	142	17.2
Mercury	mg/kg	0.09	0.03 U	0.08	0.03 U
Nickel	mg/kg	4.0 B	1.7 B	4.9 B	2.5 B
Potassium	mg/kg	308 B	176 B	318 B	248 B
Selenium	mg/kg	1.0 U	0.90 U	1.2 B	0.91 U
Silver	mg/kg	0.19 U	0.17 U	0.19 U	0.17 U
Sodium	mg/kg	51.7 U	46.5 U	61.4 B	47.0 U
Thallium	mg/kg	1.1 U	1.0 U	1.2 U	1.0 U
Vanadium	mg/kg	14.0	25.7	11.6 B	22.6
Zinc	mg/kg	24.6 J	3.6 B	87.4 J	8.8
Field Measurements					
pH	S.U.	4.60	3.37	4.95	4.81

Notes:

\1 Blind field duplicate of sample WB-SB15 0-0.5 ft bgs

\2 Blind field duplicate of sample WB-SB15 2-4 ft bgs

\3 Blind field duplicate of sample WB-SB19 0-0.5 ft bgs

\4 Although these samples are labelled with a sediment sample labelling convention, these samples were collected in a dry drainage ditch and are actually soil samples and not sediment samples

Table B-1
Summary of Analytical Results for Soil Samples
Wadesboro VCC - Site Characterization Report

		Concentration in Sample:			
Analyte	Units	WB-SB09 0-0.5 ft bgs	WB-SB09 2-4 ft bgs	WB-SB10 0-0.5 ft bgs	WB-SB10 2-4 ft bgs
Aluminum	mg/kg	9270 J	15900	11400	14400
Antimony	mg/kg	3.5 BJ	1.0 U	5.8 BJ	1.0 UJ
Arsenic	mg/kg	14.8 J	7.3	10.9	7.8
Barium	mg/kg	87.4	51.6	126	32.7 B
Beryllium	mg/kg	0.39 B	0.26 B	0.99 B	0.16 B
Cadmium	mg/kg	1.2 J	0.14 U	4.3	0.13 U
Calcium	mg/kg	81700 J	1320	139000	5140
Chromium	mg/kg	27.7 J	21.3	76.9 J	29.0 J
Cobalt	mg/kg	8.2 B	4.4 B	4.1 B	2.6 B
Copper	mg/kg	22.7	22.8	349	30.7
Iron	mg/kg	10700 J	31600	24100	36600
Lead	mg/kg	1370 J	35.2	643 J	23.1 J
Magnesium	mg/kg	787 B	2120	1120	1040 B
Manganese	mg/kg	279	236	620	65.2
Mercury	mg/kg	1.1 J	0.04 B	0.27	0.05 B
Nickel	mg/kg	40.6 J	9.6	18.3	4.6 B
Potassium	mg/kg	903 B	602 B	1410	626 B
Selenium	mg/kg	9.3 J	0.98 U	0.93 U	0.95 U
Silver	mg/kg	0.17 U	0.18 U	0.28 B	0.18 U
Sodium	mg/kg	189 B	50.5 U	826 B	49.3 U
Thallium	mg/kg	1.1 U	1.1 U	1.1 U	1.1 U
Vanadium	mg/kg	30.2 J	38.7	34.4	47.7
Zinc	mg/kg	88.8 J	27.7 J	276 J	56.3 J
Field Measurements					
pH	S.U.	4.90	4.12	4.62	4.17

Notes:

\1 Blind field duplicate of sample WB-SB15 0-0.5 ft bgs

\2 Blind field duplicate of sample WB-SB15 2-4 ft bgs

\3 Blind field duplicate of sample WB-SB19 0-0.5 ft bgs

\4 Although these samples are labelled with a sediment sample labelling convention, these samples were collected in a dry drainage ditch and are actually soil samples and not sediment samples

Table B-1
Summary of Analytical Results for Soil Samples
Wadesboro VCC - Site Characterization Report

