SONOCO

May 29, 2014

Sent Via Fed Ex

SCDHEC – BLWM
Solid Waste Enforcement
Attn: Beverly McLeod
2600 Bull Street
Columbia, South Carolina 29201-1708

Re: Consent Agreement 13-04-SW
Phase I Baseline Investigation Report

Dear Ms. McLeod:

Sonoco Products Company is pleased to submit this Phase I Baseline Investigation Report per the requirements stipulated in the Consent Agreement 13-04-SW and the Work plan approved by DHEC December 6, 2013.

Please e-mail me at cliff.chamblee@sonoco.com if you have any concerns about this report.

Sincerely,

Cliff Chamblee
Sonoco Products Company

cc: John Boyd, Esq. (Haynsworth Sinkler Boyd)

GEL Engineering LLC

Environmental | Engineering | Surveying

Phase I Baseline Investigation Report
Boiler Ash Staging Area

Consent Agreement 13-04-SW

Submitted to:
Bureau of Land and Waste Management
South Carolina Department of Health & Environmental Control
2600 Bull Street
Columbia, South Carolina 29201

Submitted for:
Sonoco Products Company
1 N. Second Street
Hartsville, South Carolina 29550

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Sonoco Products Company
Hartsville, South Carolina

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LIST OF COMMON ACRONYMS

BGS	Below Ground Surface
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
COC	Constituent of Concern
DQO	Data Quality Objectives
ESA	Environmental Site Assessment
GC/MS	Gas Chromatography/Mass Spectrometry
GIS	Geographic Information System
HASP	Health and Safety Plan
HSA	Hollow Stem Auger
IDW	Investigation Derived Waste
µg/Kg	Micrograms per Kilogram
µg/L	Micrograms per Liter
mg/Kg	Milligrams per Kilogram
mg/L	Milligrams per Liter
NTU	Nephelometric Turbidity Units
OV	Organic Vapor
PAH	Polycyclic Aromatic Hydrocarbon
PPB	Parts per Billion
PPM	Parts per Million
PID	Photoionization Detector
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan
RCRA	Resource Conservation and Recovery Act
RSL	Regional Screening Level
DHEC	South Carolina Department of Health and Environmental Control
SOP	Standard Operating Procedure
SSL	Soil Screening Level
SVOC	Semi-Volatile Organic Compound
TAL	Target Analyte List
TCL	Target Compound List
USGS	United States Geological Survey
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound

Phase I Baseline Investigation Report
Boiler Ash Staging Area
Consent Agreement 13-04-SW

Sonoco Products Company
Hartsville, South Carolina

SIGNATURE PAGE

This document, entitled "Phase I Baseline Investigation Report," has been prepared for Sonoco Products Company to present findings of the Baseline Investigation conducted at the Boiler Ash Staging Area adjacent to Patrick Highway in Hartsville, Darlington County, South Carolina. This report has been prepared and reviewed in accordance with accepted quality control practices by the undersigned.

GEL Engineering, LLC
a Member of THE GEL GROUP, INC.

Stephen K. Nix
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5/29/14
Date

Phase I Baseline Investigation Report
Boiler Ash Staging Area
Consent Agreement 13-04-SW

Sonoco Products Company
Hartsville, South Carolina

1.0 EXECUTIVE SUMMARY

The baseline investigation of the Boiler Ash Staging Area (BASA) has been conducted in accordance with Consent Agreement 13-04-SW and the DHEC-approved Work Plan. The Consent Agreement pertains to the boiler ash staging area, former industrial ponds previously owned and operated by Hartsville Print and Dye Works (closed in early 1960s), and other nearby areas related to Sonoco's recycling and paperboard manufacturing facility. The purpose of this baseline investigation is to more fully characterize the BASA, including the solids in the former industrial ponds that underlie much of the ash as well as soil, groundwater, sediment, and surface water within and proximal to the BASA.

The boiler ash staging area is approximately 14 acres and extends to about 40 feet above grade. Much of the ash pile overlies residual wastewater solids in areas that were formally ponds associated with Hartsville Dye Works, Hartsville Dye Works ceased operation in the early 1960's. The BASA is secured behind a gate and is part of an industrial facility. There is no public access to the BASA. To evaluate the BASA and surrounding area the following samples were collected:

- 26 soil samples,
- 3 boiler ash samples,
- 16 wastewater solids/sludge samples,
- 16 groundwater samples,
- 9 surface water samples, and
- 9 sediment samples.

All samples were analyzed for the TCL of VOCs and SVOCs; total and dissolved (for liquid samples) TAL metals, cyanide, and Cr VI; TPH-DRO, TPH-GRO, and oil and grease; chloride and sulfate; and bioassay samples (4 surface water samples). A summary of the findings of the baseline investigation is provided below.

Soil Samples
Soil sample findings indicate that the site soils do not appear to be adversely affected by site activities.

- Arsenic was detected in concentrations comparable to native soil. Four samples exceeded the industrial RSL. All concentrations are below 4 mg/kg except one at 18.6 mg/kg. Soils with comparable arsenic concentrations are routinely approved for unrestricted use by DHEC.
- None of the detected Cr VI concentrations exceed the industrial RSL. Cr IV was detected in the majority of the soil samples including the background samples. No pattern was identified by location, and the background locations are comparable to the other sample locations, except that the concentration in SB-06-2-4 (5.51 mg/kg) is higher than the balance of the data set.
- No other metal detected in the soil samples exceeds the RSLs. Concentrations detected in samples adjacent to and downgradient of the BASA are comparable to those detected in the background samples.
- Several SVOCs were detected in the soil samples. The majority of the SVOCs detected are PAHs that result from anthropogenic sources such as creosoted-wood and the incomplete combustion

of hydrocarbons, and are common in older developed areas. Most exceedances of industrial RSLs are limited to only two shallow soil samples (SC-04 and SB-06) located along the access road south of the BASA.

- VOCs are a constituent group commonly associated with textile wastes. However, no VOCS were detected at concentrations exceeding RSLs for residential or industrial soils indicating that the former textile plant wastewater ponds do not appear to have significantly impacted site soil.

Ash Samples

Comparison of the boiler ash results to the soil, groundwater, surface water, and sediment samples indicates that the ash does not appear to have released contaminants to the surrounding environment.

- Arsenic was the only metal detected in the ash samples at concentrations that exceed industrial RSLs. Arsenic concentrations range from 30.7 to 56.4 mg/kg. Arsenic is naturally occurring in coal and these concentrations are typical of coal ash. Previous analyses demonstrate that the arsenic is not highly leachable. The absence of elevated arsenic in site soil or groundwater supports the conclusion that the arsenic in the ash is stable and is not prone to leaching.
- Cr VI was detected in all three ash samples at concentrations that exceed residential RSLs. The concentrations are the same order of magnitude as the native soil samples, including background locations.
- The majority of the SVOCs detected are PAHs that form as a result of the incomplete combustion of carbon-containing materials. Of the SVOCs detected, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene exceed industrial RSLs in only one of the ash samples. However, they do not appear to be leaching to the environment as shown by their absence in groundwater. Based on the depth of the ash samples collected the detected concentrations of SVOCs in ash are likely attributed to the wastewater solids.
- None of the detected VOC concentrations exceed RSLs for residential or industrial soils.

Wastewater Solid and Sludge Samples

The wastewater solid and sludge sample data indicate that the wastewater solids are relatively stable and not a significant source of contaminants to the surrounding environment.

- Wastewater solids were observed to depths of 1-7 feet in borings within the footprint of the former industrial ponds and were 2-3 feet thick below the ash where the ash had been placed over the ponds.
- Cr VI was detected in seven of the WWS samples at concentrations that exceed residential RSLs. The detected concentrations in three of the samples exceed the industrial RSL. The overall concentrations in these samples are higher than in the soil or ash samples. However, elevated Cr VI is not present in other media (groundwater, surface water or sediment) at elevated concentrations indicating that it does not leach appreciably.
- Concentrations of arsenic, cobalt, copper, and lead exceed the residential RSL in one or more samples. Arsenic and lead were the only metals to exceed the industrial RSLs in at least one sample. The absence of these metals in groundwater samples at elevated concentrations indicating that they do not leach appreciably.

- SVOCs were detected in all of the WWS samples. However, only the PAHs benzo(a)pyrene (5 samples), benzo(b)fluoranthene (2 samples), and indeno(1,2,3-cd)pyrene (1 sample) exceed industrial RSLs. Furthermore, none of the SVOCs in groundwater exceed MCLs or tapwater RSLs providing additional evidence that the constituents in the sludge do not leach appreciably.
- VOCs are commonly associated with textile wastes. However, none of the detected VOCs exceed residential or industrial RSLs indicating the VOCs were not a significant component of the former dyeing and finishing processes at the Site.

Groundwater Samples

Site activities do not appear to have impacted groundwater quality underneath or downgradient from the BASA showing that the ash and wastewater solids/sludge are not leaching contaminants to groundwater in an appreciable manner.

- None of the metals concentrations in groundwater exceed MCLs or tapwater RSLs for elements that have an established MCL.
- None of the detected VOCs or SVOCs in groundwater exceed MCLs or tapwater RSLs.
- Comparison of the analytical results for the paired wells (MW-02/02A, MW-05/05A, and MW-07/07A) indicate that concentrations of detected constituents generally decrease with depth, i.e., concentrations in the lower portion of the shallow, unconfined aquifer are less than those in the upper portion of the same aquifer. Regardless, none of the constituents exceed regulatory standards.

Surface Water Samples

All four samples analyzed for bioassay (acute aquatic toxicity) passed with 0% mortality (*Ceriodaphnia dubia*). This finding provides a direct measurement showing that overall surface water quality is good.

- Although metals were detected in some surface water samples above screening criteria, the survival rate of 0% mortality of the *Ceriodaphnia dubia* in the bioassay samples documents that surface water quality is good and not adversely affected by the ash and wastewater solids/sludge.
- Total and dissolved cyanide were both detected in SW-08 only; the concentration of total cyanide exceeds the Criterion Continuous Concentration (CCC) for protection of freshwater aquatic life. The detected concentrations of cyanide in the wastewater solids samples were all below residential and industrial RSLs.
- Concentrations of total cadmium, copper, lead, mercury, nickel, and zinc exceed the Criterion Maximum Concentration (CMC) for protection of freshwater aquatic life in the unfiltered sample from SW-08. However, dissolved concentrations of these metals did not exceed the regulatory standards in the filtered sample from SW-08, which indicates the total metals concentrations may be the result of sample turbidity. Total and/or dissolved copper were detected in SW-06 and SW-07 at concentrations exceeding the CCCs or CMCs; total and/or dissolved lead were detected at concentrations exceeding the CCCs or CMCs in SW-04, SW-06, SW-07, and SW-09.
- Di-n-butylphthalate was the only SVOC detected in the surface water samples. CCCs and CMCs are not established for di-n-butylphthalate; however, the concentration does not exceed human health criteria for water and organism, organism only, or MCLs for protection of human health. Di-n-butylphthalate is also a common plasticizer and laboratory artifact.

- No VOCs were detected in the surface water samples.

Sediment Samples

The survival with 0% mortality of the *Ceriodaphnia* in the bioassay samples documents that surface water quality associated with the sediments is good. Although some constituents in sediment exceed screening levels, the sources of these constituents are not clear.

- Nine sediment samples were collected and submitted for laboratory analyses. The sediment sample results were compared to the ecological screening values (ESVs).
- Total cyanide was detected in two samples. An ESV is not established for total cyanide.
- Cr VI was detected in three samples. An ESV for Cr VI is not established. However, the concentrations are comparable to those found in the soil samples, including background locations.
- Cadmium, total chromium, copper, lead, mercury, and zinc concentrations exceed the ESVs in at least one sediment sample.
- Several SVOCs, primarily PAHs, were detected in one or more of the sediment samples. Detected concentrations of anthracene, benzo(a)anthracene, benzo(a)pyrene, bis(2-ethylhexyl)phthalate, dibenzo(a,h)anthracene, fluoranthene, phenanthrene, and pyrene exceed the ESVs in one or more of the sediment samples.
- Several VOCs were detected at low concentrations in one or more of the sediment samples; however, ESVs are not established for the detected VOCs.

2.0 INTRODUCTION

Sonoco entered into Consent Agreement 13-04-SW with the South Carolina Department of Health and Environmental Control (DHEC) on July 9, 2013. The consent agreement pertains to a boiler ash staging area (BASA), former industrial ponds previously owned and operated by Hartsville Print and Dye Works, and other nearby areas related to Sonoco's recycling and paperboard manufacturing facility in Hartsville, South Carolina. Sonoco retained GEL Engineering, LLC (GEL) to conduct a baseline investigation of the BASA and former industrial ponds, hereafter referred to as the "Site," in accordance with the consent agreement.

The *Phase I Baseline Investigation Work Plan* (Work Plan, GEL, October 30, 2013) describes the technical approach to assess the boiler ash staging area (BASA) and former industrial ponds. The Work Plan reviews existing data to identify data gaps and provides a data collection program to address the gaps. The goal of the investigation is to evaluate potential risks associated with the Site. The Work Plan is included at Appendix I. DHEC approved the Work Plan and issued the Monitoring Well Approval on December 6, 2013, also included in Appendix I.

In conjunction with the Work Plan, GEL prepared the *Quality Assurance Project Plan* (QAPP, October 2013) to outline the quality assurance and quality control (QA/QC) methods necessary to achieve data quality objectives (DQOs) required to evaluate the data collected. GEL also prepared a "Site Health and Safety Plan" (SSHP, February 2014) to describe the worker safety procedures employed during site investigation activities.

The purpose of this Phase I Baseline Investigation Report (Report) is to document the field investigation activities and evaluate the analytical data.

3.0 SITE INFORMATION AND HISTORY

3.1 Site Location

The BASA and former industrial ponds are located on Sonoco property northeast of the main manufacturing area. The Site is located approximately one-half mile from Patrick Highway in a fenced wastewater and solid waste management complex that is visible only from Sonoco's property. The location of the Site and surrounding area is shown on a portion of the Hartsville North, United States Geological Survey (USGS) 7.5-minute topographic quadrangle included as Figure 1. The geographical coordinates of the Site are 34° 23' 33.43" North Latitude and 80° 03' 25.70" West Longitude.

Areas north northwest of the Site are residential. The nearest residence is approximately 1,100 feet from the center of the Site. Black Creek is located approximately 680 feet south of the Site. The Sonoco property extends approximately 8,500 feet east of the Site and includes the wastewater treatment plant and spray farm. Sonoco's existing solid waste landfill is located northeast of the Site. The distance from the center of the Site to the nearest residence in this area is approximately 1,885 feet. This portion of Darlington County is unincorporated; therefore, the Site is subject to no land-use or zoning restrictions. The entire area, including the Site, existing wastewater ponds, spray farm and existing landfill, are fenced and routinely patrolled by security personnel.

3.2 Site History

The BASA is partially situated on two former, shallow, industrial wastewater ponds. The ponds were part of the Hartsville Dyeing and Finishing Company, which later operated under the names Hartsville Print and Dye Works, and U.S. Finishing Company. The wastewater pond treatment system operated from prior to 1948 to 1964 when U.S. Finishing Company ceased operations. Sonoco purchased the U.S. Finishing Company around 1966, but did not operate the facility. The BASA is currently approximately 14 acres and about 40 feet high at its peak. Figure 2 shows the locations of the BASA and former industrial ponds.

Sonoco began staging ash in the BASA in the mid to late 1960's as part of its recycling program. Some of the ash was recycled at offsite cement kilns and a local brick plant, and at the time supply was essentially meeting demand. Sonoco made a concerted effort to find additional recycling opportunities for the ash as road fill, flowable fill, bricks, concrete products, land amendments, etc. However, as markets for ash diminished, more ash was produced than could be recycled.

Sonoco submitted a Request for Permit to conduct an "Experimental Land Reclamation Demonstration" to DHEC on October 9, 1978. The request included an Application for a Permit to Construct a Solid Waste Management System. The request was submitted to Mr. Earl William at DHEC's Columbia office and to Mr. Jim Kelley of DHEC's Florence office. The proposed area for reclamation was the former shallow wastewater pond treatment system described above. Sonoco proposed filling the former wastewater ponds with fly ash. Sonoco's objective in filling the ponds was to return the pond area to a condition where it could be used in the future, and to provide a staging area for fly ash that would ultimately be recycled. In 1979 DHEC constructed two monitoring wells at the Site as a result of this request. One monitoring well (SO-1) was located adjacent to Black Creek and the second well was located within the proposed placement site in the footprint of the former wastewater ponds. With the exception of the National Pollutant Discharge Elimination System (NPDES) permit, which requires

monitoring of well SO-1, neither Sonoco nor DHEC files contain further correspondence regarding the ash staging area prior to 2010.

In 1997 Sonoco began operating its #9 multi-fuel, fluidized bed boiler. To maintain compliance with air regulations, limestone is injected into the ash for sulfur dioxide control. The addition of limestone causes the ash to become more comparable to poor quality gypsum than to conventional ash. The resulting ash is relatively impermeable and binds similar to weak concrete. Soon after the #9 Boiler started up, Sonoco began sending #4 boiler coal ash to the #9 boiler for more complete combustion of the carbon, so #4 boiler coal ash was not sent directly to the staging area. In 2010 Sonoco stopped storing ash at the BASA.

Currently well SO-1 is monitored under the requirements of both the NPDES and Land Application Permit No.SC003042 and the facility's existing industrial solid waste landfill Permit No. 163315-1601. Well SO-1 is 24 feet deep and is screened from approximately 12 to 22 feet. The well is located on the southeastern edge of and hydraulically downgradient from the two former industrial wastewater ponds and the BASA.

According to NPDES Permit No.SC003042, well SO-1 serves to monitor groundwater proximal to the *Former Fly Ash Disposal Area*. SO-1 is monitored for pH, specific conductance, dissolved organic carbon, sulfate, nitrate, sodium, and chloride. In accordance with Permit No. 163315-1601 and DHEC *Regulation 61-107.19, Solid Waste Management: Solid Waste Landfills and Structural Fill* (May 2008), the well is also monitored for the parameters listed in Appendix III of *Regulation 61-107.19*. These parameters include pH, specific conductance, temperature, chloride, nitrate, sulfate, eight metals, and 18 volatile organic compounds (VOCs). Since monitoring of Appendix III VOCs began in April 2009, no VOCs have been detected, and no parameters have exceeded maximum contaminant levels (MCLs) or secondary MCLs.

A survey of the ash staging area in 2011 delineated the ash placement boundaries and elevations. The ash pile is approximately 14 acres in extent, with a maximum height of approximately 40 feet. The northern portion of the ash staging area consists mainly of the #9 boiler ash and the remainder of the staging area consists mainly of coal ash. However, approximately 3 feet at the top of the entire staging area is #9 boiler ash. Locations of the different types of ash are shown on Figure 3.

On March 11, 2011, following DHEC's request for additional information and approval of a sampling and analysis plan, Sonoco submitted the waste characterization report for the boiler ash from its current operation. The waste characterization was conducted to address disposal at a permitted landfill and/or staging of ash slated for recycling.

In March of 2011 ERM NC, Inc. (ERM) conducted an assessment of the BASA (Phase I). The Phase I assessment consisted of drilling two borings through the BASA and into the native soils below. ERM drilled seven additional borings through the BASA into the native soils in May 2011 (Phase II). Samples of the ash were collected at 5-foot intervals, and samples of the underlying residual soils were collected for analysis. The samples were screened for organic vapors using a photoionization detector (PID) and a flame ionization detector (FID). PID readings ranged from 1.6 to 1,200 parts per million (ppm) and FID readings ranged from 0.5 to 168 ppm. Toxicity Characteristic Leaching Procedure (TCLP) results for arsenic for two of seven samples (0.117 mg/L and 0.108 mg/L) slightly exceeded the 0.10 milligrams per

liter (mg/L) regulatory threshold for a Class Two Landfill, although the average of all seven samples was below 0.10 mg/L. The results of the ERM investigations are discussed in the *Ash Staging Area Sample Results – Phase I* (March 2011) and the *Report of Ash Staging Area Sampling Results – Phase II* (June 2011), both included in Appendix II. No other investigations of the BASA have been conducted since then.

3.3 Ash Characteristics

To evaluate future disposal options at an offsite landfill, Sonoco submitted a Sampling and Analysis Plan to DHEC for the Sonoco Boiler Ashes in January 2011. The plan was approved by SCHDEC on January 14, 2011 and Sonoco submitted the results on March 7, 2011. Samples of bottom and fly ash were collected from the #3 boiler, #4 boiler, and #9 boiler. The #3 and #4 boilers burn coal (however these boilers were decommissioned in 2014 and 2013 respectively), while the #9 boiler burns ash from the #4 boiler, coal, wood waste, and residuals from paper production. The #3 and #4 boiler ashes were analyzed for TCLP metals, nitrates (total), nitrites (total), sodium (total), pH, and TCLP SVOCs, including a polycyclic aromatic hydrocarbon (PAH) screen and phenols. The #9 ash was analyzed for TCLP metals, nitrates (total), nitrites (total), sodium (total), TCLP SVOCs, including a PAH screen and phenols, dioxins (total), and pH.

As part of the ash characterization, samples of ash collected from two borings for ERM's Phase I ash assessment discussed above were analyzed for VOCs, SVOCs, dioxins/furans, and total metals. Analytical results identified six VOCs (acetone, 1,1-dichloroethane, methylene chloride, styrene, toluene, and xylenes) in samples collected from both borings. SVOCs 2-methynaphthalene and naphthalene were also detected in one of the borings. VOCs and SVOC did not exceed EPA Regional Screening Levels (RSLs) for industrial soils in either of the ash samples. Many of the analyzed metals were detected above the method detection limit in both borings, but only arsenic exceeded the industrial RSL.

Samples of ash collected for ERM's Phase II ash assessment discussed above were analyzed for VOCs, TCLP VOCs, TCLP SVOCs, and TCLP metals. TCLP VOCs and TCLP SVOCs were not detected in any of the samples. Of the TCLP metals analyses, only arsenic, barium, cadmium and chromium were detected at low concentrations. Samples of residual soils beneath the ash were analyzed for VOCs, SVOCs, total metals, corrosivity, nitrate/nitrite. Several VOCs, SVOCs, and metals were identified; however, of the SVOCs, only indeno(1,2,3-cd)pyrene, and benzo(a)pyrene were detected at concentrations exceeding their respective RSLs for industrial soil. Of the detected metals, only arsenic and mercury concentrations exceed their respective RSLs for industrial soils. No VOCs exceeded an RSL.

3.4 Historical Textile Dyeing, Finishing, Printing, and Bleaching Waste Streams

No information regarding the past waste treatment and disposal practices of the former Dyeing and Finishing Company facility was located in DHEC or Sonoco files, however an internal 1980 Sonoco memo states that production at the former Dyeing and Finishing Company facility had ceased for a year or two before Sonoco purchased the property in 1966. The former Dyeing and Finishing Company facility is currently used as office and warehouse space. A facility inspection performed on August 28, 2012 identified no indications of former waste handling practices other than the lagoons. Sanborn® Fire Insurance maps are not available for this facility. No historical documentation regarding the chemistry of the former waste streams, wastewater solids, etc. is available. GEL contacted the Hartsville Historical Society and the Darlington County Historical Society and was only able to confirm that the facility existed until the mid-1960s. While no facility information regarding historical operations is available,

details of waste streams typically associated with textile dyeing, finishing, printing, and bleaching operations are presented in *Profile of the Textile Industry* (USEPA 1997). In addition to metals and solvents, the dyeing and finishing waste streams may have included sodium, potassium, and magnesium salts; biological oxygen demand (BOD) from desizing; and high pH from bleaching and mercerizing.

3.5 Geology

3.5.1 Regional Geology

The Site is located in the Upper Coastal Plain Physiographic Province, which consists primarily of eastward thickening sedimentary deposits. The western limit of the Coastal Plain Province is referred to as the "Fall Line." At the Fall Line, older crystalline rocks (bedrock) of the Piedmont Physiographic Province are overlapped by the younger sedimentary deposits of the Coastal Plain. The Site is located approximately 28 miles east of the Fall Line.

Bedrock occurs at depths between 400 to 450 feet below ground surface (BGS) in the Hartsville area (Siple 1957). The shallow sediments beneath the Hartsville area include Pleistocene- to Holocene-Age terrace deposits that overlie three Upper Cretaceous units that form the Cretaceous Aquifer system in North and South Carolina. From the youngest to the oldest, the units are: the Pee Dee, Black Creek and Tuscaloosa Formations (Park 1979). The Tuscaloosa Formation (locally also referred to as the Middendorf Formation) is the only Cretaceous-Age formation of appreciable thickness beneath the Hartsville area and is characterized by medium- to coarse-grained unconsolidated sands with inconsistent light-gray silty clays that exhibit rapid vertical and lateral lithologic changes (Heron 1958).

3.5.2 Site-Specific Geology

Site-specific geology is based on the work performed during the baseline investigation that included installation of 23 soil borings that ranged in depth from 4 to 96 feet. The soil borings were installed by rotosonic drilling methods that included 4-inch continuous coring, or hand augers. Detailed lithologic descriptions were recorded on soil boring by the project geologist.

Descriptions of the cores identify a complex site geology of interbedded sand-silt-clay sequences. The lithology generally consists of fine to medium, well graded sand, non-plastic silt, and sand-silt sequences to approximately 29 feet BGS (131.4 ft MSL) where a hard, gray, highly plastic, massive, dry fat clay with purple and yellow-orange mottling is encountered. This clay ranges in thickness from 8 to 10 feet to the south and is approximately 15 feet thick to the north where it was observed in SB-02 at a depth of 35 feet BGS (138.5 ft MSL). Field observations indicate this clay appears to be a locally confining unit in vicinity of the Site. The clay unit is underlain by additional sequences of sand, silt, and clayey sand to a depth of approximately 58 feet BGS (102.4 ft MSL) where another hard, gray, highly plastic, massive, dry fat clay with purple to yellow-orange mottling was observed and ranged in thickness from 18 to 28 feet. The variability of the sequences and presence of interbedded clays suggests fluvial deposition, which may be representative of lower Cretaceous lithology. Stratigraphic sequences observed at the Site are consistent with those observed approximately 0.75-miles east of the Site at Sonoco's proposed landfill site.