		Concentration in Sample:			
Analyte	Units	WB-SB11 0-0.5 ft bgs	WB-SB11 2-4 ft bgs	WB-SB12 0-0.5 ft bgs	WB-SB12 2-4 ft bgs
Aluminum	mg/kg	15000	14400 J	12500	3740
Antimony	mg/kg	10.4 BJ	1.0 UJ	1.1 BJ	1.2 UJ
Arsenic	mg/kg	33.7	8.6 J	8.5	14.9
Barium	mg/kg	185	54.7	109	131
Beryllium	mg/kg	0.69 B	0.30 B	0.38 B	0.08 BU
Cadmium	mg/kg	1.5	R	0.74 B	0.23 B
Calcium	mg/kg	112000	1010 BJ	17700	2900
Chromium	mg/kg	34.8 J	20.3 J	16.0 J	3.6 J
Cobalt	mg/kg	4.8 B	6.3 B	6.8 B	0.59 B
Copper	mg/kg	80.6	24.6	106	8.5
Iron	mg/kg	30000	30300 J	23700	6710
Lead	mg/kg	8520 J	15.3 J	32100 J	105 J
Magnesium	mg/kg	2090	3470	2030	377 B
Manganese	mg/kg	168	303	149	57.0
Mercury	mg/kg	2.6	0.03 U	0.17	0.16
Nickel	mg/kg	15.3	14.0 J	11.7	1.1 B
Potassium	mg/kg	1730	1210	834 B	804 B
Selenium	mg/kg	6.8	0.97 UJ	0.93 U	6.5
Silver	mg/kg	0.84 B	0.18 U	2.1 B	0.21 U
Sodium	mg/kg	1590	49.9 U	48.1 U	58.5 U
Thallium	mg/kg	1.1 U	1.1 UJ	1.1 U	1.3 U
Vanadium	mg/kg	56.9	33.1 J	20.5	5.3 B
Zinc	mg/kg	366 J	40.9 J	134 J	67.2 J
Field Measurements					
pH	S.U.	4.50	3.23	4.41	3.75

Notes:

\1 Blind field duplicate of sample WB-SB15 0-0.5 ft bgs

\2 Blind field duplicate of sample WB-SB15 2-4 ft bgs

\3 Blind field duplicate of sample WB-SB19 0-0.5 ft bgs

\4 Although these samples are labelled with a sediment sample labelling convention, these samples were collected in a dry drainage ditch and are actually soil samples and not sediment samples

Table B-1
Summary of Analytical Results for Soil Samples
Wadesboro VCC - Site Characterization Report

Analyte	Units	Concentration in Sample: WB-SB13 0-0.5 ft bgs	WB-SB13 2-4 ft bgs	WB-SB14 0-0.5 ft bgs	WB-SB14 2-4 ft bgs
Aluminum	mg/kg	5880	13000	10000	14600
Antimony	mg/kg	1.9 BJ	1.0 UJ	10.8 BJ	0.99 UJ
Arsenic	mg/kg	54.8	4.1	84.1	8.3
Barium	mg/kg	73.3	50.9	672	44.1
Beryllium	mg/kg	0.07 BU	0.32 B	0.70 B	0.28 B
Cadmium	mg/kg	0.16 U	0.14 U	5.0	0.33 B
Calcium	mg/kg	19200	907 B	84500	900 B
Chromium	mg/kg	14.2 J	17.8 J	23.3 J	29.6 J
Cobalt	mg/kg	5.9 B	4.3 B	12.0	4.8 B
Copper	mg/kg	78.7	58.3	480	74.9
Iron	mg/kg	136000	23100	54200	35800
Lead	mg/kg	453 J	7.7 J	1720 J	17.6 J
Magnesium	mg/kg	794 B	1370	1400	1810
Manganese	mg/kg	627	87.6	159	122
Mercury	mg/kg	0.11	0.03 B	0.34	0.03 B
Nickel	mg/kg	7.4 B	7.3 B	8.3	7.7 B
Potassium	mg/kg	518 B	600 B	1150	682 B
Selenium	mg/kg	1.2 U	0.98 U	2.0	0.94 U
Silver	mg/kg	0.43 B	0.18 U	2.5	0.18 U
Sodium	mg/kg	203 B	50.5 U	813 B	48.7 U
Thallium	mg/kg	1.3 U	1.1 U	1.0 U	1.1 U
Vanadium	mg/kg	15.2	30.8	34.8	45.5
Zinc	mg/kg	111 J	61.7 J	638 J	309 J
Field Measurements					
pH	S.U.	7.01	3.99	5.31	3.50

Notes:

\1 Blind field duplicate of sample WB-SB15 0-0.5 ft bgs

\2 Blind field duplicate of sample WB-SB15 2-4 ft bgs

\3 Blind field duplicate of sample WB-SB19 0-0.5 ft bgs

\4 Although these samples are labelled with a sediment sample labelling convention, these samples were collected in a dry drainage ditch and are actually soil samples and not sediment samples

Table B-1
Summary of Analytical Results for Soil Samples
Wadesboro VCC - Site Characterization Report

		Concentration in Sample:			
Analyte	Units	WB-SB15 0-0.5 ft bgs	WB-SB91\1 0-0.5 ft bgs	WB-SB15 2-4 ft bgs	WB-SB90\2 2-4 ft bgs
Aluminum	mg/kg	4180	3940	3630	2600
Antimony	mg/kg	2.6 B	2.4 BJ	1.3 U	1.2 U
Arsenic	mg/kg	25.6	21.2	91.2	55.1
Barium	mg/kg	303	285	67.9	213
Beryllium	mg/kg	0.03 U	0.06 B	0.03 B	0.03 U
Cadmium	mg/kg	0.29 B	0.15 U	0.17 U	0.24 B
Calcium	mg/kg	525 B	1240 B	509 B	390 B
Chromium	mg/kg	5.7	5.9 J	6.4	4.2
Cobalt	mg/kg	3.8 B	3.7 B	1.1 B	2.0 B
Copper	mg/kg	81.3	86.4	12.8 J	28.8 J
Iron	mg/kg	33600	32100	54400	59200
Lead	mg/kg	1410	1490 J	54.7 J	550 J
Magnesium	mg/kg	296 B	264 B	446 B	254 B
Manganese	mg/kg	27.5	23.1	113	81.0
Mercury	mg/kg	0.18	0.13	0.03 U	0.04 U
Nickel	mg/kg	1.5 B	1.7 B	1.9 B	0.99 B
Potassium	mg/kg	498 B	418 B	2730	1740
Selenium	mg/kg	1.9	1.1 U	1.2 U	2.5
Silver	mg/kg	1.5 B	1.8 B	0.23 U	0.90 B
Sodium	mg/kg	501 B	427 B	4310	4110
Thallium	mg/kg	1.3 B	1.2 U	1.4 U	1.3 U
Vanadium	mg/kg	9.5 B	8.6 B	10.0 B	6.4 B
Zinc	mg/kg	105 J	49.7 J	38.3 J	108 J
Field Measurements					
pH	S.U.	3.33	3.62	3.27	2.81

Notes:

\1 Blind field duplicate of sample WB-SB15 0-0.5 ft bgs

\2 Blind field duplicate of sample WB-SB15 2-4 ft bgs

\3 Blind field duplicate of sample WB-SB19 0-0.5 ft bgs

\4 Although these samples are labelled with a sediment sample labelling convention, these samples were collected in a dry drainage ditch and are actually soil samples and not sediment samples

Table B-1
Summary of Analytical Results for Soil Samples
Wadesboro VCC - Site Characterization Report

Analyte	Units	Concentration in Sample: WB-SB15 4-6 ft bgs	WB-SB16 0-0.5 ft bgs	WB-SB16 2-4 ft bgs	WB-SB17 0-0.5 ft bgs
Aluminum	mg/kg	14500	14100	9840	10900
Antimony	mg/kg	1.1 UJ	4.9 B	0.97 U	1.8 BJ
Arsenic	mg/kg	6.4	44.6	4.7	34.2 J
Barium	mg/kg	42.2 B	280	32.8 B	114
Beryllium	mg/kg	0.27 B	0.50 B	0.17 B	0.22 B
Cadmium	mg/kg	0.44 B	2.8	0.20 B	0.16 U
Calcium	mg/kg	267 B	47600	265 B	620 B
Chromium	mg/kg	23.9	30.1	17.8	18.0
Cobalt	mg/kg	6.3 B	8.0 B	3.3 B	7.1 B
Copper	mg/kg	56.0	241	114 J	180
Iron	mg/kg	27300	43900	20700	40200
Lead	mg/kg	15.1 J	664	8.4 J	658 J
Magnesium	mg/kg	3930	1690	1290	1110 B
Manganese	mg/kg	237	268	93.6	132
Mercury	mg/kg	0.03 UJ	0.08	0.06	0.07
Nickel	mg/kg	14.5	10.8	5.7 B	6.3 B
Potassium	mg/kg	645 B	1400	481 B	680 B
Selenium	mg/kg	1.1 U	2.2	0.93 U	1.1 U
Silver	mg/kg	0.20 U	0.65 B	0.17 U	0.41 U
Sodium	mg/kg	1200 B	324 B	48.1 U	86.7 B
Thallium	mg/kg	1.2 U	1.1 U	1.1 U	2.0 B
Vanadium	mg/kg	38.3	40.9	28.0	32.8
Zinc	mg/kg	46.0 J	355 J	95.2 J	184 J
Field Measurements					
pH	S.U.	4.69	5.37	3.89	3.81