3.6 Hydrogeology

3.6.1 Regional Hydrogeology

The shallow aquifer is comprised of terrace deposits (interbedded sands, silts and clays) that extend from near the land surface to a depth of approximately 50 feet BGS where they overly the Cretaceous units. These deposits form the shallow water table aquifer system beneath the Hartsville area. Recharge to the shallow aquifer system is primarily from infiltration of precipitation and the aquifer typically discharges to nearby surface water bodies, including the Spring Branch (also known as Kilgore Branch) and Black Creek floodplains in the Hartsville area. The water table is generally a subdued reflection of topography and is encountered at depth in topographically high areas and close to the land surface near lakes and streams.

Groundwater in the deep Cretaceous aquifer system in the Hartsville area occurs primarily under confined conditions. The aquifer system consists of sandy units that are recharged predominantly from the Cretaceous outcrop areas located northwest of Hartsville. In addition, limited recharge to the confined aquifer may occur by local leakage of groundwater from the overlying, unconfined Pleistocene/Holocene shallow aquifer system through confining fine-grained strata. The Cretaceous unit that comprises most of the Cretaceous aquifer system beneath the Hartsville area is the Tuscaloosa Formation, known locally as the Middendorf Aquifer.

3.6.2 Site-Specific Hydrogeology

Comparison of the hydrogeologic data generally supports previous work conducted across the Coastal Plain region in Darlington and surrounding counties by Wollen and Colquhoun (1977), and others, and at the Sonoco facility by McCoy & McCoy Environmental Consultants, Inc. (1991). This work suggests that Cretaceous deposits are overlain by younger sands and clays of fluvial and transgression-regression marine sequences. The younger, post-Cretaceous deposits are virtually indistinguishable from the underlying Cretaceous sediments. These sediments form the shallow unconfined, and the apparent deep confined aquifers. Demarcation of the aquifer zones is based on the presence of thick, hard, highly plastic, massive, dry fat clay units observed in several soil borings located within the project area. Lithologic evidence of the mid to lower Cretaceous sediments was not observed in any of the soil borings.

Hydrogeologic cross-sections A-A' and B-B' constructed from the lithologic descriptions are provided as Figures 4 and 5, respectively. The lines of section are shown on Figure 6. The cross-sections show the presence of a shallow, unconfined aquifer underlain by a locally continuous confining unit. Underlying the locally continuous confining unit is a semi-confined aquifer followed by another clay unit that is thought to be locally confining as it was also observed approximately 0.75-miles east of the Site at the proposed Sonoco landfill site at a comparable elevation. The shallow monitoring wells of well pairs MW-02/02A, MW-05/05A, and MW-07/07A are screened in the upper portion of the shallow unconfined aquifer. The deeper monitoring wells of each well pair are installed in the lower portion of the same aquifer and completed on top of the first observed clay unit of appreciable thickness as proposed in the Work Plan. The deeper wells are constructed with 5-foot well screens to create vertical separation from the shallow wells and assess the hydrogeologic zone where heavier contaminants might be present (e.g., VOCs).

4.0 BASELINE INVESTIGATION FIELD ACTIVITIES

The baseline investigation activities summarized in the following sections establish "baseline" conditions for soil, groundwater, surface water, and sediment within and surrounding the BASA and former industrial ponds.

4.1 Soil Boring Installation and Soil, Boiler Ash, and Wastewater Solids Sampling

Twenty-three (23) soil borings were installed in accordance with the Work Plan and QAPP at the Site between February 18 and March 12, 2014, to collect soil, wastewater solids/sludge, and ash samples. The locations of the soil borings are shown on Figure 6. Soil borings SB-01 through SB-08 were installed outside the limits of the BASA and former industrial ponds. SB-09 was installed outside the former industrial ponds, but inside the limits of the BASA. SB-10 through SB-13 were installed within former Industrial Pond #1 with SB-13 also installed within the limits of the BASA. SB-14 through SB-18 were installed within former Industrial Pond #2 with SB-14 also installed within the limits of the BASA. SB-19 and SB-20 were installed in the ponded water areas to the north and south of former Industrial Pond #2. SB-21 through SB-23 were installed in the wooded area northwest of the BASA and southeast of Patrick Highway. Soil borings SB-21, SB-22, and SB-23 are considered background sampling locations. With the exception of the soil borings installed within the former industrial ponds, continuous soil cores were collected at all of the soil borings using rotosonic-drilling methods by Terra Sonic International (SC Well Driller License No. 2130). The soil borings within the former industrial ponds were installed using a hand auger by GEL (SC Well Driller License No. 1330).

Soil borings SB-01 through SB-08 and SB-21 through SB-23 were installed into the shallow, unconfined water table aquifer and ranged from 10 to 20 feet deep. Soil boring SB-09 was installed to 66 feet BGS through the boiler ash and approximately 20 feet into residual soil. Soil borings SB-13 (70 feet BGS) and SB-14 (46 feet BGS) were installed through the boiler ash, wastewater solids, and approximately 15 feet and 6 feet, respectively, into residual soil. Soil borings SB-10 through SB-12 and SB-15 through SB-20 ranged from 4 to 8 feet deep and were installed through the wastewater solids and approximately 2 feet into the underlying soil.

Soil, wastewater solids, and ash samples were collected from each boring at 2-foot intervals. Grab samples for analysis of Target Compound List (TCL) VOCs and total petroleum hydrocarbons – gasoline range organics (TPH-GRO) were collected, using laboratory-provided sampling kits, from the base of each 2-foot interval. An aliquot of the remaining portion of each 2-foot sample was placed in a re-sealable plastic bag and field-screened for total organic vapors with a MiniRae® photoionization detector (PID). The 2-foot soil sample from each boring with the highest PID result was submitted for laboratory analysis. The remaining soil from the selected interval was composited for analysis of the remaining parameters. Where screening results from each 2-foot sample were within 10% of each other, the sample from the interval above the water table was submitted for analysis. The water table was encountered at a depth of approximately 5 feet in SB-07 and buried debris was observed to a depth of approximately 6 feet. Since no soil was encountered in SB-07 above the water table, no sample was collected from SB-07. Soil cuttings generated during soil boring installation and soil sampling activities were contained in 55-gallon drums and managed onsite as investigation-derived waste (IDW). Descriptions of the soil samples, borings, and screening results were recorded on soil boring logs, which are included in Appendix III.

A total of 30 soil, 21 wastewater solids, and 3 boiler ash samples (including field duplicates) were collected and placed on ice in clean coolers. The samples were transported to GEL Laboratories, LLC (GEL Labs, SC Certification No. 10120001) of Charleston, SC under proper chain-of-custody procedures for analysis of the following parameters:

- TCL VOCs by 8260B;
- TCL SVOCs by 8270D;
- Target Analyte List (TAL) metals by 6010C/6020A;
- Mercury by 7471B;
- Hexavalent Chromium (Cr VI) by 7196A;
- TPH-Diesel Range Organics (DRO) by 8015C;
- TPH-Gasoline Range Organics (GRO) by 8015C
- Total cyanide by SW9012A;
- Oil and Grease by 9071B, and
- Chloride and sulfate by 9056A.

Analyses of TPH-GRO by 8015C and oil and grease by EPA Method 9071B were conducted by Shealy Environmental Services, Inc. (Shealy, SC Certification No 32010) of West Columbia, SC. A list of the soil samples, depths, locations, and parameters is included as Table 1.

4.2 Groundwater Monitoring Well Installation and Groundwater Sampling

In accordance with the Work Plan and QAPP, fifteen (15) permanent groundwater monitoring wells were installed at the Site from February 18 through 28, 2014 to collect samples from the upper and lower shallow, unconfined water table aquifer, measure water levels, and obtain groundwater flow direction data. The locations of the monitoring wells are shown on Figure 6. MW-01 through MW-08, MW-02A, MW-05A, and MW-07A were installed outside the limits of the BASA and former industrial ponds. MW-09 was installed outside the former industrial ponds, but within the limits of the BASA. MW-10 was installed within the limits of the BASA and former Industrial Pond #1, and MW-11 was installed within the limits of the BASA and former Industrial Pond #2. MW-12 was installed in the wooded area northwest of the BASA and former industrial ponds, and southeast of Patrick Highway. Monitoring well MW-12 is considered the background well location. All of the monitoring wells were installed using rotosonic drilling methods by Terra Sonic International (SC Well Driller License No. 2130).

The monitoring wells were installed in 6-inch diameter boreholes to total depths ranging from 15 to 70 feet BGS. The wells were constructed of 2-inch, flush-threaded Schedule 40 polyvinyl chloride (PVC) well materials. MW-01 through MW-12 were constructed with 10-foot, 0.010-inch slotted well screens installed in the upper portion of the shallow unconfined aquifer. MW-02A, MW-05A, and MW-07A were constructed with 5-foot screens installed to screen the lower portion of the shallow unconfined aquifer. No. 2 filter sand was emplaced in the annular space of each borehole from the total depth to approximately 2 feet above the well screen. A minimum of 2 feet of bentonite pellets were placed above the filter pack and allowed to hydrate for a minimum of 2 hours to form a well seal. The monitoring wells were grouted from the top of the seal to the ground surface with neat cement and completed at the surface with a lockable protective riser set in a 2-foot by 2-foot concrete well pad. Well MW-03 and MW-08 were completed at the surface with a lockable, flush-mount cover and well pad. The wells were affixed with a permanent ID placards identifying the well and construction details. Following installation, the wells were developed with a 12-volt submersible pump until development

water was relatively clear and free of sediment. The development water was contained in 55-gallon drums and managed onsite as IDW. Monitoring well construction details and water well records are contained in Appendix III.

Prior to sample collection, the water level and total well depths for each monitoring well were measured to determine the volume of standing water inside the well riser and screen. A minimum of three well volumes were purged using a peristaltic pump and new, disposable polyethylene tubing. The field parameters temperature, pH, specific conductance, dissolved oxygen (DO), oxidation-reduction potential (ORP), and turbidity were measured using a multi-parameter water-quality meter and flow-through cell. Samples submitted for dissolved (filtered) analysis of metals were filtered in the field with disposable 0.45-micron filters. Monitoring well stabilization and purging were considered complete when, for at least three consecutive measurements, pH remained constant within 0.1 standard units (su), specific conductance varied by no more than 5%, and turbidity stabilized or was below 10 Nephelometric Turbidity Units (NTUs). In addition to the newly installed monitoring wells, a groundwater sample was also collected from existing well SO-1. The groundwater sampling activities were performed in accordance with the Work Plan and QAPP. The field measurements were recorded on groundwater sampling field data sheets, which are included in Appendix V.

A total of 20 groundwater samples (including field duplicates) were collected and placed on ice in clean coolers. The samples were transported to GEL Labs under proper chain-of-custody procedures for analysis of the following parameters:

- TCL VOCs by 8260B;
- TCL SVOCs by 8270D;
- Total and dissolved TAL metals by 6010C/6020A;
- Total and dissolved mercury by 7471B;
- Total and dissolved Cr VI by 7196A;
- TPH-DRO by 8015C;
- TPH-GRO by 8015C;
- Total and dissolved cyanide by SW9012A;
- Oil and Grease by 9071B, and
- Chloride and sulfate by 9056A.

Samples for analysis of TPH-GRO by 8015C and oil and grease by 9071B were submitted to Shealy. A list of the soil samples, depths, locations, and parameters is included as Table 1.

4.3 Surface Water and Sediment Sampling

Nine (9) surface water and sediment locations were sampled April 1-2, 2014 in accordance with the Work Plan and QAPP. The surface water and sediment sample locations are shown on Figure 6. SW/SD-01 through SW/SD-05 were collected from Spring Branch, which is located north and east of the BASA. SW/SD-06 was collected where the effluent from former Industrial Pond #1 crosses the access road to the Site, and SW/SD-07 was collected from the drainage swale west of former Industrial Pond #1. SW/SD-08 and SW/SD-09 were collected from springs north of former Industrial Pond #1 and west of the BASA. Sample location SW-05/SD-05 is considered a background location. Samples were collected from downstream to upstream.

A total of 11 surface water samples and 10 sediment samples (including field duplicates) were collected and placed on ice in clean coolers. The samples were transported to GEL Labs under proper chain-of-custody procedures for analysis of the following parameters:

- TCL VOCs by 8260B;
- TCL SVOCs by 8270D;
- TAL metals by 6010C/6020A;
- Mercury by 7471B;
- Cr VI by 7196A;
- TPH-DRO by 8015C;
- TPH-GRO by 8015C;
- Cyanide by SW9012A;
- Oil and Grease by 9071B, and
- Chloride and sulfate by 9056A; and
- 48-Hour Acute Bioassay with *Ceriodaphnia dubia* by 2002.0.

Samples for analysis of TPH-GRO by 8015C and oil and grease by 9071B were submitted to Shealy. Surface water samples SW-01, SW-05, SW-06, and SW-09 were analyzed for acute bioassay and were submitted to Shealy Consulting, LLC (SC Certification No. 32566). A list of the soil samples, depths, locations, and parameters is included as Table 1.

4.4 Investigation Derived Waste

IDW generated during baseline investigation included personal protective equipment (PPE); disposable sampling equipment; soil cuttings generated from soil boring and monitoring well installation activities; decontamination fluids; and development and purge water generated during well installation and groundwater sample collection.

PPE and disposable sampling equipment were collected in garbage bags and placed in Sonoco's solid waste receptacles. Remaining IDW was containerized in SC Department of Transportation (DOT) approved 55-gallon drums and staged in a secure area adjacent to the 17-acre pond at the Sonoco facility pending review of analytical data.

4.5 Site Survey

All soil boring, monitoring well, and surface water/sediment sampling locations were surveyed by a GEL Professional Land Surveyor (SC License No. 15513). The horizontal locations were surveyed to the SC State Plane Coordinate System (North American Datum of 1983). Elevations were surveyed to North American Vertical Datum 1988. The survey was performed using a global positioning system (GPS) with differential correction as specified in the Work Plan.

5.0 SUMMARY OF BASELINE INVESTIGATION ANALYTICAL RESULTS AND FINDINGS

The following sections summarize field and analytical data collected during the baseline investigation.

5.1 Soil Sample Results

A total of 30 soil samples (including field duplicates) were analyzed. The soil sample locations are shown on Figure 6, and detected concentrations are summarized in Table 2. The soil sample results are compared to residential and industrial RSLs and SSLs for protection of groundwater. Note that exceedances of SSLs for the protection of groundwater are highlighted on Table 2; however, these are not discussed because groundwater analytical results provide a direct measure of groundwater quality, rendering the SSLs comparisons irrelevant. Copies of the soil sample Certificates of Analysis (COAs) and chain of custody forms are included in Appendix IV. Results qualified with a "J" data qualifier indicate the constituent was detected in the sample; however, the reported concentration is an estimated concentration between the laboratory detection and reporting limits.

TPH-DRO was detected in 16 of the 23 soil samples (including field duplicates) at concentrations ranging from 2.63 to 5,430 milligrams per kilogram (mg/kg). TPH-GRO was detected only in SB-14-40-42 at 13 µg/kg. Oil and grease was detected in four of the 23 soil samples at concentrations ranging from 300 to 13,000 mg/kg. Chloride was detected in all 23 soil samples and ranged from 1.28 J to 10.0 mg/kg. Sulfate was detected in 18 of the 23 soil samples at concentrations ranging from 1.92 J to 2,100 mg/kg. Screening levels have not been established for any of these parameters.

Numerous metals were detected; however, the concentrations are within the range of background concentrations in South Carolina Coastal Plain soil (Canova, 1999). Only two metals, hexavalent chromium (Cr VI) and arsenic were detected at concentrations exceeding RSLs for industrial and/or residential soils. Cr VI concentrations exceed only the residential RSL in 18 of the 30 samples collected, while arsenic concentrations exceed the residential RSL in 13 samples and also exceed the industrial RSL in 4 samples. The background Cr VI concentrations are comparable to the Site concentrations except that SB-6, located south of the access road is higher. The arsenic exceedances are all within the range of naturally occurring background concentrations documented in Coastal Plain soils.

A total of 19 SVOCs, primarily PAHs, were detected in the soil samples. However, only benzo(a)anthracene (3 samples), benzo(a)pyrene (5 samples), benzo(b)fluoranthene (3 samples), benzo(k)fluoranthene (1 sample), chrysene (1 sample), dibenzo(a,h)anthracene (3 samples), and indeno(1,2,3-cd)pyrene (3 samples) were detected at concentrations exceeding industrial RSLs. The highest concentrations, which account for most of the exceedances of industrial RSLs, are in the primary and duplicate shallow soil samples from locations SB-04-2-4 and SB-06-2-4. PAHs are products of incomplete combustion of hydrocarbons and are also present in wood preservatives such as creosote. The detected concentrations in SB-04 and SB-06 are likely from the tar coated dura pipe noted in these borings.

A total of 10 VOCs were detected in the soil samples. None of the concentrations exceed residential or industrial RSLs.

5.2 Boiler Ash Sample Results

Three boiler ash samples were analyzed. The sample locations are shown on Figure 6, and detected concentrations are included as Table 3. The boiler ash samples are compared to the residential and industrial RSLs and SSLs for the protection of groundwater. Note that exceedances of SSLs for the protection of groundwater are highlighted on Table 3; however, these are not discussed because groundwater analytical results provide a direct measure of groundwater quality, rendering the SSLs comparisons irrelevant. Copies of the boiler ash sample COAs and chain of custody forms are included in Appendix IV.

TPH-DRO was detected in ASH-14-36-38 at 11 J mg/kg and ASH-13-48-50 at 353 mg/kg. Oil and grease was detected only in ASH-13-48-50 at 1,000 mg/kg. Chloride and sulfate were detected in all three samples and ranged from 6.11 mg/kg (ASH-13-48-50) to 271 mg/kg (ASH-09-44-45) and 49.6 mg/kg (ASH-13-48-50) to 13,600 mg/kg (ASH-09-44-45), respectively. TPH-GRO was not detected in any of the samples. No RSLs and SSLs are established for these parameters.

Four metals, Cr VI, arsenic, cobalt, and thallium were detected in one or more samples at concentrations exceeding industrial and/or residential RSLs. Cr VI was detected at concentrations ranging from 0.775 J to 5.2 µg/kg, exceeding only the residential RSL in all three samples. However, these concentrations are comparable to background soils. Arsenic concentrations range from 30,700 to 56,400 µg/kg, exceeding the industrial RSL in all three samples. Cobalt was detected in one sample (ASH-09-44-45) at a concentration exceeding only the residential RSL. Thallium was detected in two samples, ASH-09-44-45 and ASH-14-36-38, at concentrations exceeding the residential RSL.

SVOCs were detected at concentrations exceeding industrial RSLs only in ASH-13-48-50. Five PAHs were detected above industrial RSLs in the sample, including benzo(a)anthracene (25,100 µg/kg), benzo(a)pyrene (28,100 µg/kg), benzo(b)fluoranthene (33,600 µg/kg), dibenzo(a,h)anthracene (4,890 µg/kg), and indeno(1,2,3-cd)pyrene (14,700 µg/kg).

None of the detected VOCs concentrations exceed RSLs or SSLs. No other constituents were detected in the boiler ash samples.

5.3 Wastewater Solid Sample Results

A total of 21 wastewater solids (WWS) samples (including field duplicates) were analyzed. The WWS sample locations are shown on Figure 6, and detected concentrations are summarized as Table 4. The WWS sample results are compared to the residential and industrial RSLs and the SSLs for protection of groundwater. Note that exceedances of SSLs for the protection of groundwater are highlighted on Table 4; however, these are not discussed because groundwater analytical results provide a direct measure of groundwater quality, rendering the SSLs comparisons irrelevant. Copies of the WWS sample COAs and chain of custody forms are included in Appendix IV.

TPH-DRO was detected in all of the samples at concentrations ranging from 7.23 J to 10,800 mg/Kg. TPH-GRO was detected in 11 of the samples at concentrations ranging from 8.7 to 1,900 mg/Kg. Oil and grease was detected in 6 of the samples and ranged from 300 to 78,000 mg/Kg. Chloride was detected in 21 of the samples and ranged from 4.30 mg/kg to 219 mg/kg. Sulfate was detected in 16 of the

samples and ranged 2.41 J mg/kg to 5,260 mg/kg. No RSLs and SSLs are established for these parameters.

Total cyanide was detected in 10 of the samples at concentrations ranging from 232 J to 8,900 µg/kg, which do not exceed residential or industrial RSLs. Cr VI was detected in seven of the samples at concentrations from 0.307 J mg/kg to 16.8 J mg/kg. All of the detected concentrations exceed the residential RSL, and 3 of the samples also exceed the industrial RSL.

All of the TAL metals were detected in one or more of the samples. Only arsenic (8 samples), and lead (3 samples) exceed industrial RSLs.

SVOCs were detected in all of the WWS samples. Only the PAHs benzo(a)pyrene (5 samples), benzo(b)fluoranthene (2 samples), and indeno(1,2,3-cd)pyrene (1 sample) exceed industrial RSLs.

VOCs were detected in 16 of the WWS samples. However, none of the detected VOCs exceed residential or industrial RSLs.

5.4 Groundwater Sample Results

A total of 20 groundwater samples (including field duplicates) were analyzed. The monitoring well locations are shown on Figure 6, and detected concentrations are summarized in Table 5. The groundwater sample results are compared to MCLs and tapwater RSLs for constituents that do not have an established MCL. Copies of the COAs and chain of custody forms are included in Appendix V. In addition to the "J" data qualifier, some of the groundwater sample results are flagged with a "B" qualifier indicating the target analyte was also detected in the associated blank.

TPH-DRO was detected in 10 of the 20 samples analyzed (including field duplicates) at concentrations ranging from 0.0796 BJ to 0.329 milligrams per liter (mg/l). Oil and grease was detected in 19 of the samples and ranged from 1.18 J to 2.47 mg/l. TPH-GRO was not detected in any of the samples. Chloride and sulfate were detected in all 20 of the samples and ranged from 0.067 to 16.4 mg/l and 0.438 and 186 mg/l, respectively. Cyanide was not detected in any of the samples.

Total and dissolved TAL metals were detected in all of the samples. None of the detected metals concentrations exceed MCLs. Concentrations of iron (5 samples) and manganese (4 samples) are the only metals that exceed tapwater RSLs.

Ten SVOCs, primarily PAHs, were detected. None of the concentrations exceed MCLs or tapwater RSLs.

The only VOCs detected in the groundwater samples were methylene chloride (13 samples) and tetrachloroethylene (1 sample). None of the concentrations exceed MCLs.

5.5 Water Level Elevations and Groundwater Flow Direction

Water level measurements were collected from Site monitoring wells on March 18, 2014, using an electric water level probe. The water levels were measured in feet and referenced to the top of casing (TOC). The corresponding groundwater elevations ranged from 153.27 feet MSL in MW-06 to 164.57 feet MSL in MW-12. The resulting hydraulic gradient calculated across the Site from MW-12 to MW-06

is 0.01 feet/foot, and the groundwater flow direction is to the south-southeast toward Black Creek. The groundwater elevations, flow direction, and water level contours are shown on Figure 7.

5.6 Surface Water Sample Results

Eleven surface water samples (including field duplicates) were analyzed. The sample locations are shown on Figure 6, and detected constituents are summarized as Table 6. The surface water sample results are compared to South Carolina standards for freshwater aquatic life and human health. Copies of the surface water sample COAs and chain of custody forms are included in Appendix VI.

TPH-DRO, TPH-GRO, and oil and grease were not detected in any of the surface water samples. Chloride and sulfate were detected in all of the samples and ranged from 3.09 to 21.1 mg/l and 1.15 to 9.50 mg/l, respectively.

Samples SW-01, SW-05, SW-06, and SW-09 analyzed for acute aquatic toxicity passed with zero percent mortality (*Ceriodaphnia dubia*). BOD was detected in only three samples and ranged from 1.04 mg/l to 14.2 mg/l.

Total and dissolved cyanide were detected only in SW-08 at 17.2 and 2.45 J µg/l, respectively. The total cyanide concentration exceeds the Criterion Continuous Concentration (CCC) for protection of freshwater aquatic life. Concentrations of total cadmium, copper, lead, mercury, nickel, and zinc exceed the Criterion Maximum Concentration (CMC) for protection of freshwater aquatic life in one sample (SW-08), but the dissolved concentrations of these metals did not exceed regulatory standards, suggesting that the detections in the unfiltered sample result from sample turbidity. Dissolved and/or total copper (SW-06 and SW-07) and dissolved and/or total lead (SW-04, SW-06, SW-07, SW-09) were also detected at concentrations exceeding CCCs or CMCs. SW-4 and SW-9 are background locations.

The SVOC di-n-butylphthalate was detected only in SW-06 at 7.97 J µg/l, and does not exceed any screening levels. No other SVOCs and no VOCs were detected in the surface water samples.

5.7 Sediment Sample Results

Nine sediment samples (including field duplicates) were analyzed. The sediment locations are shown on Figure 6, and detected concentrations are summarized as Table 6. The sediment sample results are compared to EPA Region 4 ecological screening values (ESVs). Copies of the sediment sample COAs and chain of custody forms are included in Appendix VI.

TPH-DRO, TPH-GRO, and oil and grease were not detected in any of the samples. Chloride and sulfate were detected in all of the samples and ranged from 3.66 to 73.5 mg/kg and 2.85 J to 20.3 mg/kg, respectively. ESVs have not been established for chloride and sulfate.

Total cyanide was detected only in SD-06 and SD-08 and at 341 J and 942 J µg/kg, respectively. Cr VI was also detected in only three samples and ranged from 0.168 J to 0.357 J mg/kg; no ESV currently has been established for cyanide or Cr IV. Detected concentrations are generally comparable to those found in Site soils. All of the TAL metals were detected in one or more of the samples. None of the concentrations exceed the respective ESVs in SD-01, SD-03, SD-04, SD-05, and SD-09.