Notes:

\1 Blind field duplicate of sample WB-SB15 0-0.5 ft bgs

\2 Blind field duplicate of sample WB-SB15 2-4 ft bgs

\3 Blind field duplicate of sample WB-SB19 0-0.5 ft bgs

\4 Although these samples are labelled with a sediment sample labelling convention, these samples were collected in a dry drainage ditch and are actually soil samples and not sediment samples

Table B-1
Summary of Analytical Results for Soil Samples
Wadesboro VCC - Site Characterization Report

		Concentration in Sample:			
Analyte	Units	WB-SB17 2-4 ft bgs	WB-SB18 0-0.5 ft bgs	WB-SB18 2-4 ft bgs	WB-SB19 0-0.5 ft bgs
Aluminum	mg/kg	11100	8110 J	8770	782 J
Antimony	mg/kg	1.0 UJ	1.1 BJ	1.0 UJ	32.3 J
Arsenic	mg/kg	6.4	20.3 J	3.5	112 J
Barium	mg/kg	65.4	138	19.1 B	450
Beryllium	mg/kg	0.30 B	0.43 B	0.17 B	0.02 U
Cadmium	mg/kg	0.14 U	0.41 BJ	0.13 U	0.97 BJ
Calcium	mg/kg	193 B	3220 J	375 B	218 BJ
Chromium	mg/kg	21.5 J	13.1 J	16.2 J	2.2 BJ
Cobalt	mg/kg	4.5 B	15.5	3.5 B	15.6
Copper	mg/kg	24.1	229	8.5	221
Iron	mg/kg	30400	31800 J	33800	162000 J
Lead	mg/kg	20.7 J	174 J	8.5 J	19800 J
Magnesium	mg/kg	1830	1000 B	1030 B	94.5 B
Manganese	mg/kg	182	263	81.7	29.5
Mercury	mg/kg	0.03 U	0.04 BJ	0.03 U	0.78 J
Nickel	mg/kg	8.2 B	9.8 J	3.9 B	1.3 BJ
Potassium	mg/kg	686 B	441 B	310 B	593 B
Selenium	mg/kg	1.0 U	1.0 BJ	0.97 U	4.9 J
Silver	mg/kg	0.19 U	0.46 B	0.18 U	12.1
Sodium	mg/kg	51.7 U	153 B	50.6 B	3920
Thallium	mg/kg	1.1 U	1.1 U	1.1 U	3.9
Vanadium	mg/kg	37.5	18.4 J	22.7	4.3 BJ
Zinc	mg/kg	28.5 J	362 J	43.6 J	624 J
Field Measurements					
pH	S.U.	3.11	3.65	3.48	3.33

Notes:

\1 Blind field duplicate of sample WB-SB15 0-0.5 ft bgs

\2 Blind field duplicate of sample WB-SB15 2-4 ft bgs

\3 Blind field duplicate of sample WB-SB19 0-0.5 ft bgs

\4 Although these samples are labelled with a sediment sample labelling convention, these samples were collected in a dry drainage ditch and are actually soil samples and not sediment samples

Table B-1
Summary of Analytical Results for Soil Samples
Wadesboro VCC - Site Characterization Report