Cadmium, total chromium, and zinc at concentrations of 1,220, 172,000, and 393,000 µg/kg, respectively, exceed the ESVs only in SD-06. Copper exceeds the ESV in SD-02 (20,100 µg/kg), SD-06 (2,120,000 µg/kg), SD-07 (59,700 µg/kg), SD-07-D (77,500 µg/kg), and SD-08 (52,600 µg/kg). Lead at 1,190,000 and 38,000 µg/kg in SD-06 and SD-08, respectively, exceeds the ESV. Mercury exceeds the ESV in the duplicate sample from SD-07 and in sample SD-08, at concentrations of 160 and 740 µg/kg, respectively. No other metals exceed the ESVs in the samples.

Several SVOCs, primarily PAHs, were detected in one or more of the samples. Anthracene (1 sample), benzo(a)anthracene (3 samples), benzo(a)pyrene (2 samples), bis(2-ethylhexyl)phthalate (1 sample), dibenzo(a,h)anthracene (1 sample), fluoranthene (5 samples), phenanthrene (1 sample), and pyrene (4 samples) were detected at concentrations exceeding ESVs. Several VOCs were detected at low concentrations in one or more of the samples; however, ESVs have not been established for the detected VOCs.

6.0 CONCLUSIONS

The baseline investigation of the BASA has been conducted in accordance with Consent Agreement 13-04-SW and the DHEC-approved Work Plan. The findings indicate the BASA is stable and there has been minimal leaching into the groundwater. A summary of the findings of the baseline investigation is provided below:

Soil Samples

Soil sample findings indicate that the site soils do not appear to be adversely affected by site activities.

- Arsenic was detected in concentrations comparable to native soil. Four samples exceeded the industrial RSL. All concentrations are below 4 mg/kg except one at 18.6 mg/kg. Soils with comparable arsenic concentrations are routinely approved for unrestricted use by DHEC.
- None of the detected Cr VI concentrations exceed the industrial RSL. Cr IV was detected in the majority of the soil samples including the background samples. No pattern was identified by location, and the background locations are comparable to the other sample locations, except that the concentration in SB-06-2-4 (5.51 mg/kg) is higher than the balance of the data set.
- No other metal detected in the soil samples exceeds the RSLs. Concentrations detected in samples adjacent to and downgradient of the BASA are comparable to those detected in the background samples.
- Several SVOCs were detected in the soil samples. The majority of the SVOCs detected are PAHs that result from anthropogenic sources such as creosoted-wood and the incomplete combustion of hydrocarbons, and are common in older developed areas. Most exceedances of industrial RSLs are limited to only two shallow soil samples (SC-04 and SB-06) located along the access road south of the BASA.
- VOCs are a constituent group commonly associated with textile wastes. However, no VOCS were detected at concentrations exceeding RSLs for residential or industrial soils indicating that the former textile plant wastewater ponds do not appear to have significantly impacted site soil.

Ash Samples

Comparison of the boiler ash results to the soil, groundwater, surface water, and sediment samples indicates that the ash does not appear to have released contaminants to the surrounding environment.

- Arsenic was the only metal detected in the ash samples at concentrations that exceed industrial RSLs. Arsenic concentrations range from 30.7 to 56.4 mg/kg. Previous analyses demonstrate that the arsenic is not highly leachable. The absence of elevated arsenic in site soil or groundwater supports the conclusion that the arsenic in the ash is stable and is not prone to leaching.
- Cr VI was detected in all three ash samples at concentrations that exceed residential RSLs. The concentrations are the same order of magnitude as the native soil samples, including background locations.
- The majority of the SVOCs detected are PAHs that form as a result of the incomplete combustion of carbon-containing materials. Of the SVOCs detected, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene exceed industrial RSLs in only one of the ash samples. However, they do not appear to be

leaching to the environment as shown by their absence in groundwater. Based on the depth of the ash samples collected the detected concentrations of SVOCs in ash are likely attributed to the wastewater solids.

- None of the detected VOC concentrations exceed RSLs for residential or industrial soils.

Wastewater Solid and Sludge Samples

The wastewater solid and sludge sample data indicate that the wastewater solids are relatively stable and not a significant source of contaminants to the surrounding environment.

- Wastewater solids were observed to depths of 1-7 feet in borings within the footprint of the former industrial ponds and were 2-3 feet thick below the ash where the ash had been placed over the ponds.
- Cr VI was detected in seven of the WWS samples at concentrations that exceed residential RSLs. The detected concentrations in three of the samples exceed the industrial RSL. The overall concentrations in these samples are higher than in the soil or ash samples. However, elevated Cr VI is not present in other media (groundwater, surface water or sediment) at elevated concentrations indicating that it does not leach appreciably.
- Concentrations of arsenic, cobalt, copper, and lead exceed the residential RSL in one or more samples. Arsenic and lead were the only metals to exceed the industrial RSLs in at least one sample. The absence of these metals in groundwater samples at elevated concentrations indicating that they do not leach appreciably.
- SVOCs were detected in all of the WWS samples. However, only the PAHs benzo(a)pyrene (5 samples), benzo(b)fluoranthene (2 samples), and indeno(1,2,3-cd)pyrene (1 sample) exceed industrial RSLs. Furthermore, none of the SVOCs in groundwater exceed MCLs or tapwater RSLs providing additional evidence that the constituents in the sludge do not leach appreciably.
- VOCs are commonly associated with textile wastes. However, none of the detected VOCs exceed residential or industrial RSLs indicating the VOCs were not a significant component of the former dyeing and finishing processes at the Site.

Groundwater Samples

Site activities do not appear to have impacted groundwater quality underneath or downgradient from the BASA showing that the ash and wastewater solids/sludge are not leaching contaminants to groundwater in an appreciable manner.

- None of the metals concentrations in groundwater exceed MCLs or tapwater RSLs for elements that have no established MCL.
- None of the detected VOCs or SVOCs in groundwater exceed MCLs or tapwater RSLs.
- Comparison of the analytical results for the paired wells (MW-02/02A, MW-05/05A, and MW-07/07A) indicate that concentrations of detected constituents generally decrease with depth, i.e., concentrations in the lower portion of the shallow, unconfined aquifer are less than those in the upper portion of the same aqulfer. Regardless, none of the constituents exceed regulatory standards.

Surface Water Samples

All four samples analyzed for bioassay (acute aquatic toxicity) passed with 0% mortality (*Ceriodaphnia dubia*). This finding provides a direct measurement showing that overall surface water quality is good.

- Although metals were detected in some surface water samples above screening criteria, the survival rate of 0% mortality of the *Ceriodaphnia dubia* in the bioassay samples documents that surface water quality is good and not adversely affected by the ash and wastewater solids/sludge.
- Total and dissolved cyanide were both detected in SW-08 only; the concentration of total cyanide exceeds the Criterion Continuous Concentration (CCC) for protection of freshwater aquatic life. The detected concentrations of cyanide in the wastewater solids samples were all below residential and industrial RSLs.
- Concentrations of total cadmium, copper, lead, mercury, nickel, and zinc exceed the Criterion Maximum Concentration (CMC) for protection of freshwater aquatic life in the unfiltered sample from SW-08. However, dissolved concentrations of these metals did not exceed the regulatory standards in the filtered sample from SW-08, which indicates the total metals concentrations may be the result of sample turbidity. Total and/or dissolved copper were detected in SW-06 and SW-07 at concentrations exceeding the CCCs or CMCs; total and/or dissolved lead were detected at concentrations exceeding the CCCs or CMCs in SW-04, SW-06, SW-07, and SW-09.
- Di-n-butylphthalate was the only SVOC detected in the surface water samples. CCCs and CMCs are not established for di-n-butylphthalate; however, the concentration does not exceed human health criteria for water and organism, organism only, or MCLs for protection of human health. Di-n-butylphthalate is also a common plasticizer and laboratory artifact.
- No VOCs were detected in the surface water samples.

Sediment Samples

The survival with 0% mortality of the *Ceriodaphnia* in the bioassay samples documents that surface water quality associated with the sediments is good. Although some constituents in sediment exceed screening levels, the sources of these constituents is not clear.

- Nine sediment samples were collected and submitted for laboratory analyses. The sediment sample results were compared to the ecological screening values (ESVs).
- Total cyanide was detected in two samples. An ESV is not established for total cyanide.
- Cr VI was detected in three samples. An ESV for Cr VI is not established. However, the concentrations are comparable to those found in the soil samples, including background locations.
- Cadmium, total chromium, copper, lead, mercury, and zinc concentrations exceed the ESVs in at least one sediment sample.
- Several SVOCs, primarily PAHs, were detected in one or more of the sediment samples. Detected concentrations of anthracene, benzo(a)anthracene, benzo(a)pyrene, bis(2-ethylhexyl)phthalate, dibenzo(a,h)anthracene, fluoranthene, phenanthrene, and pyrene exceed the ESVs in one or more of the sediment samples.
- Several VOCs were detected at low concentrations in one or more of the sediment samples; however, ESVs are not established for the detected VOCs.

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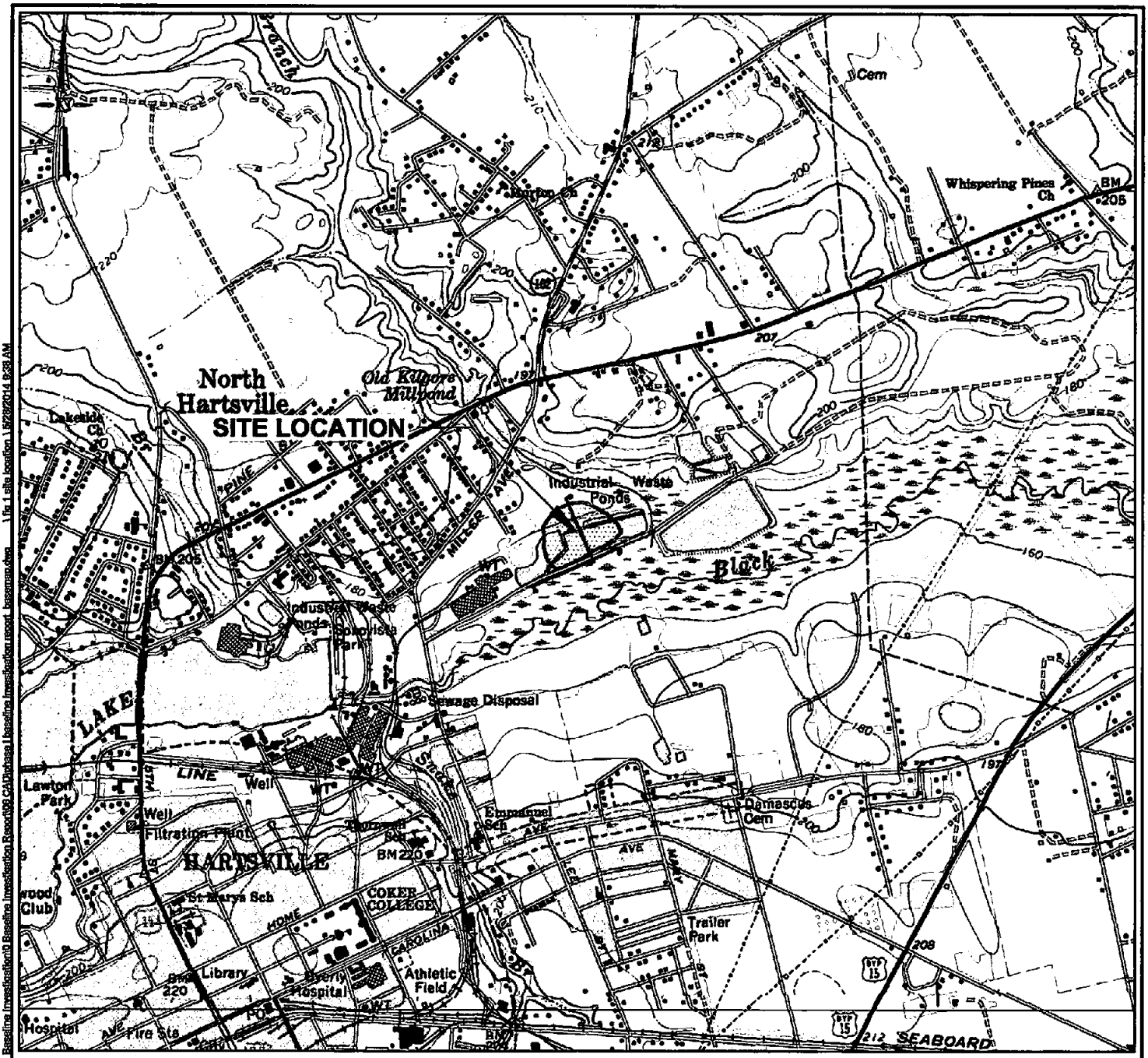
FIGURES



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FEET

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HARTSVILLE NORTH
HARTSVILLE SOUTH
1968
7.5-MINUTE SERIES QUADRANGLES

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SITE LOCATION
BOILER ASH STAGING AREA
PHASE I BASELINE INVESTIGATION

FIGURE 1

Date: 05/07/2014 | Drawn by: SKN | Approved by: TRP | Project No: SON000214

Z:\GEL Client Files\0 - T\SONOCO Sonoco Corporation\SON000413 Consent Agreement Work Plan\0 Phase I Baseline Investigation\3 Baseline Investigation Report\3 Cad\base I baseline investigation report_basemap.dwg 1/9/1 site location | 5/9/2014 9:38 AM

SITE PLAN

BOILER ASH STAGING AREA
PHASE I BASELINE INVESTIGATION

DATE: 05/07/2014
DRAWN BY: SKN
APPROVED BY: TRP
PROJECT NUMBER: SON00021.4
FIGURE: 2

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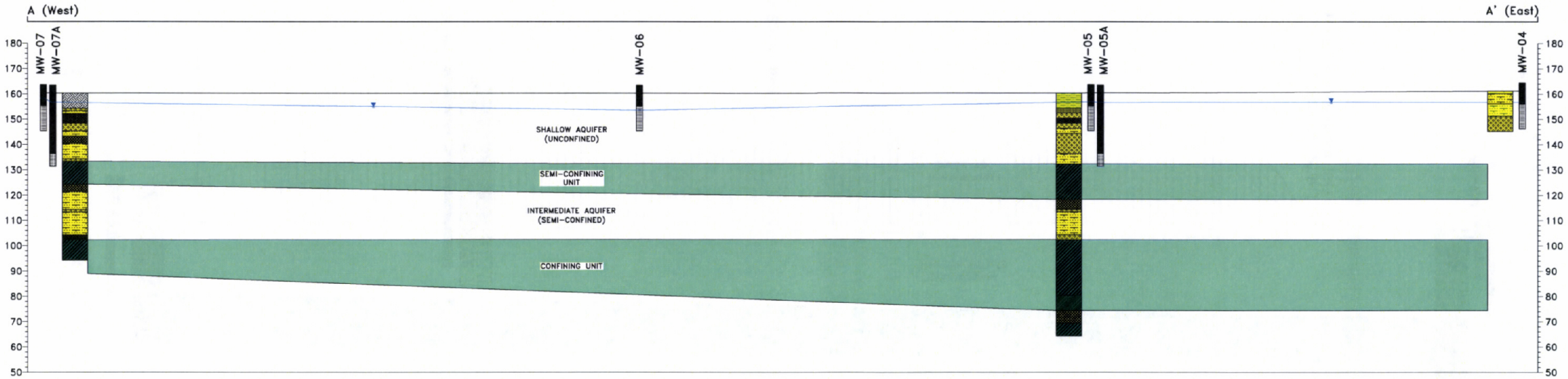
SOUTH CAROLINA

LOCATIONS OF HISTORICAL ASH FILL
BOILER ASH STAGING AREA
PHASE I BASELINE INVESTIGATION

DATE:	05/07/2014
DRAWN BY:	SKN
APPROVED BY:	TRP
PROJECT NUMBER:	SONO00214
FIGURE:	3



NOTES:

1. Elevation referenced to feet above mean sea level (FT MSL).
2. Vertical exaggeration is approximately 2:1.

APPROXIMATE HORIZONTAL SCALE IN FEET

50 0 50 100

LEGEND

- SP (Poorly graded SAND)
- SW (Well graded SAND)
- SP-SM (Poorly graded SAND w/ Silt)
- SP-SC (Poorly graded SAND w/ Clay)
- SW-SM (Well graded SAND w/ Silt)
- ML (SILT)
- SC (Clayey SAND)
- CL (Lean CLAY)
- CH (Fat CLAY)
- OL (Organic Soil)
- Fill

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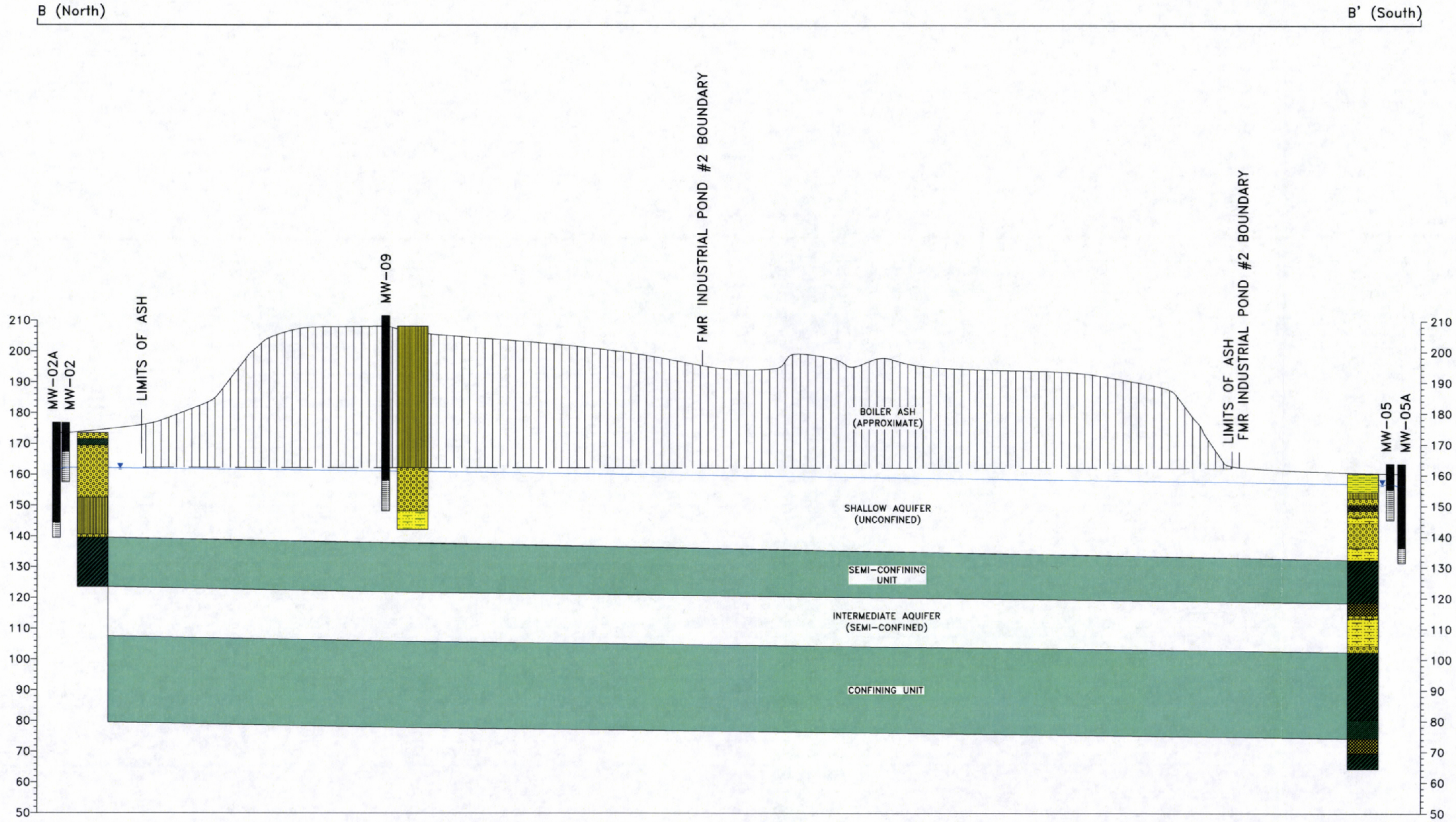
HYDROGEOLOGIC CROSS SECTION A - A'
BOILER ASH STAGING AREA
PHASE I BASELINE INVESTIGATION

DATE: 05/07/2014
DRAWN BY: SKN
APPROVED BY: TRP
PROJECT NUMBER: SON000214
FIGURE: 4

SON000214_cross sections.dwg \ fig 4 a-a' (2) \ 5/28/2014 8:40 AM



NOTES:

1. Elevation referenced to feet above mean sea level (FT MSL).
2. Vertical exaggeration is approximately 2:1.

APPROXIMATE HORIZONTAL SCALE
IN FEET

40 0 40 80

LEGEND

- SP (Poorly graded SAND)
- SW (Well graded SAND)
- SP-SM (Poorly graded SAND w/ Silt)
- SP-SC (Poorly graded SAND w/ Clay)
- SW-SM (Well graded SAND w/ Silt)
- ML (SILT)
- SC (Clayey SAND)
- CL (Lean CLAY)
- CH (Fat CLAY)
- OL (Organic Soil)
- Fill

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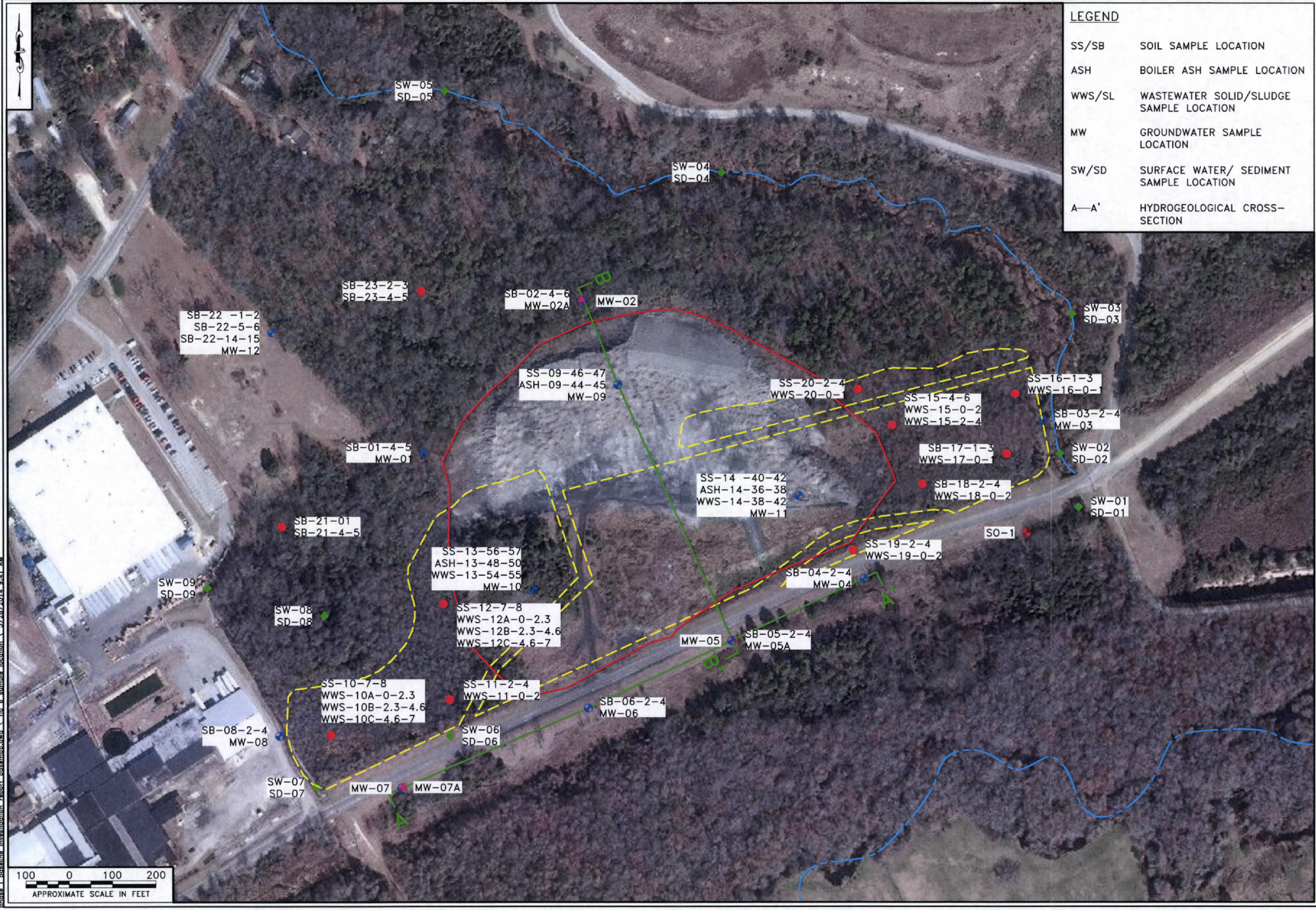
HYDROGEOLOGIC CROSS SECTION B - B'

BOILER ASH STAGING AREA
PHASE I BASELINE INVESTIGATION

DATE: 05/07/2014
DRAWN BY: SKN
APPROVED BY: TRP
PROJECT NUMBER: SON000214
FIGURE: 5

SON000214 cross sections.dwg \ fig 5 b-b' \ 5/28/2014 9:41 AM



LEGEND

SS/SB	SOIL SAMPLE LOCATION
ASH	BOILER ASH SAMPLE LOCATION
WWS/SL	WASTEWATER SOLID/SLUDGE SAMPLE LOCATION
MW	GROUNDWATER SAMPLE LOCATION
SW/SD	SURFACE WATER/ SEDIMENT SAMPLE LOCATION
A—A'	HYDROGEOLOGICAL CROSS-SECTION