		Concentration in Sample:			
Analyte	Units	WB-SB92[\3] 0-0.5 ft bgs	WB-SB19 2-4 ft bgs	WB-SB19 4-6 ft bgs	WB-SB20 0-0.5 ft bgs
Aluminum	mg/kg	844 J	11000 J	12700	11100
Antimony	mg/kg	35.4 J	1.0 UJ	1.0 UJ	4.4 B
Arsenic	mg/kg	122 J	38.9 J	6.2	14.2
Barium	mg/kg	340	61.4	51.4	139
Beryllium	mg/kg	0.02 U	0.23 B	0.29 B	0.61 B
Cadmium	mg/kg	1.7 J	R	0.94 B	2.7
Calcium	mg/kg	284 BJ	283 BJ	281 B	68600
Chromium	mg/kg	3.1 J	22.9 J	19.1	32.4
Cobalt	mg/kg	17.4	4.3 B	5.6 B	5.4 B
Copper	mg/kg	258	933	229	104
Iron	mg/kg	158000 J	21100 J	20300	25400
Lead	mg/kg	80300 J	19.1 J	194	162
Magnesium	mg/kg	84.5 B	1430	1160	2590
Manganese	mg/kg	28.1	135	97.3	148
Mercury	mg/kg	0.90 J	0.03 U	0.03 UJ	0.05 B
Nickel	mg/kg	1.9 BJ	6.7 BJ	6.3 B	16.1
Potassium	mg/kg	735 B	1210	535 B	805 B
Selenium	mg/kg	5.9 J	0.95 UJ	0.99 U	1.1 B
Silver	mg/kg	12.7	0.18 U	0.21 B	0.18 U
Sodium	mg/kg	3730	1580	2620	504 B
Thallium	mg/kg	3.8	1.1 U	1.1 U	1.1 U
Vanadium	mg/kg	4.7 BJ	32.5 J	30.2	31.9
Zinc	mg/kg	686 J	58.6 J	103 J	242 J
Field Measurements					
pH	S.U.	3.00	2.91	3.86	6.80

Notes:

\1 Blind field duplicate of sample WB-SB15 0-0.5 ft bgs

\2 Blind field duplicate of sample WB-SB15 2-4 ft bgs

\3 Blind field duplicate of sample WB-SB19 0-0.5 ft bgs

\4 Although these samples are labelled with a sediment sample labelling convention, these samples were collected in a dry drainage ditch and are actually soil samples and not sediment samples

Table B-1
Summary of Analytical Results for Soil Samples
Wadesboro VCC - Site Characterization Report

		Concentration in Sample:			
Analyte	Units	WB-SB20 2-4 ft bgs	WB-SB20 4-6 ft bgs	WB-SD03\4	WB-SD04\4
Aluminum	mg/kg	8220	9210	13100	17000 J
Antimony	mg/kg	6.8 BJ	4.0 BJ	2.1 B	2.5 UJ
Arsenic	mg/kg	72.4	21.6	17.7	51.0 J
Barium	mg/kg	403	159	47.6 B	40.0 B
Beryllium	mg/kg	0.55 B	0.61 B	0.23 B	0.26 B
Cadmium	mg/kg	3.6	3.2	0.18 U	R
Calcium	mg/kg	50500	55000	1100 B	1870 BJ
Chromium	mg/kg	17.0 J	24.4	11.4	25.1 J
Cobalt	mg/kg	19.8	8.9 B	1.9 B	3.7 B
Copper	mg/kg	650	243	263	316
Iron	mg/kg	71300	30600	12200	101000 J
Lead	mg/kg	478 J	147	408	611 J
Magnesium	mg/kg	1920	1140	614 B	757 B
Manganese	mg/kg	123	124	39.7	89.8
Mercury	mg/kg	0.10	0.04 BJ	0.09	0.13 J
Nickel	mg/kg	10.0	9.3	4 B	8.1 BJ
Potassium	mg/kg	871 B	681 B	588 B	606 B
Selenium	mg/kg	2.1	1.5	1.3 U	2.4 UJ
Silver	mg/kg	2.5	0.49 B	0.25 B	0.70 B
Sodium	mg/kg	410 B	486 B	65.2 U	124 U
Thallium	mg/kg	1.2 B	1.0 U	1.4 U	2.7 U
Vanadium	mg/kg	24.3	26.3	17.7	29.4 J
Zinc	mg/kg	652 J	300 J	88.2 J	157 J
Field Measurements					
pH	S.U.	4.85	5.80	4.58	4.11

Notes:

\1 Blind field duplicate of sample WB-SB15 0-0.5 ft bgs

\2 Blind field duplicate of sample WB-SB15 2-4 ft bgs

\3 Blind field duplicate of sample WB-SB19 0-0.5 ft bgs

\4 Although these samples are labelled with a sediment sample labelling convention, these samples were collected in a dry drainage ditch and are actually soil samples and not sediment samples

Table B-2
Summary of Analytical Results for Sediment Samples
Wadesboro VCC - Site Characterization Report