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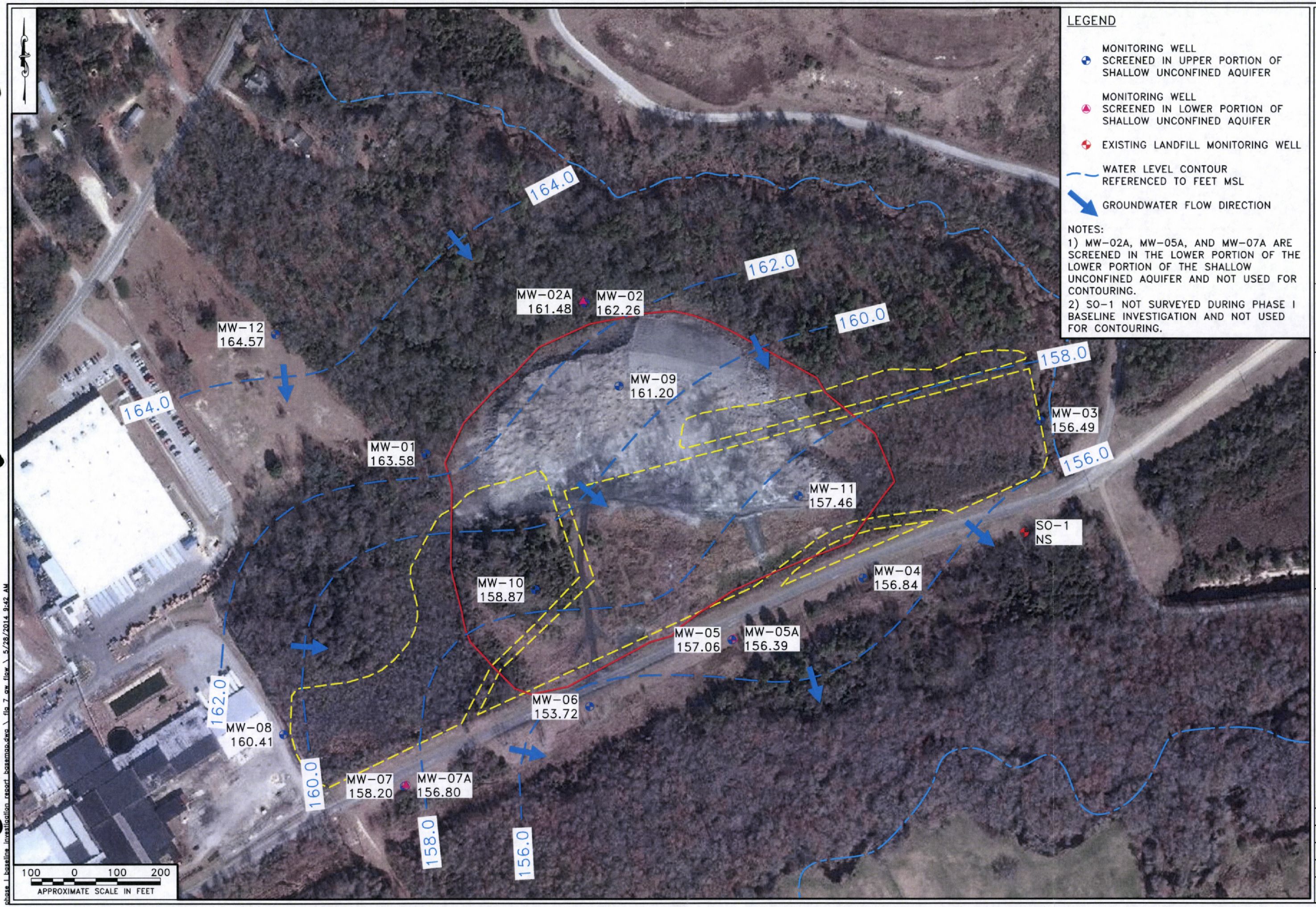
PHASE I SAMPLE LOCATION MAP

BOILER ASH STAGING AREA
PHASE I BASELINE INVESTIGATION

DATE: 04/18/2014
DRAWN BY: SKN
APPROVED BY: TRP
PROJECT NUMBER: SONO00413
FIGURE: 6

phase_I_baseline_investigation_report_boarmap.dwg \ fig 6 sample location \ 5/28/2014 9:41 AM



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GROUNDWATER ELEVATION AND FLOW DIRECTION MAP, MARCH 17, 2014

BOILER ASH STAGING AREA
PHASE I BASELINE INVESTIGATION

DATE: 05/07/2014
DRAWN BY: SKN
APPROVED BY: TRP
PROJECT NUMBER: SONO00214
FIGURE: 7

phase_I_baseline_investigation_report_bosamgo.dwg \ fig 7_gw_flow \ 5/28/2014 8:42 AM

TABLES

TABLE 1. LIST OF SAMPLE LOCATIONS AND ANALYTICAL PARAMETERS
PHASE I BASELINE INVESTIGATION REPORT
BOILER ASH STAGING AREA
CONSENT AGREEMENT 13-04-SW
SONOCO PRODUCTS COMPANY

SAMPLE TYPE	SAMPLE ID	SAMPLE LOCATION	ANALYTICAL PARAMETERS
SOIL	SB-01-4-5	Residual soil sample northwest of the Boiler Ash Staging Area and former Industrial Pond #1 (SB-01)	TAL Metals, Cyanide, Chromium (VI), TCL VOCs, TCL SVOCs, TPH-DRO, TPH-GRO, Oil & Grease, Chloride, and Sulfate
	SB-02-4-6	Residual soil sample north of the Boiler Ash Staging Area and former industrial ponds (SB-02)	TAL Metals, Cyanide, Chromium (VI), TCL VOCs, TCL SVOCs, TPH-DRO, TPH-GRO, Oil & Grease, Chloride, and Sulfate
	SB-03-2-4	Residual soil sample east of former Industrial Pond #2 (SB-03)	TAL Metals, Cyanide, Chromium (VI), TCL VOCs, TCL SVOCs, TPH-DRO, TPH-GRO, Oil & Grease, Chloride, and Sulfate
	SB-04-2-4, SB-05-2-4	Residual soil samples south of former Industrial Pond #2 (SB-04, SB-05)	TAL Metals, Cyanide, Chromium (VI), TCL VOCs, TCL SVOCs, TPH-DRO, TPH-GRO, Oil & Grease, Chloride, and Sulfate
	SB-06-2-4	Residual soil samples south of former Industrial Pond #1 (SB-06)	TAL Metals, Cyanide, Chromium (VI), TCL VOCs, TCL SVOCs, TPH-DRO, TPH-GRO, Oil & Grease, Chloride, and Sulfate
	SB-08-2-4	Residual soil sample west of former Industrial Pond #1 (SB-08)	TAL Metals, Cyanide, Chromium (VI), TCL VOCs, TCL SVOCs, TPH-DRO, TPH-GRO, Oil & Grease, Chloride, and Sulfate
	SS-09-46-47	Residual soil sample below the Boiler Ash Staging Area and north of former Industrial Pond #2 (SB-09)	TAL Metals, Cyanide, Chromium (VI), TCL VOCs, TCL SVOCs, TPH-DRO, TPH-GRO, Oil & Grease, Chloride, and Sulfate
	SS-10-7-8, SS-11-2-4, SS-12-7-8	Residual soil samples below former Industrial Pond #1 and outside the Boiler Ash Staging Area (SB-10, SB-11, SB-12)	TAL Metals, Cyanide, Chromium (VI), TCL VOCs, TCL SVOCs, TPH-DRO, TPH-GRO, Oil & Grease, Chloride, and Sulfate
	SS-13-56-57	Residual soil sample below the Boiler Ash Staging Area and former Industrial Pond #1 (SB-13)	TAL Metals, Cyanide, Chromium (VI), TCL VOCs, TCL SVOCs, TPH-DRO, TPH-GRO, Oil & Grease, Chloride, and Sulfate
	SS-14-40-42	Residual soil sample below the Boiler Ash Staging Area and former Industrial Pond #2 (SB-14)	TAL Metals, Cyanide, Chromium (VI), TCL VOCs, TCL SVOCs, TPH-DRO, TPH-GRO, Oil & Grease, Chloride, and Sulfate
	SS-15-4-6, SS-16-1-3, SS-17-1-3, SS-18-2-4	Residual soil samples below former Industrial Pond #2 and outside the Boiler Ash Staging Area (SB-15, SB-16, SB-17, SB-18)	TAL Metals, Cyanide, Chromium (VI), TCL VOCs, TCL SVOCs, TPH-DRO, TPH-GRO, Oil & Grease, Chloride, and Sulfate
	SS-19-2-4	Residual soil sample below the ponded water area south of former Industrial Pond #2 (SB-19)	TAL Metals, Cyanide, Chromium (VI), TCL VOCs, TCL SVOCs, TPH-DRO, TPH-GRO, Oil & Grease, Chloride, and Sulfate
	SS-20-2-4	Residual soil sample below the ponded water area north of former Industrial Pond #2 (SB-20)	TAL Metals, Cyanide, Chromium (VI), TCL VOCs, TCL SVOCs, TPH-DRO, TPH-GRO, Oil & Grease, Chloride, and Sulfate
	SB-21-0-1, SB-21-4-5	Background soil samples between the Site and Patrick Highway (SB-21)	TAL Metals, Cyanide, Chromium (VI), TCL VOCs, TCL SVOCs, TPH-DRO, TPH-GRO, Oil & Grease, Chloride, and Sulfate
	SB-22-1-2, SB-22-5-6, SB-22-14-15	Background soil samples between the Site and Patrick Highway (SB-22)	TAL Metals, Cyanide, Chromium (VI), TCL VOCs, TCL SVOCs, TPH-DRO, TPH-GRO, Oil & Grease, Chloride, and Sulfate
	SB-23-2-3, SB-23-4-5	Background soil samples between the Site and Patrick Highway (SB-23)	TAL Metals, Cyanide, Chromium (VI), TCL VOCs, TCL SVOCs, TPH-DRO, TPH-GRO, Oil & Grease, Chloride, and Sulfate
BOILER ASH	ASH-09-44-45	Boiler ash sample from the base of the Boiler Ash Staging Area and north of former Industrial Pond #2 (SB-09)	TAL Metals, Cyanide, Chromium (VI), TCL VOCs, TCL SVOCs, TPH-DRO, TPH-GRO, Oil & Grease, Chloride, and Sulfate
	ASH-13-48-50	Boiler ash sample from the base of the Boiler Ash Staging Area and above former Industrial Pond #1 (SB-13)	TAL Metals, Cyanide, Chromium (VI), TCL VOCs, TCL SVOCs, TPH-DRO, TPH-GRO, Oil & Grease, Chloride, and Sulfate
	ASH-14-36-38	Boiler ash sample from the base of the Boiler Ash Staging Area and formeabove r Industrial Pond #2 (SB-14)	TAL Metals, Cyanide, Chromium (VI), TCL VOCs, TCL SVOCs, TPH-DRO, TPH-GRO, Oil & Grease, Chloride, and Sulfate

TABLE 1. LIST OF SAMPLE LOCATIONS AND ANALYTICAL PARAMETERS
PHASE I BASELINE INVESTIGATION REPORT
BOILER ASH STAGING AREA
CONSENT AGREEMENT 13-04-SW
SONOCO PRODUCTS COMPANY

SAMPLE TYPE	SAMPLE ID	SAMPLE LOCATION	ANALYTICAL PARAMETERS
WASTEWATER SOLID/ SLUDGE	WWS-10A-0-2.3, WWS-10B-2.3-4.6, WWS-10C-4.6-7	Samples from the upper, middle, and lower zones observed in former Industrial Pond #1 (SB-10)	TAL Metals, Cyanide, Chromium (VI), TCL VOCs, TCL SVOCs, TPH-DRO, TPH-GRO, Oil & Grease, Chloride, and Sulfate
	WWS-11-0-2	Samples from the upper zone observed in former Industrial Pond #1 (SB-11)	TAL Metals, Cyanide, Chromium (VI), TCL VOCs, TCL SVOCs, TPH-DRO, TPH-GRO, Oil & Grease, Chloride, and Sulfate
	WWS-12A-0-2.3, WWS-12B-2.3-4.6, WWS-12C-4.6-7	Samples from the upper, middle, and lower zones observed in former Industrial Pond #1 (SB-12)	TAL Metals, Cyanide, Chromium (VI), TCL VOCs, TCL SVOCs, TPH-DRO, TPH-GRO, Oil & Grease, Chloride, and Sulfate
	SL-13-54-55	Sample from former Industrial Pond #1, but below the boiler ash (SB-13).	TAL Metals, Cyanide, Chromium (VI), TCL VOCs, TCL SVOCs, TPH-DRO, TPH-GRO, Oil & Grease, Chloride, and Sulfate
	WWS-14-38-42	Sample from former Industrial Pond #2, but below the boiler ash (SB-14).	TAL Metals, Cyanide, Chromium (VI), TCL VOCs, TCL SVOCs, TPH-DRO, TPH-GRO, Oil & Grease, Chloride, and Sulfate
	WWS-15-0-2, WWS-15-2-4	Samples from the upper and lower zones observed in former Industrial Pond #2 (SB-15)	TAL Metals, Cyanide, Chromium (VI), TCL VOCs, TCL SVOCs, TPH-DRO, TPH-GRO, Oil & Grease, Chloride, and Sulfate
	WWS-16-0-1	Samples from the upper zone observed in former Industrial Pond #2 (SB-16)	TAL Metals, Cyanide, Chromium (VI), TCL VOCs, TCL SVOCs, TPH-DRO, TPH-GRO, Oil & Grease, Chloride, and Sulfate
	WWS-17-0-1	Samples from the upper zone observed in former Industrial Pond #2 (SB-17)	TAL Metals, Cyanide, Chromium (VI), TCL VOCs, TCL SVOCs, TPH-DRO, TPH-GRO, Oil & Grease, Chloride, and Sulfate
	WWS-18-0-2	Samples from the upper zone observed in former Industrial Pond #2 (SB-18)	TAL Metals, Cyanide, Chromium (VI), TCL VOCs, TCL SVOCs, TPH-DRO, TPH-GRO, Oil & Grease, Chloride, and Sulfate
	WWS-19-0-2	Sample from the ponded water area south of former Industrial Pond #2 (SB-19)	TAL Metals, Cyanide, Chromium (VI), TCL VOCs, TCL SVOCs, TPH-DRO, TPH-GRO, Oil & Grease, Chloride, and Sulfate
	WWS-20-0-1	Sample from the ponded water area north of former Industrial Pond #2 (SB-20)	TAL Metals, Cyanide, Chromium (VI), TCL VOCs, TCL SVOCs, TPH-DRO, TPH-GRO, Oil & Grease, Chloride, and Sulfate
GROUNDWATER	MW-01	Shallow groundwater sample northwest of the Boiler Ash Staging Area and former Industrial Pond #1	TAL Metals, Cyanide, Chromium (VI), TCL VOCs, TCL SVOCs, TPH-DRO, TPH-GRO, Oil & Grease, Chloride, and Sulfate
	MW-02, MW-02A	Shallow and intermediate groundwater samples north of the Boiler Ash Staging Area and former industrial ponds	TAL Metals, Cyanide, Chromium (VI), TCL VOCs, TCL SVOCs, TPH-DRO, TPH-GRO, Oil & Grease, Chloride, and Sulfate
	MW-03	Shallow groundwater sample east of former Industrial Pond #2	TAL Metals, Cyanide, Chromium (VI), TCL VOCs, TCL SVOCs, TPH-DRO, TPH-GRO, Oil & Grease, Chloride, and Sulfate
	MW-04	Shallow groundwater sample south of former Industrial Pond #2	TAL Metals, Cyanide, Chromium (VI), TCL VOCs, TCL SVOCs, TPH-DRO, TPH-GRO, Oil & Grease, Chloride, and Sulfate
	MW-05, MW-05A	Shallow and intermediate groundwater samples south of former Industrial Pond #2	TAL Metals, Cyanide, Chromium (VI), TCL VOCs, TCL SVOCs, TPH-DRO, TPH-GRO, Oil & Grease, Chloride, and Sulfate

TABLE 1. LIST OF SAMPLE LOCATIONS AND ANALYTICAL PARAMETERS
PHASE I BASELINE INVESTIGATION REPORT
BOILER ASH STAGING AREA
CONSENT AGREEMENT 13-04-SW
SONOCO PRODUCTS COMPANY

SAMPLE TYPE	SAMPLE ID	SAMPLE LOCATION	ANALYTICAL PARAMETERS
GROUNDWATER	MW-06	Shallow groundwater sample south of former Industrial Pond #1	TAL Metals, Cyanide, Chromium (VI), TCL VOCs, TCL SVOCs, TPH-DRO, TPH-GRO, Oil & Grease, Chloride, and Sulfate
	MW-07, MW-07A	Shallow and intermediate groundwater samples south of former Industrial Pond #1	TAL Metals, Cyanide, Chromium (VI), TCL VOCs, TCL SVOCs, TPH-DRO, TPH-GRO, Oil & Grease, Chloride, and Sulfate
	MW-08	Shallow groundwater sample west of former Industrial Pond #1	TAL Metals, Cyanide, Chromium (VI), TCL VOCs, TCL SVOCs, TPH-DRO, TPH-GRO, Oil & Grease, Chloride, and Sulfate
	MW-09	Shallow groundwater sample below the Boiler Ash Staging Area and north of former Industrial Pond #2	TAL Metals, Cyanide, Chromium (VI), TCL VOCs, TCL SVOCs, TPH-DRO, TPH-GRO, Oil & Grease, Chloride, and Sulfate
	MW-10	Shallow groundwater sample below the Boiler Ash Staging Area and former Industrial Pond #1	TAL Metals, Cyanide, Chromium (VI), TCL VOCs, TCL SVOCs, TPH-DRO, TPH-GRO, Oil & Grease, Chloride, and Sulfate
	MW-11	Shallow groundwater sample below the Boiler Ash Staging Area and former Industrial Pond #2	TAL Metals, Cyanide, Chromium (VI), TCL VOCs, TCL SVOCs, TPH-DRO, TPH-GRO, Oil & Grease, Chloride, and Sulfate
	MW-12	Background groundwater sample between the Site and Patrick Highway	TAL Metals, Cyanide, Chromium (VI), TCL VOCs, TCL SVOCs, TPH-DRO, TPH-GRO, Oil & Grease, Chloride, and Sulfate
	SO-1	Shallow groundwater sample from existing permanent monitoring well south of former Industrial Pond #2	TAL Metals, Cyanide, Chromium (VI), TCL VOCs, TCL SVOCs, TPH-DRO, TPH-GRO, Oil & Grease, Chloride, and Sulfate
SURFACE WATER	SW-01	Sample from Spring Branch southeast of former Industrial Pond #2	TAL Metals, Cyanide, Chromium (VI), TCL VOCs, TCL SVOCs, TPH-DRO, TPH-GRO, Oil & Grease, Chloride, Sulfate, BOD, and Accute Bioassay (Toxicity)
	SW-02	Sample from discharge of former Industrial Pond #2 to Spring Branch	TAL Metals, Cyanide, Chromium (VI), TCL VOCs, TCL SVOCs, TPH-DRO, TPH-GRO, Oil & Grease, Chloride, and Sulfate
	SW-03	Sample from Spring Branch northeast of former Industrial Pond #2	TAL Metals, Cyanide, Chromium (VI), TCL VOCs, TCL SVOCs, TPH-DRO, TPH-GRO, Oil & Grease, Chloride, and Sulfate
	SW-04	Sample from Spring Branch northeast of Site	TAL Metals, Cyanide, Chromium (VI), TCL VOCs, TCL SVOCs, TPH-DRO, TPH-GRO, Oil & Grease, Chloride, and Sulfate
	SW-05	Background sample from Spring Branch upgradient of the Site	TAL Metals, Cyanide, Chromium (VI), TCL VOCs, TCL SVOCs, TPH-DRO, TPH-GRO, Oil & Grease, Chloride, Sulfate, BOD, and Accute Bioassay (Toxicity)
	SW-06	Sample from discharge of former Industrial Pond #1 to Black Creek flood plain	TAL Metals, Cyanide, Chromium (VI), TCL VOCs, TCL SVOCs, TPH-DRO, TPH-GRO, Oil & Grease, Chloride, Sulfate, BOD, and Accute Bioassay (Toxicity)
	SW-07	Sample from drainage swale west of former Industrial Pond #1	TAL Metals, Cyanide, Chromium (VI), TCL VOCs, TCL SVOCs, TPH-DRO, TPH-GRO, Oil & Grease, Chloride, and Sulfate
	SW-08	Sample from spring/seep upgradient of former Industrial Pond #1	TAL Metals, Cyanide, Chromium (VI), TCL VOCs, TCL SVOCs, TPH-DRO, TPH-GRO, Oil & Grease, Chloride, and Sulfate
	SW-09	Sample from spring/seep upgradient of former Industrial Pond #1	TAL Metals, Cyanide, Chromium (VI), TCL VOCs, TCL SVOCs, TPH-DRO, TPH-GRO, Oil & Grease, Chloride, Sulfate, BOD, and Accute Bioassay (Toxicity)

TABLE 1. LIST OF SAMPLE LOCATIONS AND ANALYTICAL PARAMETERS
PHASE I BASELINE INVESTIGATION REPORT
BOILER ASH STAGING AREA
CONSENT AGREEMENT 13-04-SW
SONOCO PRODUCTS COMPANY

SAMPLE TYPE	SAMPLE ID	SAMPLE LOCATION	ANALYTICAL PARAMETERS
SEDIMENT	SD-01	Sample from Spring Branch southeast of former Industrial Pond #2	TAL Metals, Cyanide, Chromium (VI), TCL VOCs, TCL SVOCs, TPH-DRO, TPH-GRO, Oil & Grease, Chloride, and Sulfate
	SD-02	Sample from discharge of former Industrial Pond #2 to Spring Branch	TAL Metals, Cyanide, Chromium (VI), TCL VOCs, TCL SVOCs, TPH-DRO, TPH-GRO, Oil & Grease, Chloride, and Sulfate
	SD-03	Sample from Spring Branch northeast of former Industrial Pond #2	TAL Metals, Cyanide, Chromium (VI), TCL VOCs, TCL SVOCs, TPH-DRO, TPH-GRO, Oil & Grease, Chloride, and Sulfate
	SD-04	Sample from Spring Branch northeast of Site	TAL Metals, Cyanide, Chromium (VI), TCL VOCs, TCL SVOCs, TPH-DRO, TPH-GRO, Oil & Grease, Chloride, and Sulfate
	SD-05	Background sample from Spring Branch upgradient of the Site	TAL Metals, Cyanide, Chromium (VI), TCL VOCs, TCL SVOCs, TPH-DRO, TPH-GRO, Oil & Grease, Chloride, and Sulfate
	SD-06	Sample from discharge of former Industrial Pond #1 to Black Creek flood plain	TAL Metals, Cyanide, Chromium (VI), TCL VOCs, TCL SVOCs, TPH-DRO, TPH-GRO, Oil & Grease, Chloride, and Sulfate
	SD-07	Sample from drainage swale west of former Industrial Pond #1	TAL Metals, Cyanide, Chromium (VI), TCL VOCs, TCL SVOCs, TPH-DRO, TPH-GRO, Oil & Grease, Chloride, and Sulfate
	SD-08	Sample from spring/seep upgradient of former Industrial Pond #1	TAL Metals, Cyanide, Chromium (VI), TCL VOCs, TCL SVOCs, TPH-DRO, TPH-GRO, Oil & Grease, Chloride, and Sulfate
	SD-09	Sample from spring/seep upgradient of former Industrial Pond #1	TAL Metals, Cyanide, Chromium (VI), TCL VOCs, TCL SVOCs, TPH-DRO, TPH-GRO, Oil & Grease, Chloride, and Sulfate

NOTES:
1 - All samples were collected and analyzed in accordance with the Work Plan and QAPP.
2 - TAL metals, mercury, cyanide, and chromium (VI) includes total and dissolved analyses for aqueous samples.
3 - Field duplicates and field, equipment and trip blanks were collected in accordance with the Work Plan and QAPP.

TABLE 2. SUMMARY OF DETECTED CONSTITUENTS IN SOIL SAMPLES
PHASE I BASELINE INVESTIGATION REPORT
BOILER ASH STAGING AREA
CONSENT AGREEMENT 13-04-SW
SONOCO PRODUCTS COMPANY

CONSTITUENT	FRACTION	UNITS	R-RSL	I-RSL	RB-SSL	MCL-SSL	SB-01-4-5		SB-01-4-5-D		SB-02-4-6		SB-03-2-4		SB-04-2-4		SB-04-2-4-D		SB-05-2-4		SB-05-2-4-D		SB-06-2-4		SB-08-2-4		SB-08-2-4-D		SS-09-46-47	
Diesel Range Organics	DRO	MG/KG	NE	NE	NE	NE	2.37	U	2.36	U	2.3	U	2.56	U	**310**		**68.6**		2.63	J	2.48	U	**5,430**		**11.7**		**97.2**		2.38	U
Oil & Grease	O&G	MG/KG	NE	NE	NE	NE	260	U	220	U	250	U	240	U	**760**		**6,500**		280	U	240	U	**13,000**		230	U	230	U	220	U
Gasoline Range Organics	GRO	MG/KG	NE	NE	NE	NE	5	U	4.4	U	5.3	U	4.3	U	5.6	U	5.6	U	6	U	5.1	U	9.2	U	4.2	U	4.5	U	4.6	U
Chloride	G	MG/KG	NE	NE	NE	NE	1.28	J	1.38	J	1.25	J	1.81	J	1.25	J	1.15	J	1.29	J	1.21	J	2.6	J	1.6	J	1.56	J	**3.45**	
Cyanide, Total	G	UG/KG	22,000	140,000	14	2,000	83.2	U	86.3	U	87.8	U	99.4	U	86.5	U	91.2	U	82.5	U	91	U	124	U	80	U	80	U	90.4	U
Hexavalent Chromium	G	MG/KG	0.29	5.6	0.00059	NE	0.307	J	0.309	J	**0.426**		**0.851**		**0.528**		0.181	U	0.286	J	0.182	U	**5.51**		0.317	J	**0.663**		0.255	J
Sulfate	G	MG/KG	NE	NE	NE	NE	**26**		**28**		**21.1**		1.55	U	**49.6**		**41.9**		**16.5**		**17**		**21.9**		2.34	J	2.05	J	**65.6**	
Aluminum	METALS	UG/KG	77,000,000	990,000,000	23,000,000	NE	**7,220,000**		**7,150,000**		**3,920,000**		**4,730,000**		**4,470,000**		**4,540,000**		**7,400,000**		**7,680,000**		**5,760,000**		**12,100,000**		**445,000**		**1,090,000**	
Antimony	METALS	UG/KG	31,000	410,000	270	270	347	U	353	U	344	U	393	U	390	U	406	J	**1,240**		**1210**		**1,450**		364	U	369	U	332	U
Arsenic	METALS	UG/KG	610	2,400	1.3	290	1,060	J	963	J	886	J	**1,420**		**3,090**		**3,370**		941	J	897	J	**18,600**		**3,190**		224	U	744	J
Barium	METALS	UG/KG	15,000,000	190,000,000	120,000	82,000	**14,300**		**12,900**		**4,450**		**5,330**		**35,700**		**35,000**		**6,640**		**5470**		**206,000**		**19,900**		**2,230**		**3,860**	
Beryllium	METALS	UG/KG	160,000	2,000,000	13,000	3,200	91.3	J	87.3	J	38	J	59	J	**190**		**148**		61.3	J	49.9	J	**878**		**147**		50.4	J	43	J
Cadmium	METALS	UG/KG	70,000	800,000	520	380	75.3	J	78.6	J	47.4	J	126	J	**481**		82	J	28.4	J	27.1	J	**391**		**281**		41.2	J	30	J
Calcium	METALS	UG/KG	NE	NE	NE	NE	**25,800**		**26,300**		19400	J	10,400	J	**710,000**		**493,000**		**78,800**		**58,500**		**2,720,000**		**284,000**		**45,800**		**665,000**	
Chromium	METALS	UG/KG	120,000,000*	1,500,000,000*	NE	180,000,000	**7,820**		**7,700**		**7100**		**9,110**		**5,180**		**4,570**		**6,540**		**5,760**		**7,870**		**17,800**		**788**		**1,950**	
Cobalt	METALS	UG/KG	23,000	300,000	210	NE	**490**		**517**		201	J	**225**		**767**		**550**		**377**		**281**		**8,340**		**968**		**431**		**225**	
Copper	METALS	UG/KG	3,100,000	41,000,000	22,000	46,000	**2,860**		**2,990**		**1,790**		**2,650**		**8,490**		**106,000**		**3,550**		**2,810**		**29,600**		**30,900**		**2,840**		**5,790**	
Iron	METALS	UG/KG	55,000,000	720,000,000	270,000	NE	**3,520,000**		**3,500,000**		**2,770,000**		**2,790,000**		**3,320,000**		**3,630,000**		**3,110,000**		**2,720,000**		**7,490,000**		**9,590,000**		**614,000**		**1,310,000**	
Lead	METALS	UG/KG	400,000	800,000	NE	14,000	**4,020**		**4,170**		**2,550**		**4,410**		**6,330**		**4,860**		**4,530**		**3,420**		**36,100**		**9,570**		**1,000**		**1,890**	
Magnesium	METALS	UG/KG	NE	NE	NE	NE	**183,000**		**184,000**		**62,700**		**57,800**		**70,200**		**54,900**		**70,500**		**58,700**		**285,000**		**256,000**		**51,600**		**33,700**	
Manganese	METALS	UG/KG	1,800,000	23,000,000	21,000	NE	**7,970**		**9,570**		**2,830**		**2,100**		**50,000**		**36,800**		**3,350**		**2,340**		**62,800**		**20,600**		**17,900**		**2,520**	
Mercury	METALS	UG/KG	10,000	43,000	33	100	**282**		**256**		**150**		4.65	U	**14.7**		**16.8**		**22.7**		**23.8**		**76**		**36.8**		**26.2**		**356**	
Nickel	METALS	UG/KG	1,500,000	20,000,000	20,000	NE	**1,820**		**1,850**		**887**		**859**		**2,410**		**1,720**		**1,810**		**1,690**		**7,370**		**3,120**		322	J	**560**	
Potassium	METALS	UG/KG	NE	NE	NE	NE	**175,000**		**184,000**		**68,700**		**100,000**		**108,000**		**114,000**		**70,400**		58,400	J	**606,000**		**285,000**		**97,500**		44,300	J
Selenium	METALS	UG/KG	390,000	5,100,000	400	260	358	U	357	U	336	U	369	U	374	U	355	U	355	U	358	U	**5,520**		352	U	369	U	357	U
Silver	METALS	UG/KG	390,000	5,100,000	600	NE	105	U	114	J	104	U	119	U	118	U	103	U	108	U	106	U	143	U	233	J	112	U	148	J
Sodium	METALS	UG/KG	NE	NE	NE	NE	17400	U	17300	U	16300	U	17,900	U	22,000	J	17,200	U	20,000	J	21,900	J	**133,000**		**58,000**		17,900	U	17300	U
Thallium	METALS	UG/KG	780	10,000	11	140	65.1	U	65.0	U	61.0	U	67	U	**137**	J	**85.1**	J	**101**	J	65.1	U	**519**		89.3	J	67	U	64.9	U
Vanadium	METALS	UG/KG	390,000	5,100,000	63,000	NE	**9,880**		**10900**		**9920**		**23,500**		**10,600**		**8,310**		**9270**		**8,530**		**18,700**		**18,000**		**11,200**		**3,430**	
Zinc	METALS	UG/KG	23,000,000	310,000,000	290,000	NE	**4,750**		4720		2020	J	1750	J	**17,300**		**7,550**		**3680**		**3,440**		**55,800**		**33,300**		**3,750**		**2,210**	
1-Methylnaphthalene	SVOA	UG/KG	16,000	53,000	5.1	NE	10.9	U	10.9	U	10.7	U	11.8	U	122	U	113	U	11.4	U	11.5	U	7,440	U	11.1	U	**24.1**	J	11	U
2,4-Dimethylphenol	SVOA	UG/KG	1,200,000	12,000,000	320	NE	109	U	109	U	107	U	118	U	1,220	U	1,130	U	114	U	115	U	**74,400**	U	111	U	113	U	110	U
2-Methylnaphthalene	SVOA	UG/KG	230,000	2,200,000	140	NE	10.9	U	10.9	U	10.7	U	11.8	U	122	U	113	U	11.4	U	11.5	U	**7,690**	J	11.1	U	18.8	J	11	U
Acenaphthene	SVOA	UG/KG	3,400,000	33,000,000	4,100	NE	10.9	U	10.9	U	10.7	U	11.8	U	**490**		279	J	11.4	U	11.5	U	**57,000**		11.1	U	**145**		11	U
Anthracene	SVOA	UG/KG	17,000,000	170,000,000	42,000	NE	10.9	U	10.9	U	10.7	U	11.8	U	**4,810**		**728**		11.4	U	11.5	U	**140,000**		15.2	J	**303**		11	U
Benzo(a)anthracene	SVOA	UG/KG	150	2,100	10	NE	10.9	U	10.9	U	10.7	U	11.8	U	**22,300**		**5,990**		11.4	U	13.8	J	**386,000**		**118**		**728**		11	U
Benzo(a)pyrene	SVOA	UG/KG	15	210	4	240	10.9	U	10.9	U	10.7	U	11.8	U	**21,500**		**6,660**		11.4	U	13.8	J	**346,000**		**128**		**631**		12.9	J
Benzo(b)fluoranthene	SVOA	UG/KG	150	2,100	35	NE	10.9	U	10.9	U	10.7	U	11.8	U	**24,700**		**9,120**		11.4	U	13.1	J	**405,000**		**189**		**911**		14	J
Benzo(ghi)perylene	SVOA	UG/KG	NE	NE	NE	NE	10.9	U	10.9	U	10.7	U	11.8	U	**10,300**		**3,370**		11.4	U	11.5	U	**181,000**		**74.3**		**337**		11	U
Benzo(k)fluoranthene	SVOA	UG/KG	1,500	21,000	350	NE	10.9	U	10.9	U	10.7	U	11.8	U	**9,080**		**3,060**		11.4	U	11.5	U	**145,000**		**64.7**		**320**		12.2	J
bis(2-Ethylhexyl)phthalate	SVOA	UG/KG	35,000	120,000	1,100	1,400	109	U	109	U	107	U	118	U	1,220	U	1,130	U	114	U	115	U	74,400	U	111	U	238	J	110	U
Carbazole	SVOA	UG/KG	NE	NE	NE	NE	10.9	U	10.9	U	10.7	U	11.8	U	251	J	185	J	11.4	U	11.5	U	**132,000**		11.8	J	**205**		11	U
Chrysene	SVOA	UG/KG	15,000	210,000	1,100	NE	10.9	U	10.9	U	10.7	U	11.8	U	**21,900**		**6,350**		11.4	U	11.5	U	**413,000**		**145**		**812**		11	U
Dibenzo(a,h)anthracene	SVOA	UG/KG	15	210	11	NE	10.9	U	10.9	U	10.7	U	11.8	U	**3,620**		**1,030**		11.4	U	11.5	U	**58,800**		17.4	J	**97.6**		11	U
Diphenylamine	SVOA	UG/KG	1,500,000	15,000,000	440	NE	109	U	109	U	107	U	118	U	1,220	U	1,130	U	114	U	115	U	74,400	U	111	U	113	U	110	U
Fluoranthene	SVOA	UG/KG	2,300,000	22,000,000	70,000	NE	10.9	U	10.9	U	10.7	U	11.8	U	**39,800**		**9,750**		11.4	U	13.5	J	**864,000**		**191**		**1700**		11	U
Fluorene	SVOA	UG/KG	2,300,000	22,000,000	4,000	NE	10.9	U	10.9	U	10.7	U	11.8	U	**867**		256	J	11.4	U	11.5	U	**56,300**		11.1	U	**131**		11	U
Indeno(1,2,3-cd)pyrene	SVOA	UG/KG	150	2,100	200	NE	10.9	U	10.9	U	10.7	U	11.8	U	**10,900**		**3,610**		11.4	U	11.5	U	**188,000**		**66.6**		**400**		11	U
Naphthalene	SVOA	UG/KG	3,600	18,000	0.47	NE	10.9	U	10.9	U	10.7	U	11.8	U	122	U	113	U	11.4	U	11.5	U	13,600	J	12.2	J	23.4	J	11	U
Phenanthrene	SVOA	UG/KG	NE	NE	NE	NE	10.9	U	10.9	U	10.7	U	11.8	U	**13,400**		**2,870**		11.4	U	11.5	U	**525,000**		**84**		**1500**		11	U
Pyrene	SVOA	UG/KG	1,700,000	17,000,000	9,500	NE	10.9	U	10.9	U	10.7	U	11.8	U	**27,500**		**7,010**		11.4	U	11.5	U	**460,000**		**169**		**1530**		11	U
1,1,2-Trichloroethane	VOA	UG/KG	1,100	5,300	0.077	1.6	0.213	U	0.219	U	0.247	U	0.229	U	0.274	U	0.24	U	0.265	U	0.241	U	0.447	U	0.222	U	0.204	U	0.286	U
2-Butanone	VOA	UG/KG	28,000,000	200,000,000	1,000	NE	1.07	U	1.10	U	1.24	U	1.14	U	1.41	J	2.3	J	2.16	J	1.2	U	4.07	J	2.22	J	2.72	J	1.43	U
Acetone	VOA	UG/KG	61,000,000	630,000,000	2,400	NE	9.89		**26.3**		**7.19**		**12.5**		**20.7**		**26.2**		**163**		**34.7**		**31.8**		**21.5**		**35.8**		**75.4**	
Benzene	VOA	UG/KG	1,100	5,400	0.2	2.6	0.213	U	0.219	U	0.247	U	0.229	U	0.274	U	0.24	U	0.265	U	0.241	U	0.447	U	0.222	U	0.204	U	0.286	U
Carbon disulfide	VOA	UG/KG	820,000	3,700,000	210	NE	1.07	U	1.10	U	1.24	U	1.14	U	1.37	U	1.2	U	1.32	U	1.2	U	2.24	U	1.11	U	1.02	U	1.43	U
Chlorobenzene	VOA	UG/KG	290,000	1,400,000	49	68	0.213	U	0.219	U	0.247	U	0.229	U	0.274	U	0.24	U	0.265	U	0.241	U	0.447	U	0.222	U	0.204	U	0.286	U
Chloromethane	VOA	UG/KG	120,000	500,000	49	NE	0.213	U	0.219	U	0.247	U	0.229	U	0.274	U	0.24	U	0.265	U	0.241	U	0.447	U	0.222	U	0.204	U	0.286	U
Ethylbenzene	VOA	UG/KG	5,400	27,000	1.5	780	0.213	U	0.219	U	0.247	U	0.229	U	0.274	U	0.24	U	0.265	U	0.241	U	0.447	U	0.222	U	0.341	J	0.286	U
Styrene	VOA	UG/KG	6,300,000	36,000,000	1,200	110	0.213	U	0.219	U	0.264	J	0.229	U	0.274	U	0.24	U	0.265	U	0.241	U	0.447	U	0.222	U	0.204	U	0.286	U
Toluene	VOA	UG/KG	5,000,000	45,000,000	590	690	0.213	U	0.219	U	0.247	U	0.229	U	0.274	U	0.24	U	0.265	U	0.241	U	0.447	U	0.222	U	0.204	U	0.286	U
Xylenes (total)	VOA	UG/KG	630,000	2,700,000	190	9,800	0.213	U	0.219	U	0.247	U	0.229	U	0.274	U	0.24	U	0.265	U	0.241	U	0.447	U	0.222	U	0.565	J	0.286	U

TABLE 2. SUMMARY OF DETECTED CONSTITUENTS IN SOIL SAMPLES
PHASE I BASELINE INVESTIGATION REPORT
BOILER ASH STAGING AREA
CONSENT AGREEMENT 13-04-SW
SONOCO PRODUCTS COMPANY

CONSTITUENT	FRACTION	UNITS	R-RSL	I-RSL	RB-SSL	MCL-SSL	SS-10-7-8		SS-11-2-4		SS-12-7-8		SS-13-56-57		SS-14-40-42		SS-15-4-6		SS-16-1-3		SS-17-1-3		SS-18-2-4		SS-19-2-4		SS-20-2-4		SB-21-0-1	
Diesel Range Organics	DRO	MG/KG	NE	NE	NE	NE	**11.4**		**15.8**		**11.5**		**9**		**29.5**		2.79	U	4.77	J	2.69	J	6.02	J	**11.60**		**30.5**		NA	
Oil & Grease	O&G	MG/KG	NE	NE	NE	NE	290	U	250	U	290	U	270	U	260	U	270	U	**300**		230	U	260	U	240	U	300	U	NA	
Gasoline Range Organics	GRO	MG/KG	NE	NE	NE	NE	5.9	U	5.0	U	6.0	U	6	U	**13**		5.3	U	5.7	U	4.5	U	4.6	U	5.0	U	6.3	U	NA	
Chloride	G	MG/KG	NE	NE	NE	NE	**4.25**		**4.38**		**3.27**		**4.5**		**77.1**		2.48	J	**6.40**		**3.86**		**25.2**		**24.1**		**10.0**		NA	
Cyanide, Total	G	UG/KG	22,000	140,000	14	2,000	105	U	95.2	U	104	U	90	U	107	U	108	U	98.0	U	93.0	U	91.4	U	87.9	U	119	U	81.2	U
Hexavalent Chromium	G	MG/KG	0.29	5.6	0.00059	NE	2.08	J	0.346	J	0.232	U	**0.731**		**0.607**		0.216	J	0.200	U	0.191	U	0.185	U	0.201	U	2.17	U	0.169	J
Sulfate	G	MG/KG	NE	NE	NE	NE	1.93	U	1.92	J	1.91	U	1.69	U	**2100**		1.72	U	**121**		**22.1**		**600**		**966**		**82.9**		NA	
Aluminum	METALS	UG/KG	77,000,000	990,000,000	23,000,000	NE	**4,040,000**		**1,230,000**		**4,130,000**		**873,000**		**3,650,000**		**1,810,000**		**8,330,000**		**3,740,000**		**6,390,000**		**2,280,000**		**7,180,000**		**2,920,000**	
Antimony	METALS	UG/KG	31,000	410,000	270	270	476	U	1240		472	U	416	U	390	U	428	U	397	U	383	U	365	U	414	U	467	U	321	U
Arsenic	METALS	UG/KG	610	2,400	1.3	290	283	U	247	U	269	U	233	U	253	U	245	U	561	J	233	U	244	U	392	J	277	U	338	J
Barium	METALS	UG/KG	15,000,000	190,000,000	120,000	82,000	**2,710**		**4,680**		**3,190**		**1,800**		**3,410**		**1,710**		**10,700**		**4,340**		**6,440**		**2,470**		**9,060**		**7,300**	
Beryllium	METALS	UG/KG	160,000	2,000,000	13,000	3,200	69.4	J	28.6	J	71.0	J	23	U	37.9	J	24.5	U	98.3	J	43.8	J	74.3	J	27.8	J	**289**		35.4	J
Cadmium	METALS	UG/KG	70,000	800,000	520	380	28.3	U	43.4	J	28.3	J	23	U	25.3	U	24.5	U	207	J	30.7	J	24.4	U	24.9	U	46.6	J	24	J
Calcium	METALS	UG/KG	NE	NE	NE	NE	11,700	J	**277,000**		15,100	J	7,670	U	**154,000**		**35,400**		**158,000**		22,200	J	**32,100**		**187,000**		**672,000**		**25,600**	
Chromium	METALS	UG/KG	120,000,000*	1,500,000,000*	NE	180,000,000	**6,990**		**12,900**		**7,470**		**4,100**		**5,410**		**3,310**		**16,800**		**7,430**		**6,630**		**3,560**		**7,380**		**2,470**	
Cobalt	METALS	UG/KG	23,000	300,000	210	NE	88.7	J	74.0	U	213	J	95.8	J	114	J	73.5	U	**451**		**333**		**288**		104	J	244	J	122	J
Copper	METALS	UG/KG	3,100,000	41,000,000	22,000	46,000	**4,240**		**15,300**		**6,130**		**996**		**2,040**		**1,530**		**9,440**		**3,260**		**3,070**		**1,380**		**4,150**		**1,020**	
Iron	METALS	UG/KG	55,000,000	720,000,000	270,000	NE	**158,000**		**154,000**		**230,000**		**165,000**		**206,000**		**157,000**		**1,440,000**		**861,000**		**499,000**		**96,800**		**406,000**		**1,090,000**	
Lead	METALS	UG/KG	400,000	800,000	NE	14,000	**2,990**		**3,490**		**4,470**		**2,880**		**3,460**		**1,670**		**6,230**		**3,860**		**4,260**		**2,120**		**5,170**		**3,650**	
Magnesium	METALS	UG/KG	NE	NE	NE	NE	**42,400**		**57,700**		**52,500**		**11,700**		**223,000**		**32,800**		**145,000**		**115,000**		**132,000**		**190,000**		**216,000**		**61,000**	
Manganese	METALS	UG/KG	1,800,000	23,000,000	21,000	NE	**2,070**		**4,040**		**3,450**		**5,810**		**2,920**		**1,630**		**4,090**		**6,060**		**4,350**		**2,140**		**8,850**		**7,980**	
Mercury	METALS	UG/KG	10,000	43,000	33	100	**31.7**		**19.2**		14.0	J	4.88	J	**19.8**		6.70	J	9.47	J	8.77	J	9.97	J	12.5	J	**44.7**		12.5	J
Nickel	METALS	UG/KG	1,500,000	20,000,000	20,000	NE	**588**		269	J	**820**		221	J	409	J	364	J	**1,620**		**1,090**		**1,270**		375	J	**1,070**		**1,100**	
Potassium	METALS	UG/KG	NE	NE	NE	NE	**178,000**		62,200	J	**107,000**		**74,800**		**666,000**		43,200	J	**174,000**		**98,100**		**309,000**		**348,000**		**350,000**		**57,100**	
Selenium	METALS	UG/KG	390,000	5,100,000	400	260	471	J	407	U	444	U	384	U	417	U	404	U	430	U	384	U	403	U	410	U	457	U	303	U
Silver	METALS	UG/KG	390,000	5,100,000	600	NE	144	U	158	J	143	U	163	J	118	U	130	U	120	U	116	U	111	U	126	U	294	J	97.3	U
Sodium	METALS	UG/KG	NE	NE	NE	NE	**1,000,000**		**19,700**	U	**603,000**		**370,000**		**1,990,000**		**76,900**		**76,800**		**86,100**		**778,000**		**1,070,000**		**529,000**		14700	U
Thallium	METALS	UG/KG	780	10,000	11	140	85.0	U	74.0	U	80.7	U	69.8	U	75.8	U	73.5	U	78.3	U	69.8	U	73.3	U	74.6	U	83.1	U	55.1	U
Vanadium	METALS	UG/KG	390,000	5,100,000	63,000	NE	**3,740**		**800**		**4,660**		**1,110**		**2,520**		**1,870**		**19,800**		**7,540**		**3,140**		**2,220**		**3,770**		**3,980**	
Zinc	METALS	UG/KG	23,000,000	310,000,000	290,000	NE	1570	J	**6,350**		1820	J	**4,340**		**3,530**		1320	J	**32,800**		**3,420**		**2,770**		2280	J	**8,160**		**4,290**	
1-Methylnaphthalene	SVOA	UG/KG	16,000	53,000	5.1	NE	14.8	U	12.7	U	73.2	U	12.7	U	12.9	U	12.9	U	13.0	U	11.9	U	12.2	U	12.6	U	14.4	U	NA	
2,4-Dimethylphenol	SVOA	UG/KG	1,200,000	12,000,000	320	NE	148	U	127	U	732	U	127	U	129	U	129	U	130	U	119	U	122	U	126	U	144	U	NA	
2-Methylnaphthalene	SVOA	UG/KG	230,000	2,200,000	140	NE	14.8	U	12.7	U	73.2	U	12.7	U	12.9	U	12.9	U	13.0	U	11.9	U	12.2	U	12.6	U	14.4	U	NA	
Acenaphthene	SVOA	UG/KG	3,400,000	33,000,000	4,100	NE	14.8	U	12.7	U	73.2	U	12.7	U	12.9	U	12.9	U	13.0	U	11.9	U	12.2	U	12.6	U	14.4	U	NA	
Anthracene	SVOA	UG/KG	17,000,000	170,000,000	42,000	NE	14.8	U	12.7	U	73.2	U	12.7	U	12.9	U	12.9	U	13.0	U	11.9	U	34.9	J	12.6	U	14.4	U	NA	
Benzo(a)anthracene	SVOA	UG/KG	150	2,100	10	NE	14.8	U	12.7	U	73.2	U	12.7	U	12.9	U	12.9	U	13.0	U	11.9	U	**123**		12.6	U	14.4	U	NA	
Benzo(a)pyrene	SVOA	UG/KG	15	210	4	240	14.8	U	12.7	U	222	J	14	J	12.9	U	12.9	U	13.0	U	11.9	U	**162**		22.2	J	14.4	U	NA	
Benzo(b)fluoranthene	SVOA	UG/KG	150	2,100	35	NE	14.8	U	12.7	U	73.2	U	13.1	J	12.9	U	12.9	U	13.0	U	11.9	U	**174**		12.6	U	14.4	U	NA	
Benzo(ghi)perylene	SVOA	UG/KG	NE	NE	NE	NE	14.8	U	12.7	U	73.2	U	12.7	U	12.9	U	12.9	U	13.0	U	11.9	U	**123**		12.6	U	14.4	U	NA	
Benzo(k)fluoranthene	SVOA	UG/KG	1,500	21,000	350	NE	14.8	U	12.7	U	73.2	U	12.7	U	12.9	U	12.9	U	13.0	U	11.9	U	**61.3**		12.6	U	14.4	U	NA	
bis(2-Ethylhexyl)phthalate	SVOA	UG/KG	35,000	120,000	1,100	1,400	148	U	215	J	732	U	127	U	129	U	129	U	130	U	119	U	122	U	126	U	144	U	NA	
Carbazole	SVOA	UG/KG	NE	NE	NE	NE	14.8	U	12.7	U	73.2	U	12.7	U	12.9	U	12.9	U	13.0	U	11.9	U	12.2	U	12.6	U	14.4	U	NA	
Chrysene	SVOA	UG/KG	15,000	210,000	1,100	NE	14.8	U	12.7	U	73.2	U	12.7	U	12.9	U	12.9	U	13.0	U	11.9	U	**170**		12.6	U	14.4	U	NA	
Dibenzo(a,h)anthracene	SVOA	UG/KG	15	210	11	NE	14.8	U	12.7	U	73.2	U	12.7	U	12.9	U	12.9	U	13.0	U	11.9	U	12.2	U	12.6	U	14.4	U	NA	
Diphenylamine	SVOA	UG/KG	1,500,000	15,000,000	440	NE	148	U	127	U	732	U	127	U	129	U	129	U	130	U	119	U	122	U	126	U	144	U	NA	
Fluoranthene	SVOA	UG/KG	2,300,000	22,000,000	70,000	NE	17.3	J	12.7	U	73.2	U	12.7	U	12.9	U	12.9	U	13.0	U	11.9	U	**242**		12.6	U	14.4	U	NA	
Fluorene	SVOA	UG/KG	2,300,000	22,000,000	4,000	NE	14.8	U	12.7	U	73.2	U	12.7	U	12.9	U	12.9	U	13.0	U	11.9	U	12.2	U	12.6	U	14.4	U	NA	
Indeno(1,2,3-cd)pyrene	SVOA	UG/KG	150	2,100	200	NE	14.8	U	12.7	U	73.2	U	12.7	U	12.9	U	12.9	U	13.0	U	11.9	U	**102**		12.6	U	14.4	U	NA	
Naphthalene	SVOA	UG/KG	3,600	18,000	0.47	NE	14.8	U	12.7	U	73.2	U	12.7	U	19	J	12.9	U	13.0	U	11.9	U	12.2	U	12.6	U	14.4	U	NA	
Phenanthrene	SVOA	UG/KG	NE	NE	NE	NE	14.8	U	12.7	U	73.2	U	12.7	U	12.9	U	12.9	U	13.0	U	11.9	U	**173**		12.6	U	14.4	U	NA	
Pyrene	SVOA	UG/KG	1,700,000	17,000,000	9,500	NE	14.8	U	12.7	U	73.2	U	12.7	U	12.9	U	12.9	U	13.0	U	14.3	J	375		19.7	J	14.4	U	NA	
1,1,2-Trichloroethane	VOA	UG/KG	1,100	5,300	0.077	1.6	0.265	U	0.248	U	0.281	U	0.207	U	**1.98**		0.271	U	0.274	U	0.241	U	0.256	U	0.283	U	0.346	U	NA	
2-Butanone	VOA	UG/KG	28,000,000	200,000,000	1,000	NE	3.44	J	2.21	J	2.31	J	1.04	U	**5.48**		5.75		1.63	J	2.30	J	1.90	J	1.47	J	5.78		NA	
Acetone	VOA	UG/KG	61,000,000	630,000,000	2,400	NE	**20.6**		**8.17**		**25.3**		1.04	U	**36.2**		**33.1**		**15.5**		**24.5**		**13.0**		**9.50**		**37.1**		NA	
Benzene	VOA	UG/KG	1,100	5,400	0.2	2.6	**2.48**		0.248	U	0.281	U	**2.21**		0.297	U	0.271	U	0.274	U	0.241	U	0.256	U	0.283	U	0.346	U	NA	
Carbon disulfide	VOA	UG/KG	820,000	3,700,000	210	NE	1.33	U	1.24	U	1.41	U	1.04	U	1.78	J	1.35	U	2.26	J	1.20	U	1.28	U	1.41	U	1.73	U	NA	
Chlorobenzene	VOA	UG/KG	290,000	1,400,000	49	68	0.265	U	0.248	U	0.281	U	0.207	U	0.742	J	0.271	U	0.274	U	0.241	U	0.256	U	0.283	U	0.346	U	NA	
Chloromethane	VOA	UG/KG	120,000	500,000	49	NE	0.265	U	0.248	U	0.281	U	0.207	U	0.297	U	0.271	U	0.274	U	0.241	U	0.256	U	0.283	U	0.346	U	NA	
Ethylbenzene	VOA	UG/KG	5,400	27,000	1.5	780	**4.44**		0.248	U	0.281	U	0.207	U	**11.6**		0.271	U	0.274	U	0.241	U	0.256	U	0.283	U	0.346	U	NA	
Styrene	VOA	UG/KG	6,300,000	36,000,000	1,200	110	0.265	U	0.248	U	0.281	U	0.207	U	0.297	U	0.271	U	0.274	U	0.241	U	0.256	U	0.283	U	0.346	U	NA	
Toluene	VOA	UG/KG	5,000,000	45,000,000	590	690	**4.73**		0.248	U	0.281	U	**1.92**		0.969	J	0.271	U	0.274	U	0.241	U	0.256	U	0.283	U	0.507	J	NA	
Xylenes (total)	VOA	UG/KG	630,000	2,700,000	190	9,800	**58.7**		0.248	U	0.281	U	**29.8**		**69.7**		**5.11**		0.274	U	0.241	U	0.256	U	0.283	U	0.726	J	NA	