Analyte	Units	Concentration in Sample: WB-SD01	WB-SD02	WB-SD99[1]
Aluminum	mg/kg	1740	7130	7370
Antimony	mg/kg	1.1 U	1.5 U	1.7 U
Arsenic	mg/kg	1.5 B	5.5	4.8
Barium	mg/kg	21.2 B	75.0	76.0
Beryllium	mg/kg	0.15 B	0.29 B	0.32 B
Cadmium	mg/kg	0.15 U	0.21 U	0.23 U
Calcium	mg/kg	330 B	1240 B	1300 B
Chromium	mg/kg	4.4	13.0	14.7
Cobalt	mg/kg	1.9 B	6.6 B	6.9 B
Copper	mg/kg	2.8 B	14.3	14.0
Iron	mg/kg	6570	16300	17700
Lead	mg/kg	4.2	11.9	13.0
Magnesium	mg/kg	391 B	1190 B	1340 B
Manganese	mg/kg	66.4	247	258
Mercury	mg/kg	0.03 U	0.06 B	0.05 B
Nickel	mg/kg	2.7 B	8.9 B	9.0 B
Potassium	mg/kg	180 B	571 B	573 B
Selenium	mg/kg	1.0 U	1.5 U	1.6 U
Silver	mg/kg	0.20 U	0.27 U	0.30 U
Sodium	mg/kg	54.2 U	76.3 U	84.2 U
Thallium	mg/kg	1.2 U	1.8 B	1.9 U
Vanadium	mg/kg	8.7 B	21.1	23.4
Zinc	mg/kg	37.2 J	189 J	173 J
Field Measurements				
pH	S.U.	6.81	6.60	6.43

Notes:

\1 Blind field duplicate of sample WB-SD02

Table B-3
Summary of Analytical Results for Groundwater Samples
Wadesboro VCC - Site Characterization Report

Analyte	Units	Concentration in Sample: WB-MW1	WB-MW2	WB-MW3	WB-MW90[1]
Aluminum	µg/L	52600 J	84600 J	400 J	377 J
Antimony	µg/L	22.5 U	22.5 U	4.5 U	4.5 U
Arsenic	µg/L	15.0 U	15.0 U	3.0 U	3.0 U
Barium	µg/L	31.0 B	37.7 B	198 B	199 B
Beryllium	µg/L	10.8 B	11.5 B	0.10 U	0.10 U
Cadmium	µg/L	10.1 BJ	27.8 J	0.60 U	0.60 U
Calcium	µg/L	565000	415000	260000	261000
Chromium	µg/L	2.5 U	9.0 U	0.79 U	0.50 U
Cobalt	µg/L	631	996	2.2 B	2.0 B
Copper	µg/L	54.5 B	998	2.5 U	1.8 B
Iron	µg/L	575	60700	469	403
Lead	µg/L	11.5 U	10.3 U	2.6 B	1.9 U
Magnesium	µg/L	277000	214000	48000	48100
Manganese	µg/L	28700	53900	1740	1760
Mercury	µg/L	0.10 U	0.10 U	0.10 U	0.10 U
Nickel	µg/L	498	505	5.1 B	4.2 B
Potassium	µg/L	6320 B	7500 B	6290	6120
Selenium	µg/L	R	R	R	R
Silver	µg/L	4.0 U	4.0 U	0.80 U	0.80 U
Sodium	µg/L	57400	1350000	36400	36200
Thallium	µg/L	24.5 UJ	24.5 UJ	6.0 BJ	4.9 UJ
Vanadium	µg/L	4.0 U	12.3 B	1.1 U	1.2 U
Zinc	µg/L	1480	4630	1.8 B	1.8 B
Field Measurements					
pH	S.U.	4.59	4.62	6.88	6.88
Temperature	°C	14.23	15.37	15.51	15.51
Conductivity	mS/cm	3.95	4.62	1.53	1.53
Dissolved Oxygen	mg/L	2.83	1.42	2.34	2.34
ORP	mV	520	353	305	305
Flow	mL/min	350	200	200	200
Turbidity	--	clear	v. slight	clear	clear

Notes:

\1 Blind field duplicate of sample WB-MW3

Table B-4
Summary of Analytical Results for Surface Water Samples
Wadesboro VCC - Site Characterization Report