TABLE 2. SUMMARY OF DETECTED CONSTITUENTS IN SOIL SAMPLES
PHASE I BASELINE INVESTIGATION REPORT
BOILER ASH STAGING AREA
CONSENT AGREEMENT 13-04-SW
SONOCO PRODUCTS COMPANY

CONSTITUENT	FRACTION	UNITS	R-RSL	I-RSL	RB-SSL	MCL-SSL	SB-21-4-5		SB-22-1-2		SB-22-5-6		SB-22-14-15		SB-23-2-3		SB-23-4-5	
Diesel Range Organics	DRO	MG/KG	NE	NE	NE	NE	NA		NA		NA		NA		NA		NA	
Oil & Grease	O&G	MG/KG	NE	NE	NE	NE	NA		NA		NA		NA		NA		NA	
Gasoline Range Organics	GRO	MG/KG	NE	NE	NE	NE	NA		NA		NA		NA		NA		NA	
Chloride	G	MG/KG	NE	NE	NE	NE	NA		NA		NA		NA		NA		NA	
Cyanide, Total	G	UG/KG	22,000	140,000	14	2,000	86.9	U	90.6	U	89.2	U	75.1	U	76.0	U	97.9	U
Hexavalent Chromium	G	MG/KG	0.29	5.6	0.00059	NE	**0.622**		0.466	J	**1.22**		**0.506**		0.308	J	**0.689**	
Sulfate	G	MG/KG	NE	NE	NE	NE	NA		NA		NA		NA		NA		NA	
Aluminum	METALS	UG/KG	77,000,000	990,000,000	23,000,000	NE	**8,410,000**		**1,500,000**		**7,970,000**		**1,040,000**		**6,330,000**		**21,900,000**	
Antimony	METALS	UG/KG	31,000	410,000	270	270	354	U	371	U	348	U	319	U	309	U	374	U
Arsenic	METALS	UG/KG	610	2,400	1.3	290	**1200**		256	J	746	J	349	J	571	J	414	J
Barium	METALS	UG/KG	15,000,000	190,000,000	120,000	82,000	**15,300**		**5,590**		**6,620**		**865**		**14,500**		**22,100**	
Beryllium	METALS	UG/KG	160,000	2,000,000	13,000	3,200	98	J	32.4	J	50.4	J	18.9	U	90.9	J	103	J
Cadmium	METALS	UG/KG	70,000	800,000	520	380	97	J	24.2	U	60.9	J	18.9	U	64.1	J	166	J
Calcium	METALS	UG/KG	NE	NE	NE	NE	**37,700**		**38400**		**28200**		6250	U	**93,400**		**147,000**	
Chromium	METALS	UG/KG	120,000,000*	1,500,000,000*	NE	180,000,000	**8,120**		**1,520**		**10,500**		**2,010**		**5,930**		**15,800**	
Cobalt	METALS	UG/KG	23,000	300,000	210	NE	**800**		72.6	U	208	J	56.8	U	467		606	
Copper	METALS	UG/KG	3,100,000	41,000,000	22,000	46,000	**2,730**		**567**		**2,050**		**479**		**3,400**		**6,580**	
Iron	METALS	UG/KG	55,000,000	720,000,000	270,000	NE	**4,630,000**		**635,000**		**3,800,000**		**922,000**		**2,440,000**		**2,230,000**	
Lead	METALS	UG/KG	400,000	800,000	NE	14,000	**4,010**		**3,160**		**3,330**		**712**		**3,270**		**9,530**	
Magnesium	METALS	UG/KG	NE	NE	NE	NE	**254,000**		**26,700**		**63,600**		**17,600**		**158,000**		**208,000**	
Manganese	METALS	UG/KG	1,800,000	23,000,000	21,000	NE	**10,900**		**3,100**		**1,990**		**1,360**		**6,480**		**4,680**	
Mercury	METALS	UG/KG	10,000	43,000	33	100	10.2	J	7.12	J	**26.4**		4.23	U	**352**		**91**	
Nickel	METALS	UG/KG	1,500,000	20,000,000	20,000	NE	**2,810**		434	J	**764**		162	J	**1,600**		**3,000**	
Potassium	METALS	UG/KG	NE	NE	NE	NE	**258,000**		31300	J	**66200**		20600	J	**151,000**		**208,000**	
Selenium	METALS	UG/KG	390,000	5,100,000	400	260	357	U	399	U	354	U	313	U	330	U	387	U
Silver	METALS	UG/KG	390,000	5,100,000	600	NE	107	U	112	U	105	U	96.6	U	93.5	U	169	J
Sodium	METALS	UG/KG	NE	NE	NE	NE	17300	U	19400	U	17200	U	15200	U	16000	U	22300	J
Thallium	METALS	UG/KG	780	10,000	11	140	76.6	J	72.6	U	64.3	U	56.8	U	60.5	J	96.8	J
Vanadium	METALS	UG/KG	390,000	5,100,000	63,000	NE	**9,440**		**3,070**		**19,400**		**3,400**		**6,270**		**20,100**	
Zinc	METALS	UG/KG	23,000,000	310,000,000	290,000	NE	**7,380**		**6,220**		**2,590**		1,150	J	**3,550**		**4,770**	
1-Methylnaphthalene	SVOA	UG/KG	16,000	53,000	5.1	NE	NA		NA		NA		NA		NA		NA	
2,4-Dimethylphenol	SVOA	UG/KG	1,200,000	12,000,000	320	NE	NA		NA		NA		NA		NA		NA	
2-Methylnaphthalene	SVOA	UG/KG	230,000	2,200,000	140	NE	NA		NA		NA		NA		NA		NA	
Acenaphthene	SVOA	UG/KG	3,400,000	33,000,000	4,100	NE	NA		NA		NA		NA		NA		NA	
Anthracene	SVOA	UG/KG	17,000,000	170,000,000	42,000	NE	NA		NA		NA		NA		NA		NA	
Benzo(a)anthracene	SVOA	UG/KG	150	2,100	10	NE	NA		NA		NA		NA		NA		NA	
Benzo(a)pyrene	SVOA	UG/KG	15	210	4	240	NA		NA		NA		NA		NA		NA	
Benzo(b)fluoranthene	SVOA	UG/KG	150	2,100	35	NE	NA		NA		NA		NA		NA		NA	
Benzo(ghi)perylene	SVOA	UG/KG	NE	NE	NE	NE	NA		NA		NA		NA		NA		NA	
Benzo(k)fluoranthene	SVOA	UG/KG	1,500	21,000	350	NE	NA		NA		NA		NA		NA		NA	
bis(2-Ethylhexyl)phthalate	SVOA	UG/KG	35,000	120,000	1,100	1,400	NA		NA		NA		NA		NA		NA	
Carbazole	SVOA	UG/KG	NE	NE	NE	NE	NA		NA		NA		NA		NA		NA	
Chrysene	SVOA	UG/KG	15,000	210,000	1,100	NE	NA		NA		NA		NA		NA		NA	
Dibenzo(a,h)anthracene	SVOA	UG/KG	15	210	11	NE	NA		NA		NA		NA		NA		NA	
Diphenylamine	SVOA	UG/KG	1,500,000	15,000,000	440	NE	NA		NA		NA		NA		NA		NA	
Fluoranthene	SVOA	UG/KG	2,300,000	22,000,000	70,000	NE	NA		NA		NA		NA		NA		NA	
Fluorene	SVOA	UG/KG	2,300,000	22,000,000	4,000	NE	NA		NA		NA		NA		NA		NA	
Indeno(1,2,3-cd)pyrene	SVOA	UG/KG	150	2,100	200	NE	NA		NA		NA		NA		NA		NA	
Naphthalene	SVOA	UG/KG	3,600	18,000	0.47	NE	NA		NA		NA		NA		NA		NA	
Phenanthrene	SVOA	UG/KG	NE	NE	NE	NE	NA		NA		NA		NA		NA		NA	
Pyrene	SVOA	UG/KG	1,700,000	17,000,000	9,500	NE	NA		NA		NA		NA		NA		NA	
1,1,2-Trichloroethane	VOA	UG/KG	1,100	5,300	0.077	1.6	NA		NA		NA		NA		NA		NA	
2-Butanone	VOA	UG/KG	28,000,000	200,000,000	1,000	NE	NA		NA		NA		NA		NA		NA	
Acetone	VOA	UG/KG	61,000,000	630,000,000	2,400	NE	NA		NA		NA		NA		NA		NA	
Benzene	VOA	UG/KG	1,100	5,400	0.2	2.6	NA		NA		NA		NA		NA		NA	
Carbon disulfide	VOA	UG/KG	820,000	3,700,000	210	NE	NA		NA		NA		NA		NA		NA	
Chlorobenzene	VOA	UG/KG	290,000	1,400,000	49	68	NA		NA		NA		NA		NA		NA	
Chloromethane	VOA	UG/KG	120,000	500,000	49	NE	NA		NA		NA		NA		NA		NA	
Ethylbenzene	VOA	UG/KG	5,400	27,000	1.5	780	NA		NA		NA		NA		NA		NA	
Styrene	VOA	UG/KG	6,300,000	36,000,000	1,200	110	NA		NA		NA		NA		NA		NA	
Toluene	VOA	UG/KG	5,000,000	45,000,000	590	690	NA		NA		NA		NA		NA		NA	
Xylenes (total)	VOA	UG/KG	630,000	2,700,000	190	9,800	NA		NA		NA		NA		NA		NA	

TABLE 2. SUMMARY OF DETECTED CONSTITUENTS IN SOIL SAMPLES
PHASE I BASELINE INVESTIGATION REPORT
BOILER ASH STAGING AREA
CONSENT AGREEMENT 13-04-SW
SONOCO PRODUCTS COMPANY

NOTES:

1 - All samples collected by GEL between February 20-28, 2014.
2 - SB- and SS- sample prefixes indicate soil sample; sample suffix indicates sample depth in feet below ground surface.
3 - "D" sample suffix indicates field duplicate.
4 - Regional Screening Levels (RSLs) for residential (R) and industrial (I) soils and risk-based (RB) and Maximum Contaminant Level (MCL)-based Soil Screening Levels (SSLs) for the protection of groundwater (Regiona Screening Levels for Chemicals at Superfund Sites, EPA, November 2013).
5 - "NE" indicates RSL or SSL not established for constituent.
6 - Results in BOLD indicate concentration exceeds laboratory reporting limit.
7 - "U" data qualifier indicates constiuent not detected above method detection limit.
8 - "J" data qualifier indicates concentration exceeds method detection limit, but not laboratory reporting limit.
9 - Total chromium RSLs and SSL based on screening levels for chromium III.
10 - "NA" indicates sample not analyzed for constituent.

Indicates concentration exceeds SSLs for protection of groundwater.
Indicates concentration exceeds SSLs for protection of groundwater and residential RSL.
Indicates concentration exceeds SSLs for protection of groundwater, residential RSL, and industrial RSL.

TABLE 3. SUMMARY OF DETECTED CONSTITUENTS IN ASH SAMPLES
PHASE I BASELINE INVESTIGATION REPORT
BOILER ASH STAGING AREA
CONSENT AGREEMENT 13-04-SW
SONOCO PRODUCTS COMPANY

CONSTITUENT	FRACTION	UNITS	R-RSL	I-RSL	RB-SSL	MCL-SSL	ASH-09-44-45		ASH-13-48-50		ASH-14-36-38	
Diesel Range Organics	DRO	MG/KG	NE	NE	NE	NE	2.41	U	**353**		11	J
Oil & Grease	O&G	MG/KG	NE	NE	NE	NE	230	U	**1,000**		410	U
Gasoline Range Organics	GRO	MG/KG	NE	NE	NE	NE	7..8	U	6.2	U	17	U
Chloride	G	MG/KG	NE	NE	NE	NE	**271**		**6.11**		**65.7**	
Cyanide, Total	G	UG/KG	22,000	140,000	14	2,000	86.1	U	120	U	168	U
Hexavalent Chromium	G	MG/KG	0.29	5.6	0.00059	NE	**1.98**		**5.2**		0.775	J
Sulfate	G	MG/KG	NE	NE	NE	NE	**13,600**		**49.6**		**1,290**	
Aluminum	METALS	UG/KG	77,000,000	990,000,000	23,000,000	NE	**31,000,000**		**4,580,000**		**5,710,000**	
Antimony	METALS	UG/KG	31,000	410,000	270	270	**1,930**		465	U	1,740	J
Arsenic	METALS	UG/KG	610	2,400	1.3	290	**56,400**		**36,100**		**30,700**	
Barium	METALS	UG/KG	15,000,000	190,000,000	120,000	82,000	**404,000**		**439,000**		**280,000**	
Beryllium	METALS	UG/KG	160,000	2,000,000	13,000	3,200	**12,600**		**1,180**		**5,550**	
Cadmium	METALS	UG/KG	70,000	800,000	520	380	**2,050**		**643**		**427**	
Calcium	METALS	UG/KG	NE	NE	NE	NE	**183,000,000**		**7,090,000**		**4,190,000**	
Chromium	METALS	UG/KG	120,000,000*	1,500,000,000*	NE	180,000,000	**37,600**		**112,000**		**8,100**	
Cobalt	METALS	UG/KG	23,000	300,000	210	NE	**37,700**		**5,090**		**17,400**	
Copper	METALS	UG/KG	3,100,000	41,000,000	22,000	46,000	**119,000**		**55,300**		**50,300**	
Iron	METALS	UG/KG	55,000,000	720,000,000	270,000	NE	**13,900,000**		**9,760,000**		**5,660,000**	
Lead	METALS	UG/KG	400,000	800,000	NE	14,000	**32,400**		**21,700**		**20,200**	
Magnesium	METALS	UG/KG	NE	NE	NE	NE	**3,850,000**		**804,000**		**1,010,000**	
Manganese	METALS	UG/KG	1,800,000	23,000,000	21,000	NE	**224,000**		**180,000**		**86,200**	
Mercury	METALS	UG/KG	10,000	43,000	33	100	**379**		**49.9**		**177**	
Nickel	METALS	UG/KG	1,500,000	20,000,000	20,000	NE	**57,600**		**11,600**		**23,500**	
Potassium	METALS	UG/KG	NE	NE	NE	NE	**3,360,000**		**1,080,000**		**2,000,000**	
Selenium	METALS	UG/KG	390,000	5,100,000	400	260	**18,500**		875	J	**8,150**	
Silver	METALS	UG/KG	390,000	5,100,000	600	NE	209	J	141	U	210	U
Sodium	METALS	UG/KG	NE	NE	NE	NE	**1,480,000**		**339,000**		**2,420,000**	
Thallium	METALS	UG/KG	780	10,000	11	140	**1,630**		304	J	**1,380**	
Vanadium	METALS	UG/KG	390,000	5,100,000	63,000	NE	**80,700**		**44,100**		**21,400**	
Zinc	METALS	UG/KG	23,000,000	310,000,000	290,000	NE	**839,000**		**59,700**		**36,700**	
1-Methylnaphthalene	SVOA	UG/KG	16,000	53,000	5.1	NE	11.1	U	143	U	37.6	J
2,4-Dimethylphenol	SVOA	UG/KG	1,200,000	12,000,000	320	NE	111	U	1430	U	209	U
2-Methylnaphthalene	SVOA	UG/KG	230,000	2,200,000	140	NE	11.1	U	143	U	37.6	J
Acenaphthene	SVOA	UG/KG	3,400,000	33,000,000	4,100	NE	11.1	U	**555**		20.9	U
Anthracene	SVOA	UG/KG	17,000,000	170,000,000	42,000	NE	11.1	U	**2,150**		20.9	U
Benzo(a)anthracene	SVOA	UG/KG	150	2,100	10	NE	11.1	U	**25,100**		20.9	U
Benzo(a)pyrene	SVOA	UG/KG	15	210	4	240	11.1	U	**28,100**		20.9	U
Benzo(b)fluoranthene	SVOA	UG/KG	150	2,100	35	NE	11.1	U	**33,600**		20.9	U
Benzo(ghi)perylene	SVOA	UG/KG	NE	NE	NE	NE	11.1	U	**13,800**		20.9	U
Benzo(k)fluoranthene	SVOA	UG/KG	1,500	21,000	350	NE	11.1	U	**12,000**		20.9	U
bis(2-Ethylhexyl)phthalate	SVOA	UG/KG	35,000	120,000	1,100	1400	111	U	1,430	U	209	U
Carbazole	SVOA	UG/KG	NE	NE	NE	NE	11.1	U	**1,120**		20.9	U
Chrysene	SVOA	UG/KG	15,000	210,000	1,100	NE	11.1	U	**28,300**		20.9	U
Dibenzo(a,h)anthracene	SVOA	UG/KG	15	210	11	NE	11.1	U	**4,890**		20.9	U
Diphenylamine	SVOA	UG/KG	1,500,000	15,000,000	440	NE	111	U	1,430	U	209	U
Fluoranthene	SVOA	UG/KG	2,300,000	22,000,000	70,000	NE	11.1	U	**36,800**		20.9	U
Fluorene	SVOA	UG/KG	2,300,000	22,000,000	4,000	NE	11.1	U	**584**		20.9	U
Indeno(1,2,3-cd)pyrene	SVOA	UG/KG	150	2,100	200	NE	11.1	U	**14,700**		20.9	U
Naphthalene	SVOA	UG/KG	3,600	18,000	0.47	NE	11.1	U	234	J	57.2	J
Phenanthrene	SVOA	UG/KG	NE	NE	NE	NE	11.1	U	**7,440**		20.9	U
Pyrene	SVOA	UG/KG	1,700,000	17,000,000	9,500	NE	11.1	U	**26,800**		20.9	U
1,1,2-Trichloroethane	VOA	UG/KG	1,100	5,300	0.077	1.6	0.418	U	0.407	U	0.807	U
2-Butanone	VOA	UG/KG	28,000,000	200,000,000	1,000	NE	2.09	U	4.56	J	4.04	U
Acetone	VOA	UG/KG	61,000,000	630,000,000	2,400	NE	**38.8**		**44.1**		**403**	
Benzene	VOA	UG/KG	1,100	5,400	0.2	2.6	0.418	U	0.407	U	0.807	U
Carbon disulfide	VOA	UG/KG	820,000	3,700,000	210	NE	2.09	U	2.04	U	4.04	U
Chlorobenzene	VOA	UG/KG	290,000	1,400,000	49	68	0.418	U	0.407	U	0.807	U
Chloromethane	VOA	UG/KG	120,000	500,000	49	NE	0.418	U	0.407	U	0.807	U
Ethylbenzene	VOA	UG/KG	5,400	27,000	1.5	780	0.418	U	0.407	U	0.807	U
Styrene	VOA	UG/KG	6,300,000	36,000,000	1200	110	0.418	U	0.407	U	0.807	U
Toluene	VOA	UG/KG	5,000,000	45,000,000	590	690	0.418	U	0.407	U	0.807	U
Xylenes (total)	VOA	UG/KG	630,000	2,700,000	190	9800	0.418	U	0.407	U	0.807	U

TABLE 3. SUMMARY OF DETECTED CONSTITUENTS IN ASH SAMPLES
PHASE I BASELINE INVESTIGATION REPORT
BOILER ASH STAGING AREA
CONSENT AGREEMENT 13-04-SW
SONOCO PRODUCTS COMPANY

NOTES:

1 - All samples collected by GEL between March 10-13, 2014.
2 - ASH- sample prefix indicate ash sample; WWS- sample prefix indicate wastewater solid samples; SL- sample prefix indicated sludge sample; sample suffix indicates sample depth in feet below ground surface.
3 - "D" sample suffix indicates field duplicate.
4 - Regional Screening Levels (RSLs) for residential (R) and industrial (I) soils and risk-based (RB) and Maximum Contaminant Level (MCL)-based Soil Screening Levels (SSLs) for the protection of groundwater (Regiona Screening Levels for Chemicals at Superfund Sites, EPA, November 2013).
5 - "NE" indicates RSL or SSL not established for constituent.
6 - Results in BOLD indicate concentration exceeds laboratory reporting limit.
7 - "U" data qualifier indicates constiuent not detected above method detection limit.
8 - "J" data qualifier indicates concentration exceeds method detection limit, but not laboratory reporting limit.
9 - Total chromium RSLs and SSL based on screening levels for chromium III.

Indicates concentration exceeds SSLs for protection of groundwater.
Indicates concentration exceeds SSLs for protection of groundwater and residential RSL.
Indicates concentration exceeds SSLs for protection of groundwater, residential RSL, and industrial RSL.

TABLE 4. SUMMARY OF DETECTED CONSTITUENTS IN WASTEWATER SOLID SAMPLES
PHASE I BASELINE INVESTIGATION REPORT
BOILER ASH STAGING AREA
CONSENT AGREEMENT 13-04-SW
SONOCO PRODUCTS COMPANY

CONSTITUENT	FRACTION	UNITS	R-RSL	I-RSL	RB-SSL	MCL-SSL	WWS-10A-0-2.3		WWS-10A-0-2.3-D		WWS-10B-2.3-4.6		WWS-10C-4.6-7		WWS-11-0-2		WWS-12A-0-2.3		WWS-12B-2.3-4.6		WWS-12C-4.6-7	
Diesel Range Organics	DRO	MG/KG	NE	NE	NE	NE	3,800		7,040		110		35.8		10,800		357		535		7.9	J
Oil & Grease	O&G	MG/KG	NE	NE	NE	NE	5,600		33,000		300	U	1,000		78,000		770	U	1,200	U	460	U
Gasoline Range Organics	GRO	MG/KG	NE	NE	NE	NE	1,900		1,600		20		6.8	U	900		19.0	U	220		22	
Chloride	G	MG/KG	NE	NE	NE	NE	15.3		19.1		11.1		10.5		17.8		43.6		27.3		4.30	
Cyanide, Total	G	UG/KG	22,000	140,000	14	2,000	1,120.0		8,900.0		137	U	121	U	6,820.0		1,690.0		367	J	115	U
Hexavalent Chromium	G	MG/KG	0.29	5.6	0.00059	NE	0.797	U	9.08		0.598	U	0.516	U	1.52		9.22	U	5.72	U	2.13	U
Sulfate	G	MG/KG	NE	NE	NE	NE	4.91	J	8.84	J	2.55	U	2.41	J	29.0		296		239		1.87	U
Aluminum	METALS	UG/KG	77,000,000	990,000,000	23,000,000	NE	1,870,000		2,820,000		1,740,000		3,680,000		2,920,000		18,000,000		6,600,000		2,680,000	
Antimony	METALS	UG/KG	31,000	410,000	270	270	4,340		5,370		1110	J	1220	J	6,150		6,430		1280	U	456	U
Arsenic	METALS	UG/KG	610	2,400	1.3	290	665	J	1,480	J	349	U	1,030	J	610	U	43,500		10,200		269	U
Barium	METALS	UG/KG	15,000,000	190,000,000	120,000	82,000	42,700		182,000		10,300		24,600		207,000		498,000		179,000		2,510	
Beryllium	METALS	UG/KG	160,000	2,000,000	13,000	3,200	173	J	379		167	J	246		459		5,520		2150		79.7	J
Cadmium	METALS	UG/KG	70,000	800,000	520	380	496	J	1,320		65.3	J	115	J	7,650		2,180		722	J	26.9	U
Calcium	METALS	UG/KG	NE	NE	NE	NE	1,090,000		1,580,000		336,000		988,000		1,940,000		31,700,000		8,980,000		13,900	J
Chromium	METALS	UG/KG	120,000,000*	1,500,000,000*	NE	180,000,000	334,000		1,110,000		152,000		25,500		1,740,000		678,000		110,000		5,540	
Cobalt	METALS	UG/KG	23,000	300,000	210	NE	442	J	981		144	J	600		1,950		25,200		8,140		149	J
Copper	METALS	UG/KG	3,100,000	41,000,000	22,000	46,000	929,000		5,530,000		154,000		139,000		5,280,000		2,160,000		304,000		3,580	
Iron	METALS	UG/KG	55,000,000	720,000,000	270,000	NE	659,000		1,500,000		274,000		1,790,000		2,760,000		7,970,000		2,140,000		77,200	
Lead	METALS	UG/KG	400,000	800,000	NE	14,000	211,000		1,260,000		49,500		52,000		1,230,000		1,060,000		174,000		2,970	
Magnesium	METALS	UG/KG	NE	NE	NE	NE	365,000		823,000		296,000		210,000		1,110,000		2,170,000		1,010,000		19,500	
Manganese	METALS	UG/KG	1,800,000	23,000,000	21,000	NE	11,400		16,800		2,820		12,500		35,000		199,000		63,100		2,010	
Mercury	METALS	UG/KG	10,000	43,000	33	100	530		1,420		29.9		68.7		1,770		1,100		191		26.9	
Nickel	METALS	UG/KG	1,500,000	20,000,000	20,000	NE	3,240		8,370		752		2,220		10,900		48,000		15,400		647	
Potassium	METALS	UG/KG	NE	NE	NE	NE	84,500	J	189,000		85,100	J	166,000		180,000	J	2,650,000		968,000		114,000	
Selenium	METALS	UG/KG	390,000	5,100,000	400	260	853	U	936	U	576	U	633	J	1,010	U	7,970		2,200	J	444	U
Silver	METALS	UG/KG	390,000	5,100,000	600	NE	897	J	1,680		436	J	323	J	1,380	J	1,460	J	388	U	138	U
Sodium	METALS	UG/KG	NE	NE	NE	NE	118,000	J	104,000	J	347,000		211,000		85,900	J	671,000		1,160,000		748,000	
Thallium	METALS	UG/KG	780	10,000	11	140	253	J	170	U	105	U	91.7	U	248	J	1,900	J	494	J	80.8	U
Vanadium	METALS	UG/KG	390,000	5,100,000	63,000	NE	4,630		6,200		1,720		5,880		6,850		128,000		25,800		2,350	
Zinc	METALS	UG/KG	23,000,000	310,000,000	290,000	NE	144,000		329,000		21,600		28,000		1,470,000		393,000		107,000		1810	J
1-Methylnaphthalene	SVOA	UG/KG	16,000	53,000	5.1	NE	133	U	151	U	96.2	U	80.8	U	2050		60.2	U	38.8	U	14.0	U
2,4-Dimethylphenol	SVOA	UG/KG	1,200,000	12,000,000	320	NE	1330	U	1510	U	962	U	808	U	3250	U	602	U	388	U	140	U
2-Methylnaphthalene	SVOA	UG/KG	230,000	2,200,000	140	NE	208	J	242	J	96.2	U	80.8	U	2,980		60.2	U	38.8	U	14.0	U
Acenaphthene	SVOA	UG/KG	3,400,000	33,000,000	4,100	NE	133	U	151	U	96.2	U	80.8	U	325	U	60.2	U	38.8	U	14.0	U
Anthracene	SVOA	UG/KG	17,000,000	170,000,000	42,000	NE	133	U	151	U	96.2	U	80.8	U	325	U	60.2	U	38.8	U	14.0	U
Benzo(a)anthracene	SVOA	UG/KG	150	2,100	10	NE	133	U	151	U	96.2	U	91.6	J	325	U	60.2	U	38.8	U	14.0	U
Benzo(a)pyrene	SVOA	UG/KG	15	210	4	240	133	U	151	U	96.2	U	80.8	U	325	U	134	J	38.8	U	75.2	
Benzo(b)fluoranthene	SVOA	UG/KG	150	2,100	35	NE	133	U	217	J	96.2	U	127	J	325	U	179	J	38.8	U	14.0	U
Benzo(ghi)perylene	SVOA	UG/KG	NE	NE	NE	NE	133	U	151	U	96.2	U	80.8	U	325	U	251		38.8	U	14.0	U
Benzo(k)fluoranthene	SVOA	UG/KG	1,500	21,000	350	NE	133	U	151	U	96.2	U	80.8	U	325	U	60.2	U	38.8	U	14.0	U
bis(2-Ethylhexyl)phthalate	SVOA	UG/KG	35,000	120,000	1,100	1400	20,400		29,900		962	U	808	U	79,100		7,280		1,440		140	U
Carbazole	SVOA	UG/KG	NE	NE	NE	NE	133	U	151	U	96.2	U	80.8	U	325	U	60.2	U	38.8	U	14.0	U
Chrysene	SVOA	UG/KG	15,000	210,000	1,100	NE	133	U	151	U	96.2	U	80.8	U	325	U	60.2	U	38.8	U	14.0	U
Dibenzo(a,h)anthracene	SVOA	UG/KG	15	210	11	NE	133	U	151	U	96.2	U	80.8	U	325	U	60.2	U	38.8	U	14.0	U
Diphenylamine	SVOA	UG/KG	1,500,000	15,000,000	440	NE	1330	U	1510	U	962	U	808	U	3250	U	602	U	388	U	140	U
Fluoranthene	SVOA	UG/KG	2,300,000	22,000,000	70,000	NE	133	U	151	U	96.2	U	105	J	531	J	223		41.4	J	21.0	J
Fluorene	SVOA	UG/KG	2,300,000	22,000,000	4,000	NE	133	U	151	U	96.2	U	80.8	U	325	U	60.2	U	38.8	U	14.0	U
Indeno(1,2,3-cd)pyrene	SVOA	UG/KG	150	2,100	200	NE	133	U	151	U	96.2	U	80.8	U	325	U	185	J	38.8	U	14.0	U
Naphthalene	SVOA	UG/KG	3,600	18,000	0.47	NE	767		933		507		86.2	J	3630		138	J	85.5	J	14.0	U
Phenanthrene	SVOA	UG/KG	NE	NE	NE	NE	133	U	151	U	96.2	U	80.8	U	1250		60.2	U	38.8	U	14.0	U
Pyrene	SVOA	UG/KG	1,700,000	17,000,000	9,500	NE	257	J	363	J	96.2	U	116	J	380	J	185	J	47.9	J	17.3	J
1,1,2-Trichloroethane	VOA	UG/KG	1,100	5,300	0.077	1.6	109	U	114	U	0.354	U	0.258	U	153	U	0.557	U	104	U	0.443	U
2-Butanone	VOA	UG/KG	28,000,000	200,000,000	1,000	NE	546	U	568	U	8.52		2.54	J	763	U	8.18	J	522	U	3.92	J
Acetone	VOA	UG/KG	61,000,000	630,000,000	2,400	NE	546	U	568	U	45.7		15.5		763	U	52.4		522	U	21.5	
Benzene	VOA	UG/KG	1,100	5,400	0.2	2.6	109	U	114	U	0.991	J	0.827	J	153	U	0.557	U	104	U	0.443	U
Carbon disulfide	VOA	UG/KG	820,000	3,700,000	210	NE	546	U	568	U	1.77	U	1.29	U	763	U	2.78	U	522	U	2.21	U
Chlorobenzene	VOA	UG/KG	290,000	1,400,000	49	68	109	U	114	U	3.20		0.913		153	U	3.64		104	U	0.443	U
Chloromethane	VOA	UG/KG	120,000	500,000	49	NE	109	U	114	U	0.354	U	0.258	U	153	U	0.557	U	104	U	0.443	U
Ethylbenzene	VOA	UG/KG	5,400	27,000	1.5	780	109	U	114	U	1.27		0.258	U	153	U	0.557	U	104	U	0.443	U
Styrene	VOA	UG/KG	6,300,000	36,000,000	1200	110	109	U	114	U	0.354	U	0.258	U	153	U	0.557	U	104	U	0.443	U
Toluene	VOA	UG/KG	5,000,000	45,000,000	590	690	131	J	140	J	3.35		1.38		153	U	1.69	J	104	U	0.443	U
Xylenes (total)	VOA	UG/KG	630,000	2,700,000	190	9800	109	U	114	U	3640		3650		153	U	939		1010	J	36.2	

TABLE 4. SUMMARY OF DETECTED CONSTITUENTS IN WASTEWATER SOLID SAMPLES
PHASE I BASELINE INVESTIGATION REPORT
BOILER ASH STAGING AREA
CONSENT AGREEMENT 13-04-SW
SONOCO PRODUCTS COMPANY

CONSTITUENT	FRACTION	UNITS	R-RSL	I-RSL	RB-SSL	MCL-SSL	WWS-13-54-55		WWS-13-54-55-D		WWS-14-38-40		WWS-14-38-40-D		WWS-15-0-2		WWS-15-2-4		WWS-16-0-1		WWS-16-0-1-D	
Diesel Range Organics	DRO	MG/KG	NE	NE	NE	NE	1,720		994		34.4		31.4		29.2		23.4		127		27.7	
Oil & Grease	O&G	MG/KG	NE	NE	NE	NE	360	U	340	U	270	U	290	U	450	U	460	U	330	U	300	
Gasoline Range Organics	GRO	MG/KG	NE	NE	NE	NE	750		820		10		8.7		57.0		13.0	U	9.9	U	7.7	U
Chloride	G	MG/KG	NE	NE	NE	NE	32.2	J	44.9	J	88.7		76.5		6.02		5.17		15.7		17.2	
Cyanide, Total	G	UG/KG	22,000	140,000	14	2,000	452	J	306	J	112	U	99.5	U	137	U	497	J	232	J	187	U
Hexavalent Chromium	G	MG/KG	0.29	5.6	0.00059	NE	9.44	J	16.8	J	2.08	J	1.12	U	2.63	U	0.370	U	2.86	U	3.33	U
Sulfate	G	MG/KG	NE	NE	NE	NE	28.9	U	38.7	U	2,140		1,950		2.26	U	38.5		82.3		109	
Aluminum	METALS	UG/KG	77,000,000	990,000,000	23,000,000	NE	2,010,000		5,830,000		3,360,000		3,090,000		4,330,000		10,900,000		10,700,000		10,600,000	
Antimony	METALS	UG/KG	31,000	410,000	270	270	664	U	936	U	445	U	453	U	555	U	2,830		611	U	732	U
Arsenic	METALS	UG/KG	610	2,400	1.3	290	428	U	1,290	J	797	J	708	J	469	J	25,300		1,710	J	2,290	
Barium	METALS	UG/KG	15,000,000	190,000,000	120,000	82,000	105,000		77,900		9240		15,200		25,000		307,000		37,400		78,600	
Beryllium	METALS	UG/KG	160,000	2,000,000	13000	3,200	591		729		60	J	87	J	206		3,280		318		388	
Cadmium	METALS	UG/KG	70,000	800,000	520	380	153	J	845		90.1	J	245	J	163	J	497		1,390		1,390	
Calcium	METALS	UG/KG	NE	NE	NE	NE	4,360,000		1,710,000		1,760,000		1,810,000		2,360,000		24,000,000		694,000		870,000	
Chromium	METALS	UG/KG	120,000,000*	1,500,000,000*	NE	180,000,000	37,600		211,000		21,700		20,800		32,000		16,900		165,000		529,000	
Cobalt	METALS	UG/KG	23,000	300,000	210	NE	498		1,450		226	J	319		599		11,400		819		746	
Copper	METALS	UG/KG	3,100,000	41,000,000	22,000	46,000	8,190		84,500		16,000		31,100		21,300		56,700		110,000		296,000	
Iron	METALS	UG/KG	55,000,000	720,000,000	270,000	NE	489,000		1,290,000		383,000		550,000		1,830,000		4,560,000		2,970,000		2,460,000	
Lead	METALS	UG/KG	400,000	800,000	NE	14,000	6,420		32,000		6,490		9,880		8,600		22,800		45,900		120,000	
Magnesium	METALS	UG/KG	NE	NE	NE	NE	975,000		407,000		399,000		536,000		521,000		2,420,000		237,000		332,000	
Manganese	METALS	UG/KG	1,800,000	23,000,000	21000	NE	58,000		35,600		12,600		15,700		25,600		228,000		9,110		9,820	
Mercury	METALS	UG/KG	10,000	43,000	33	100	104		85.2		32		52		147		166		297		570	
Nickel	METALS	UG/KG	1,500,000	20,000,000	20000	NE	3,300		4,660		625		871		1,290		25,000		3,620		3,610	
Potassium	METALS	UG/KG	NE	NE	NE	NE	503,000		1,110,000		900,000		893,000		271,000		2,450,000		312,000		373,000	
Selenium	METALS	UG/KG	390,000	5,100,000	400	260	707	U	1,230	J	459	U	455	U	553	U	3,350		609	U	709	U
Silver	METALS	UG/KG	390,000	5,100,000	600	NE	283	J	284	U	135	U	137	U	168	U	551	J	185	U	222	U
Sodium	METALS	UG/KG	NE	NE	NE	NE	3,820,000		9,030,000		3,460,000		3,390,000		364,000		555,000		223,000		315,000	
Thallium	METALS	UG/KG	780	10,000	11	140	129	U	159	U	83.4	U	82.7	U	101	U	1,400		111	U	129	U
Vanadium	METALS	UG/KG	390,000	5,100,000	63000	NE	1,440		9,840		2,440		2,890		2,950		52,100		10,700		12,200	
Zinc	METALS	UG/KG	23,000,000	310,000,000	290000	NE	13,100		107,000		15,100		156,000		33,500		57,300		123,000		117,000	
1-Methylnaphthalene	SVOA	UG/KG	16,000	53,000	5.1	NE	101		176		55.7	U	14	U	17.0	U	45.1	J	19.0	U	112	U
2,4-Dimethylphenol	SVOA	UG/KG	1,200,000	12,000,000	320	NE	1,840		5,680		557	U	140	U	170	U	246	U	190	U	1120	U
2-Methylnaphthalene	SVOA	UG/KG	230,000	2,200,000	140	NE	202		344		55.7	U	14	U	17.0	U	48.4	J	19.0	U	112	U
Acenaphthene	SVOA	UG/KG	3,400,000	33,000,000	4100	NE	21.7	U	29	U	55.7	U	14	U	17.0	U	24.6	U	19.0	U	112	U
Anthracene	SVOA	UG/KG	17,000,000	170,000,000	42,000	NE	21.7	U	29	U	55.7	U	14	U	17.0	U	138		19.0	U	112	U
Benzo(a)anthracene	SVOA	UG/KG	150	2,100	10	NE	21.7	U	99.7		55.7	U	14	U	17.0	U	1,220		19.0	U	112	U
Benzo(a)pyrene	SVOA	UG/KG	15	210	4	240	49.2	J	102		55.7	U	14	U	17.0	U	2,120		19.0	U	112	U
Benzo(b)fluoranthene	SVOA	UG/KG	150	2,100	35	NE	66.6	J	152		55.7	U	14	U	17.0	U	2,250		19.0	U	112	U
Benzo(ghi)perylene	SVOA	UG/KG	NE	NE	NE	NE	57.2	J	66.8	J	55.7	U	14	U	17.0	U	2,610		19.0	U	112	U
Benzo(k)fluoranthene	SVOA	UG/KG	1,500	21,000	350	NE	30.4	J	58.1	J	55.7	U	14	U	17.0	U	576		19.0	U	112	U
bis(2-Ethylhexyl)phthalate	SVOA	UG/KG	35,000	120,000	1,100	1400	217	U	2710		781	J	140	U	875		246	U	896		1,250	J
Carbazole	SVOA	UG/KG	NE	NE	NE	NE	21.7	U	29	U	55.7	U	14	U	17.0	U	25	U	19.0	U	112	U
Chrysene	SVOA	UG/KG	15,000	210,000	1,100	NE	26.8	J	131		55.7	U	14	U	17.0	U	1,730		19.0	U	112	U
Dibenzo(a,h)anthracene	SVOA	UG/KG	15	210	11	NE	26	J	38.7	J	55.7	U	14	U	17.0	U	25	U	19.0	U	112	U
Diphenylamine	SVOA	UG/KG	1,500,000	15,000,000	440	NE	217	U	939	J	557	U	140	U	170	U	246	U	190	U	1120	U
Fluoranthene	SVOA	UG/KG	2,300,000	22,000,000	70,000	NE	69.5	J	218		55.7	U	14	U	17.0	U	1,850		19.0	U	112	U
Fluorene	SVOA	UG/KG	2,300,000	22,000,000	4,000	NE	21.7	U	29	U	55.7	U	14	U	17.0	U	25	U	19.0	U	112	U
Indeno(1,2,3-cd)pyrene	SVOA	UG/KG	150	2,100	200	NE	36.2	J	94.8	J	55.7	U	14	U	17.0	U	2,030		19.0	U	112	U
Naphthalene	SVOA	UG/KG	3,600	18,000	0.47	NE	1,740		1310		55.7	U	16.8	J	39.1	J	81.2	J	19.0	U	112	U
Phenanthrene	SVOA	UG/KG	NE	NE	NE	NE	23.9	J	131		55.7	U	14	U	17.0	U	869		19.0	U	112	U
Pyrene	SVOA	UG/KG	1,700,000	17,000,000	9500	NE	35.4	J	150		55.7	U	14	U	18.7	J	2,250		19.0	U	112	U
1,1,2-Trichloroethane	VOA	UG/KG	1,100	5,300	0.077	1.6	74.3	U	99.2	U	0.309	U	0.324	U	0.852	U	0.775	U	0.742	U	0.435	U
2-Butanone	VOA	UG/KG	28,000,000	200,000,000	1,000	NE	372	U	496	U	3.1	J	3.58	J	36.1		5.74	J	3.71	U	2.18	U
Acetone	VOA	UG/KG	61,000,000	630,000,000	2,400	NE	372	U	496	U	51.1		66.7		167		269		28.6		9.04	
Benzene	VOA	UG/KG	1,100	5,400	0.2	2.6	74.3	U	99.2	U	0.309	U	0.335	J	0.852	U	0.775	U	0.742	U	0.435	U
Carbon disulfide	VOA	UG/KG	820,000	3,700,000	210	NE	372	U	496	U	2.03	J	1.62	U	9.35	J	3.88	U	3.71	U	2.18	U
Chlorobenzene	VOA	UG/KG	290,000	1,400,000	49	68	146	J	215	J	0.464	J	0.4	J	0.852	U	0.775	U	0.742	U	0.435	U
Chloromethane	VOA	UG/KG	120,000	500,000	49	NE	74.3	U	99.2	U	0.309	U	0.368	J	0.852	U	0.775	U	0.742	U	0.435	U
Ethylbenzene	VOA	UG/KG	5,400	27,000	1.5	780	102	J	126	J	2.81		2.82		0.852	U	0.775	U	0.742	U	0.435	U
Styrene	VOA	UG/KG	6,300,000	36,000,000	1200	110	74.3	U	99.2	U	0.309	U	0.324	U	0.852	U	0.775	U	0.742	U	0.435	U
Toluene	VOA	UG/KG	5,000,000	45,000,000	590	690	74.3	U	99.2	U	0.989	J	1.11		1.11	J	0.775	U	0.742	U	0.435	U
Xylenes (total)	VOA	UG/KG	630,000	2,700,000	190	9800	15,800		19,500		31.2		29.8		3.18	J	0.775	U	1.81	J	0.435	U

TABLE 4. SUMMARY OF DETECTED CONSTITUENTS IN WASTEWATER SOLID SAMPLES
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BOILER ASH STAGING AREA
CONSENT AGREEMENT 13-04-SW
SONOCO PRODUCTS COMPANY

CONSTITUENT	FRACTION	UNITS	R-RSL	I-RSL	RB-SSL	MCL-SSL	WWS-17-0-1		WWS-17-0-1-D		WWS-18-0-2		WWS-19-0-2		WWS-20-0-2	
Diesel Range Organics	DRO	MG/KG	NE	NE	NE	NE	**13.8**		7.23	J	**43.5**		7.46	J	**102**	
Oil & Grease	O&G	MG/KG	NE	NE	NE	NE	**480**		460	U	380	U	390	U	410	U
Gasoline Range Organics	GRO	MG/KG	NE	NE	NE	NE	6.7	U	9.3	U	8.7	U	10.0	U	10.0	U
Chloride	G	MG/KG	NE	NE	NE	NE	**21.8**		**24.5**		**219**		**41.0**		**15.8**	
Cyanide, Total	G	UG/KG	22,000	140,000	14	2,000	133	U	157	U	177	U	184	U	275	J
Hexavalent Chromium	G	MG/KG	0.29	5.6	0.00059	NE	0.307	J	0.358	J	0.364	U	0.348	U	4.76	U
Sulfate	G	MG/KG	NE	NE	NE	NE	**1,170**		**519**		**5,260**		**1,580**		**355**	
Aluminum	METALS	UG/KG	77,000,000	990,000,000	23,000,000	NE	**9,590,000**		**9,350,000**		**13,700,000**		**13,800,000**		**21,500,000**	
Antimony	METALS	UG/KG	31,000	410,000	270	270	580	U	652	U	1560	J	**2,360**		**4,930**	
Arsenic	METALS	UG/KG	610	2,400	1.3	290	**3,050**		**2,690**		**32,200**		**49,000**		**49,800**	
Barium	METALS	UG/KG	15,000,000	190,000,000	120,000	82,000	**78,900**		**52,600**		**318,000**		**386,000**		**412,000**	
Beryllium	METALS	UG/KG	160,000	2,000,000	13000	3,200	**391**		**363**		**4,150**		**5,830**		**7,190**	
Cadmium	METALS	UG/KG	70,000	800,000	520	380	**805**		**744**		**1,020**		**622**		**1,190**	
Calcium	METALS	UG/KG	NE	NE	NE	NE	**3,100,000**		**2,870,000**		**12,600,000**		**8,130,000**		**46,300,000**	
Chromium	METALS	UG/KG	120,000,000*	1,500,000,000*	NE	180,000,000	**44,500**		**37,600**		**76,300**		**16,900**		**40,000**	
Cobalt	METALS	UG/KG	23,000	300,000	210	NE	**1,430**		**1,270**		**13,600**		**17,900**		**21,100**	
Copper	METALS	UG/KG	3,100,000	41,000,000	22,000	46,000	**49,800**		**45,700**		**137,000**		**65,000**		**123,000**	
Iron	METALS	UG/KG	55,000,000	720,000,000	270,000	NE	**3,210,000**		**2,640,000**		**5,970,000**		**7,130,000**		**9,370,000**	
Lead	METALS	UG/KG	400,000	800,000	NE	14,000	**98,100**		**76,100**		**66,900**		**28,100**		**49,800**	
Magnesium	METALS	UG/KG	NE	NE	NE	NE	**1,270,000**		**1,210,000**		**3,150,000**		**2,540,000**		**2,790,000**	
Manganese	METALS	UG/KG	1,800,000	23,000,000	21000	NE	**45,400**		**37,700**		**198,000**		**106,000**		**199,000**	
Mercury	METALS	UG/KG	10,000	43,000	33	100	**166**		**284**		**371**		**188**		**744**	
Nickel	METALS	UG/KG	1,500,000	20,000,000	20000	NE	**4,060**		**3,810**		**28,800**		**33,500**		**44,300**	
Potassium	METALS	UG/KG	NE	NE	NE	NE	**767,000**		**764,000**		**4,250,000**		**3,010,000**		**3,520,000**	
Selenium	METALS	UG/KG	390,000	5,100,000	400	260	581	U	614	U	**3,420**		1,720	J	**9,290**	
Silver	METALS	UG/KG	390,000	5,100,000	600	NE	176	U	391	J	419	J	513	J	673	J
Sodium	METALS	UG/KG	NE	NE	NE	NE	**1,290,000**		**1,330,000**		**4,980,000**		**1,320,000**		**859,000**	
Thallium	METALS	UG/KG	780	10,000	11	140	128	J	112	U	**1,420**		**1,720**		**2,130**	
Vanadium	METALS	UG/KG	390,000	5,100,000	63000	NE	**10,700**		**13,100**		**46,000**		**53,700**		**119,000**	
Zinc	METALS	UG/KG	23,000,000	310,000,000	290000	NE	**95,100**		**102,000**		**110,000**		**53,400**		**149,000**	
1-Methylnaphthalene	SVOA	UG/KG	16,000	53,000	5.1	NE	18.1	U	20.2	U	23.6	U	70.7	J	45.6	J
2,4-Dimethylphenol	SVOA	UG/KG	1,200,000	12,000,000	320	NE	181	U	202	U	236	U	219	U	304	U
2-Methylnaphthalene	SVOA	UG/KG	230,000	2,200,000	140	NE	18.1	U	20.2	U	23.6	U	**83.8**		51.7	J
Acenaphthene	SVOA	UG/KG	3,400,000	33,000,000	4100	NE	18.1	U	20.2	U	23.6	U	21.9	U	30.4	U
Anthracene	SVOA	UG/KG	17,000,000	170,000,000	42,000	NE	18.1	U	20.2	U	26.8	J	**455**		**148**	
Benzo(a)anthracene	SVOA	UG/KG	150	2,100	10	NE	**71.7**		**92.2**		**206**		**1,340**		**1,580**	
Benzo(a)pyrene	SVOA	UG/KG	15	210	4	240	**90.4**		**121**		**387**		**1,760**		**1,770**	
Benzo(b)fluoranthene	SVOA	UG/KG	150	2,100	35	NE	**137**		**138**		**443**		**2,320**		**2,060**	
Benzo(ghi)perylene	SVOA	UG/KG	NE	NE	NE	NE	**74.1**		**130**		**535**		**1,550**		**1,350**	
Benzo(k)fluoranthene	SVOA	UG/KG	1,500	21,000	350	NE	32.5	J	47.8	J	**131**		**525**		**594**	
bis(2-Ethylhexyl)phthalate	SVOA	UG/KG	35,000	120,000	1,100	1400	181	U	202	U	236	U	219	U	304	U
Carbazole	SVOA	UG/KG	NE	NE	NE	NE	18.1	U	20.2	U	23.6	U	21.9	U	30.4	U
Chrysene	SVOA	UG/KG	15,000	210,000	1,100	NE	**67.5**		**74.0**		**317**		**1,700**		**2,040**	
Dibenzo(a,h)anthracene	SVOA	UG/KG	15	210	11	NE	18.1	U	20.2	U	23.6	U	22	U	30.4	U
Diphenylamine	SVOA	UG/KG	1,500,000	15,000,000	440	NE	181	U	202	U	236	U	219	U	304	U
Fluoranthene	SVOA	UG/KG	2,300,000	22,000,000	70,000	NE	**98.8**		**103**		**284**		**2,500**		**2,820**	
Fluorene	SVOA	UG/KG	2,300,000	22,000,000	4,000	NE	18.1	U	20.2	U	23.6	U	30.6	J	30.4	U
Indeno(1,2,3-cd)pyrene	SVOA	UG/KG	150	2,100	200	NE	**63.9**		**114**		**434**		**1,350**		**1,200**	
Naphthalene	SVOA	UG/KG	3,600	18,000	0.47	NE	18.1	U	20.2	U	23.6	U	**99.8**		53.7	J
Phenanthrene	SVOA	UG/KG	NE	NE	NE	NE	44.0	J	57.9	J	**177**		**2,760**		**482**	
Pyrene	SVOA	UG/KG	1,700,000	17,000,000	9500	NE	97.6		121		**380**		**3,530**		**3,500**	
1,1,2-Trichloroethane	VOA	UG/KG	1,100	5,300	0.077	1.6	0.271	U	0.341	U	0.305	U	0.528	U	0.532	U
2-Butanone	VOA	UG/KG	28,000,000	200,000,000	1,000	NE	1.36	U	1.71	U	1.53	U	2.64	U	**9.72**	
Acetone	VOA	UG/KG	61,000,000	630,000,000	2,400	NE	**9.27**		1.71	U	1.53	U	2.64	U	**82.5**	
Benzene	VOA	UG/KG	1,100	5,400	0.2	2.6	0.271	U	0.341	U	0.305	U	0.528	U	0.532	U
Carbon disulfide	VOA	UG/KG	820,000	3,700,000	210	NE	1.36	U	1.71	U	1.53	U	2.64	U	3.39	J
Chlorobenzene	VOA	UG/KG	290,000	1,400,000	49	68	0.271	U	0.341	U	0.305	U	0.528	U	0.532	U
Chloromethane	VOA	UG/KG	120,000	500,000	49	NE	0.271	U	0.341	U	0.305	U	0.528	U	0.532	U
Ethylbenzene	VOA	UG/KG	5,400	27,000	1.5	780	0.271	U	0.341	U	0.305	U	0.528	U	0.532	U
Styrene	VOA	UG/KG	6,300,000	36,000,000	1200	110	0.271	U	0.341	U	0.305	U	0.528	U	0.532	U
Toluene	VOA	UG/KG	5,000,000	45,000,000	590	690	0.271	U	0.341	U	0.305	U	0.528	J	0.532	U
Xylenes (total)	VOA	UG/KG	630,000	2,700,000	190	9800	0.271	U	0.341	U	0.305	U	0.528	U	0.532	U