Analyte	Units	Concentration in Sample: WB-SW01	WB-SW02	WB-SW99[1]
TAL Metals				
Aluminum	µg/L	265	344	353
Antimony	µg/L	4.5 U	4.5 U	4.5 U
Arsenic	µg/L	3.0 U	3.0 U	3.0 U
Barium	µg/L	80.2 B	80.3 B	79.3 B
Beryllium	µg/L	0.10 U	0.10 U	0.10 U
Cadmium	µg/L	0.60 U	0.60 U	0.60 U
Calcium	µg/L	18500	20500	21200
Chromium	µg/L	0.80 U	0.50 U	0.51 U
Cobalt	µg/L	0.70 U	0.90 B	0.89 B
Copper	µg/L	1.0 U	1.9 U	1.5 U
Iron	µg/L	1250	1150	1200
Lead	µg/L	1.9 U	1.9 U	1.9 U
Magnesium	µg/L	5360	5580	5790
Manganese	µg/L	76.4	111	116
Mercury	µg/L	0.10 U	0.10 U	0.10 U
Nickel	µg/L	1.6 U	2.5 B	2.5 B
Potassium	µg/L	1500 B	1560 B	1610 B
Selenium	µg/L	4.3 U	4.3 U	4.3 U
Silver	µg/L	0.80 U	0.80 U	0.80 U
Sodium	µg/L	12300	12700	13200
Thallium	µg/L	4.9 U	4.9 U	4.9 U
Vanadium	µg/L	0.97 U	1.2 U	1.2 U
Zinc	µg/L	12.4 B	21.7	23.5
Water Quality Parameters				
pH	S.U.	8.27	7.90	NM
Temperature	°C	22.95	22.46	NM
Specific Conductance	mS/cm	0.184	0.189	NM
Dissolved Oxygen	mg/L	6.34	6.51	NM
Oxidation/Reduction Potential	mV	280	375	NM

Notes:

\1 Blind field duplicate of sample WB-SW02

NM = not measured

Table B-5
Summary of Analytical Results for Field QC Samples
Wadesboro VCC - Site Characterization Report

		Concentration in Sample:					
Analyte	Units	WB-EBSD 041601	WB-EBSB 041601	WB-EBSB 041701	WB-EBSB 041801	WB-EBSD 041801	WB-EBGW 042601
Aluminum	µg/L	38.8 U	215	387	292	209	25.1 BU
Antimony	µg/L	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U
Arsenic	µg/L	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U
Barium	µg/L	0.74 U	0.50 U	4.5 U	0.50 U	1.5 U	0.50 U
Beryllium	µg/L	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Cadmium	µg/L	0.60 U	0.60 U	0.60 U	0.60 U	0.60 U	0.60 U
Calcium	µg/L	170 B	243 B	1040 B	151 B	273 B	212 B
Chromium	µg/L	0.50 U	8.7 B	17.0	2.2 U	45.9	0.50 U
Cobalt	µg/L	0.70 U	0.70 U	0.70 U	0.70 U	0.70 U	0.70 U
Copper	µg/L	1.0 U	22.3 B	3.7 U	1.3 U	1.8 U	1.0 U
Iron	µg/L	22.4 U	392	777	223	796	10.8 U
Lead	µg/L	1.9 U	1.9 U	269	4.2 J	8.1	1.9 U
Magnesium	µg/L	18.8 B	19.1 U	87.0 B	12.0 U	33.0 U	34.0 U
Manganese	µg/L	8.9 B	40.6	28.9	11.2 B	89.6	0.88 U
Mercury	µg/L	0.10 U	0.10 U	0.20 B	0.10 U	0.10 U	0.10 U
Nickel	µg/L	1.6 U	11.0 B	16.1 B	4.4 B	6.1 B	1.6 U
Potassium	µg/L	17.1 U	27.2 B	77.9 B	17.4 B	40.0 B	17.1 U
Selenium	µg/L	4.3 U	4.3 U	4.3 U	4.3 U	4.3 U	R
Silver	µg/L	0.80 U	0.80 U	0.80 U	0.80 U	0.80 U	0.80 U
Sodium	µg/L	296 B	507 B	485 B	281 B	456 B	428 B
Thallium	µg/L	4.9 U	4.9 U	4.9 U	4.9 U	4.9 U	4.9 UJ
Vanadium	µg/L	0.80 U	0.80 U	0.86 U	0.80 U	0.80 U	0.80 U
Zinc	µg/L	2.2 B	128	267	3.9 B	8.6 B	1.1 U