TABLE 4. SUMMARY OF DETECTED CONSTITUENTS IN WASTEWATER SOLID SAMPLES
PHASE I BASELINE INVESTIGATION REPORT
BOILER ASH STAGING AREA
CONSENT AGREEMENT 13-04-SW
SONOCO PRODUCTS COMPANY

NOTES:

1 - All samples collected by GEL between March 10-13, 2014.
2 - ASH- sample prefix indicate ash sample; WWS- sample prefix indicate wastewater solid samples; SL- sample prefix indicated sludge sample; sample suffix indicates sample depth in feet below ground surface.
3 - "D" sample suffix indicates field duplicate.
4 - Regional Screening Levels (RSLs) for residential (R) and industrial (I) soils and risk-based (RB) and Maximum Contaminant Level (MCL)-based Soil Screening Levels (SSLs) for the protection of groundwater (Regiona Screening Levels for Chemicals at Superfund Sites, EPA, November 2013).
5 - "NE" indicates RSL or SSL not established for constituent.
6 - Results in BOLD indicate concentration exceeds laboratory reporting limit.
7 - "U" data qualifier indicates constiuent not detected above method detection limit.
8 - "J" data qualifier indicates concentration exceeds method detection limit, but not laboratory reporting limit.
9 - Total chromium RSLs and SSL based on screening levels for chromium III.

Indicates concentration exceeds SSLs for protection of groundwater.
Indicates concentration exceeds SSLs for protection of groundwater and residential RSL.
Indicates concentration exceeds SSLs for protection of groundwater, residential RSL, and industrial RSL.

TABLE 5. SUMMARY OF DETECTED CONSTITUENTS IN GROUNDWATER SAMPLES
PHASE I BASELINE INVESTIGATION REPORT
BOILER ASH STAGING AREA
CONSENT AGREEMENT 13-04-SW
SONOCO PRODUCTS COMPANY

CONSTITUENT	FRACTION	UNITS	Tapwater-RSL	MCL	MW-01		MW-01-D		MW-02		MW-02A		MW-03		MW-04		MW-05		MW-05A		MW-06		MW-06-D		MW-07		MW-07A		MW-08		MW-08-D	
Diesel Range Organics	DRO	MG/L	NE	NE	0.0998	BJ	0.0796	BJ	0.0926	J	0.05	U	0.05	U	0.0959	J	**0.329**		0.05	U	0.105	J	0.123	J	**0.284**		0.05	U	0.18	J	0.158	J
Oil & Grease	HEM	MG/L	NE	NE	1.56	J	1.34	J	1.92	J	1.98	J	2.21	J	2	J	2.1	J	1.81	J	2.08	J	1.9	J	1.43	J	1.18	J	1.12	U	1.8	J
Gasoline Range Organics	GRO	MG/L	NE	NE	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Chloride	G	MG/L	NE	NE	**6.4**		**6.28**		**6.36**		**9.59**		**4.26**		**3.69**		**4.9**		**11.4**		**12.1**		**12**		**11.3**		**7.99**		**5.27**		**5.34**	
Sulfate	G	MG/L	NE	NE	**12.1**		**11.7**		**12.6**		**5.58**		**1.28**		**40**		**62.1**		**125**		**0.444**		**0.438**		**2.12**		**1.59**		**6.8**		**6.81**	
Hexavalent Chromium	G	MG/L	0.000031	NE	0.0033	U	0.0033	U	0.0033	U	0.0033	U	0.00469	J	0.00369	J	0.0033	U	0.0033	U	0.0033	U	0.0033	U	0.0033	U	0.0033	U	0.0033	U	0.0033	U
Hexavalent Chromium-Dissolved	G	MG/L	0.000031	NE	0.0033	U	0.0033	U	0.0033	U	0.0033	U	0.0033	U	0.00458	J	0.0033	U	0.0033	U	0.0033	U	0.0033	U	0.0033	U	0.0033	U	0.0033	U	0.0033	U
Aluminum	METALS	UG/L	16000	NE	**164**		**159**		**71.5**		22.8	J	**73.6**		**212**		**125**		15	U	**109**		**69.7**		**501**		**141**		**416**		**418**	
Aluminum-Dissolved	METALS	UG/L	16000	NE	**182**		**153**		34.3	J	15	U	15	U	**155**		**57.8**		15	U	15	U	15	U	**267**		35.9	J	49.6	J	23.4	J
Arsenic	METALS	UG/L	0.045	10	1.7	U	1.7	U	1.7	U	1.7	U	3.01	J	3.59	J	**7.52**		1.75	J	**7.09**		**6.84**		1.7	U	1.7	U	1.7	U	1.7	U
Arsenic-Dissolved	METALS	UG/L	0.045	10	1.7	U	1.7	U	1.7	U	1.7	U	2.59	J	2.12	J	**5.95**		1.7	U	**7.8**		**7.25**		1.7	U	1.7	U	1.7	U	1.7	U
Barium	METALS	UG/L	2900	2,000	**43.1**		**43**		**44.7**		**8.01**		**2.52**		**221**		**1870**		**18.3**		**928**		**931**		**11.3**		**14.7**		**19.8**		**20.2**	
Barium-Dissolved	METALS	UG/L	2900	2,000	**43.1**		**47**		**40.4**		**9.07**		**2.51**		**232**		**1780**		**19.2**		**909**		**853**		**13**		**15**		**18.6**		**17.9**	
Cadmium	METALS	UG/L	6.9	5	0.11	U	0.11	U	0.138	J	0.11	U	0.11	U	0.254	J	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U
Cadmium-Dissolved	METALS	UG/L	6.9	5	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U
Calcium	METALS	UG/L	NE	NE	**3,680**		**3,470**		**21,100**		**1,050**		**623**		**48,500**		**69,500**		**9,850**		**131,000**		**131,000**		**6,990**		**1,570**		**12,300**		**12,800**	
Calcium-Dissolved	METALS	UG/L	NE	NE	**3,490**		**3,690**		**21,600**		**1,110**		**587**		**47,300**		**67,100**		**10,700**		**146,000**		**129,000**		**7,490**		**1,510**		**10,900**		**11,500**	
Chromium	METALS	UG/L	NE	100	2	U	2	U	2	U	2	U	2	U	2.26	J	2	U	2	U	2	U	2	U	7.05	J	2	U	2	U	3.32	J
Chromium-Dissolved	METALS	UG/L	NE	100	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	6.32	J	2	U	2	U	2	U
Cobalt	METALS	UG/L	4.7	NE	0.653	J	0.62	J	**1.74**		**1.65**		0.161	J	**1.34**		0.496	J	**2.51**		0.197	J	0.165	J	0.153	J	**1.35**		0.174	J	0.173	J
Cobalt-Dissolved	METALS	UG/L	4.7	NE	0.753	J	0.837	J	**1.76**		**1.72**		0.146	J	**1.34**		0.51	J	**2.56**		0.213	J	0.235	J	0.154	J	**1.33**		0.218	J	0.197	J
Copper	METALS	UG/L	620	1,300	**1.46**		**1.32**		**3.83**		**2.34**		0.744	J	**13.4**		0.609	J	0.35	U	0.845	J	0.5	J	**1.51**		**1.92**		**1.84**		**1.94**	
Copper-Dissolved	METALS	UG/L	620	1,300	**1.47**		**2.24**		0.792	J	0.519	J	0.35	U	**5.19**		0.805	J	0.644	J	0.693	J	0.773	J	0.93	J	**2.16**		0.753	J	0.393	J
Iron	METALS	UG/L	11,000	NE	**222**		**202**		**7,450**		**4,060**		**9,230**		**5,160**		**70,000**		**12,900**		**30,200**		**30,000**		**4,110**		47.8	J	**396**		**340**	
Iron-Dissolved	METALS	UG/L	11,000	NE	**225**		**291**		**9,040**		**3,730**		**9,100**		**5,230**		**71,100**		**15,200**		**27,100**		**27,600**		**4,380**		72.5	J	**416**		**296**	
Lead	METALS	UG/L	NE	15	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.632	J	0.5	U	0.5	U	0.5	U	0.5	U	0.667	J	0.5	U	1.51	J	1.47	J
Lead-Dissolved	METALS	UG/L	NE	15	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Magnesium	METALS	UG/L	NE	NE	**1,130**		**1,090**		**2,160**		**673**		**395**		**2,190**		**6,300**		**5,010**		**16,200**		**16,000**		**2,380**		**932**		**724**		**738**	
Magnesium-Dissolved	METALS	UG/L	NE	NE	**1,160**		**1,160**		**2,160**		**677**		**475**		**2,100**		**7,980**		**5,040**		**17,300**		**16,200**		**2,510**		**927**		**772**		**791**	
Manganese	METALS	UG/L	320	NE	**34**		**33.5**		**114**		**56.1**		**10.8**		**413**		**1,080**		**104**		**1,340**		**1,360**		**49.9**		**14.9**		**37.5**		**36.3**	
Manganese-Dissolved	METALS	UG/L	320	NE	**33.4**		**37.5**		**126**		**57.4**		**10.4**		**370**		**940**		**106**		**1,350**		**1,410**		**54.5**		**15.1**		**49.8**		**44**	
Nickel	METALS	UG/L	300	NE	1.61	J	1.3	J	**4.83**		1.59	J	0.5	U	**4.99**		0.942	J	1.49	J	1.53	J	1.43	J	0.531	J	1.65	J	0.63	J	0.628	J
Nickel-Dissolved	METALS	UG/L	300	NE	1.56	J	**2.41**		**5.12**		1.85	J	0.5	U	**5.43**		1.44	J	1.98	J	1.75	J	**2.02**		0.887	J	**2.12**		0.83	J	0.541	J
Potassium	METALS	UG/L	NE	NE	**1,640**		**1,570**		**2,920**		**849**		**497**		**5,660**		**13,300**		**9,900**		**21,800**		**21,000**		**4,440**		**1,010**		**3,030**		**3,200**	
Potassium-Dissolved	METALS	UG/L	NE	NE	**1,440**		**1,620**		**2,830**		**821**		**549**		**5,440**		**18,100**		**9,480**		**21,500**		**22,600**		**4,970**		**991**		**3,180**		**3,230**	
Sodium	METALS	UG/L	NE	NE	**4,940**		**4,880**		**9,930**		**8,580**		**5,520**		**19,300**		**47,600**		**69,900**		**43,200**		**43,900**		**14,700**		**7,290**		**10,200**		**10,500**	
Sodium-Dissolved	METALS	UG/L	NE	NE	**4,780**		**4,950**		**9,100**		**8,090**		**4,670**		**19,400**		**77,000**		**73,400**		**43,500**		**40,400**		**16,500**		**7,460**		**10,700**		**10,800**	
Vanadium	METALS	UG/L	63	NE	1	U	1	U	1	U	1	U	1	U	2.22	J	2.95	J	1	U	2.25	J	1.14	J	1.87	J	1	U	2.37	J	3.96	J
Vanadium-Dissolved	METALS	UG/L	63	NE	1	U	1	U	1	U	1	U	1	U	1.34	J	2.22	J	1	U	1.27	J	1.29	J	1	U	1	U	2.78	J	2.66	J
Zinc	METALS	UG/L	4,700	NE	**13.8**		**12.5**		**13**		**13.9**		3.5	U	**38.6**		3.5	U	3.5	U	3.5	U	3.5	U	3.5	U	4.69	J	7.76	J	7.91	J
Zinc-Dissolved	METALS	UG/L	4,700	NE	**15.8**		**18.5**		**11.7**		**14.4**		3.5	U	**41.8**		3.5	U	6.8	J	3.5	U	3.5	U	4.8	J	7.58	J	6.56	J	5.92	J
Acenaphthene	SVOA	UG/L	400	NE	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	**1.46**		0.3	U	0.3	U	0.39	J	0.35	J	0.42	J	0.3	U	0.3	U	0.3	U
Anthracene	SVOA	UG/L	1,300	NE	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.46	J	0.3	U	0.3	U	0.3	U
Benzo(a)anthracene	SVOA	UG/L	0.029	NE	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.61	J	0.3	U	0.33	J	0.3	U	0.3	U	0.3	U
Benzo(b)fluoranthene	SVOA	UG/L	0.029	NE	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.43	J	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
Benzo(ghi)perylene	SVOA	UG/L	NE	NE	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.38	J	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
Carbazole	SVOA	UG/L	NE	NE	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.63	J	0.53	J	0.38	J	0.3	U	0.3	U	0.3	U
Fluoranthene	SVOA	UG/L	630	NE	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	**1.34**		0.3	U	0.3	U	**1.01**		0.34	J	**1.18**		0.3	U	0.3	U	0.3	U
Fluorene	SVOA	UG/L	220	NE	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.73	J	0.3	U	0.3	U	0.3	U	0.3	U	0.42	J	0.3	U	0.3	U	0.3	U
Phenanthrene	SVOA	UG/L	NE	NE	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.51	J	0.3	U	0.3	U	0.96	J	0.64	J	**1.86**		0.3	U	0.3	U	0.3	U
Pyrene	SVOA	UG/L	87	NE	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	**1.19**		0.3	U	0.3	U	0.86	J	0.33	J	0.99	J	0.3	U	0.3	U	0.3	U
Methylene chloride	VOA	UG/L	9.9	5	1.47	BJ	1.44	BJ	1.53	BJ	1.59	BJ	1	U	2.38	B	2.32	B	2.32	B	1	U	1	U	1.44	BJ	1.33	BJ	1.52	BJ	1.47	BJ
Tetrachloroethylene	VOA	UG/L	9.7	5	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.99	J	0.3	U	0.3	U

TABLE 5. SUMMARY OF DETECTED CONSTITUENTS IN GROUNDWATER SAMPLES
PHASE I BASELINE INVESTIGATION REPORT
BOILER ASH STAGING AREA
CONSENT AGREEMENT 13-04-SW
SONOCO PRODUCTS COMPANY

CONSTITUENT	FRACTION	UNITS	Tapwater-RSL	MCL	MW-09		MW-10		MW-10-D		MW-11		MW-12		SO-1	
Diesel Range Organics	DRO	MG/L	NE	NE	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U
Oil & Grease	HEM	MG/L	NE	NE	1.41	J	1.9	J	1.76	J	1.89	J	2.47	J	2.06	J
Gasoline Range Organics	GRO	MG/L	NE	NE	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Chloride	G	MG/L	NE	NE	**16.4**		**3.61**		**3.63**		**5.31**		**7.7**		**2.95**	
Sulfate	G	MG/L	NE	NE	**186**		**0.594**		**0.588**		**5.71**		**7.68**		**3.53**	
Hexavalent Chromium	G	MG/L	0.000031	NE	0.00553	J	0.0033	U	0.0033	U	**0.0106**		0.0033	U	0.0033	U
Hexavalent Chromium-Dissolved	G	MG/L	0.000031	NE	0.0033	U	0.0033	U	0.0033	U	0.00638	J	0.0033	U	0.0033	U
Aluminum	METALS	UG/L	16000	NE	**339**		**159**		**194**		**341**		**70.5**		**409**	
Aluminum-Dissolved	METALS	UG/L	16000	NE	31.3	J	15	U	15	U	15	U	29.9	J	27.1	J
Arsenic	METALS	UG/L	0.045	10	1.7	U	1.7	U	1.7	U	4.42	J	1.7	U	1.7	U
Arsenic-Dissolved	METALS	UG/L	0.045	10	1.7	U	1.7	U	1.7	U	3.89	J	1.7	U	1.7	U
Barium	METALS	UG/L	2900	2,000	**196**		**18.9**		**19.5**		**17.2**		**37.6**		**4.81**	
Barium-Dissolved	METALS	UG/L	2900	2,000	**190**		**16.1**		**15.8**		**14.5**		**38.6**		**4.49**	
Cadmium	METALS	UG/L	6.9	5	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U
Cadmium-Dissolved	METALS	UG/L	6.9	5	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U
Calcium	METALS	UG/L	NE	NE	**33,500**		**871**		**870**		**8,980**		**2,480**		**1,410**	
Calcium-Dissolved	METALS	UG/L	NE	NE	**32,100**		**769**		**769**		**8,860**		**2,610**		**1,370**	
Chromium	METALS	UG/L	NE	100	2.78	J	2.63	J	3.79	J	3.84	J	2	U	3	J
Chromium-Dissolved	METALS	UG/L	NE	100	2	U	2	U	2	U	2	U	2	U	2	U
Cobalt	METALS	UG/L	4.7	NE	0.1	U	**2.05**		**2.06**		0.423	J	0.865	J	0.444	J
Cobalt-Dissolved	METALS	UG/L	4.7	NE	0.1	U	**1.93**		**1.92**		0.1	U	0.917	J	0.389	J
Copper	METALS	UG/L	620	1,300	**1.85**		**2.86**		**3.13**		**2.31**		**1.65**		**4.51**	
Copper-Dissolved	METALS	UG/L	620	1,300	0.603	J	0.647	J	0.386	J	0.506	J	**1.98**		**1.76**	
Iron	METALS	UG/L	11,000	NE	**9,640**		**649**		**749**		**20,800**		**1,020**		**1,270**	
Iron-Dissolved	METALS	UG/L	11,000	NE	**8,250**		**570**		**520**		**19,300**		**1,150**		**130**	
Lead	METALS	UG/L	NE	15	1.4	J	0.511	J	0.579	J	0.793	J	0.5	U	**2.68**	
Lead-Dissolved	METALS	UG/L	NE	15	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Magnesium	METALS	UG/L	NE	NE	**6,300**		**396**		**397**		**1,120**		**931**		**424**	
Magnesium-Dissolved	METALS	UG/L	NE	NE	**6,200**		**419**		**427**		**1,260**		**915**		**398**	
Manganese	METALS	UG/L	320	NE	**102**		**39.1**		**39.1**		**86.3**		**63**		**16.9**	
Manganese-Dissolved	METALS	UG/L	320	NE	**98**		**37.9**		**34.6**		**83.4**		**66**		**15.8**	
Nickel	METALS	UG/L	300	NE	1.87	J	**3.4**		**3.66**		1.37	J	**2.17**		0.679	J
Nickel-Dissolved	METALS	UG/L	300	NE	1.41	J	**3.41**		**3.05**		0.961	J	**2.45**		0.631	J
Potassium	METALS	UG/L	NE	NE	**13,500**		**399**		**397**		**1,890**		**1,760**		**609**	
Potassium-Dissolved	METALS	UG/L	NE	NE	**13,200**		**445**		**454**		**1,920**		**1,870**		**583**	
Sodium	METALS	UG/L	NE	NE	**37,000**		**3,620**		**3,260**		**5,370**		**5,290**		**2,850**	
Sodium-Dissolved	METALS	UG/L	NE	NE	**34,500**		**3,520**		**3,400**		**4,950**		**4,950**		**2,560**	
Vanadium	METALS	UG/L	63	NE	1.92	J	1	U	1	U	2.27	J	1	U	**10.1**	
Vanadium-Dissolved	METALS	UG/L	63	NE	1.16	J	1	U	1	U	1	U	1	U	1	U
Zinc	METALS	UG/L	4,700	NE	3.5	U	4.8	J	4.95	J	3.5	U	8.72	J	3.5	U
Zinc-Dissolved	METALS	UG/L	4,700	NE	3.5	U	4.28	J	5	J	3.5	U	**10.3**		4.01	J
Acenaphthene	SVOA	UG/L	400	NE	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
Anthracene	SVOA	UG/L	1,300	NE	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
Benzo(a)anthracene	SVOA	UG/L	0.029	NE	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
Benzo(b)fluoranthene	SVOA	UG/L	0.029	NE	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
Benzo(ghi)perylene	SVOA	UG/L	NE	NE	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
Carbazole	SVOA	UG/L	NE	NE	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
Fluoranthene	SVOA	UG/L	630	NE	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
Fluorene	SVOA	UG/L	220	NE	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
Phenanthrene	SVOA	UG/L	NE	NE	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
Pyrene	SVOA	UG/L	87	NE	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U
Methylene chloride	VOA	UG/L	9.9	5	1	U	1	U	1	U	1	U	1.53	BJ	2.36	B
Tetrachloroethylene	VOA	UG/L	9.7	5	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U	0.3	U

NOTES:

1 - All samples collected by GEL between March 17-20, 2014.
2 - "D" sample suffix indicates field duplicate.
3 - Regional Screening Levels (RSLs) for tapwater and and Maximum Contaminant Levels (MCLs) (Regiona Screening Levels for Chemicals at Superfund Sites, EPA, November 2013).
4 - "NE" indicates RSL or SSL not established for constituent.
5 - Results in BOLD indicate concentration exceeds laboratory reporting limit.
6 - "U" data qualifier indicates constiuent not detected above method detection limit.
7 - "J" data qualifier indicates concentration exceeds method detection limit, but not laboratory reporting limit.
8 - Total chromium MCL based on screening levels for chromium III.
Indicates concentration exceeds tapwater RSL.

TABLE 6. SUMMARY OF DETECTED CONSTITUENTS IN SURFACE WATER SAMPLES
PHASE I BASELINE INVESTIGATION REPORT
BOILER ASH STAGING AREA
CONSENT AGREEMENT 13-04-SW
SONOCO PRODUCTS COMPANY

CONSTITUENT	FRACTION	UNITS	FRESHWATER AQUATIC LIFE		HUMAN HEALTH			SW-01		SW-02		SW-02-D		SW-03		SW-04		SW-05		SW-06		SW-07		SW-07-D		SW-08		SW-09	
			CMC	CCC	WATER & ORGANISM	ORGANISM	MCL																						
Chloride	G	MG/L	NE	NE	NE	NE	NE	**4.06**		**3.94**		**3.93**		**3.80**		**3.38**		**3.09**		**8.80**		**10.2**		**10.2**		**21.1**		**9.74**	
Sulfate	G	MG/L	NE	NE	NE	NE	NE	**3.33**		**2.61**		**2.58**		**1.91**		**1.56**		**1.15**		**9.50**		**6.70**		**6.74**		**6.31**		**8.23**	
Cyanide, Total	G	UG/L	22	5.2	140	140	200	1.67	U	1.67	U	1.67	U	1.67	U	1.67	U	1.67	U	1.67	U	1.67	U	1.67	U	**17.2**		1.67	U
Cyanide - Dissolved	G	UG/L	22	5.2	140	140	200	1.67	U	1.67	U	1.67	U	1.67	U	1.67	U	1.67	U	1.67	U	1.67	U	1.67	U	2.45	J	1.67	U
Hexavalent Chromium	G	MG/L	16	11	NE	NE	100	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	**0.0152**		0.003	U
Hexavalent Chromium-Dissolved	G	MG/L	16	11	NE	NE	100	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U
Aluminum	METALS	UG/L	NE	NE	NE	NE	NE	**112**		**120**		**123**		**126**		**180**		**128**		**123**		**163**		**171**		**4100**		**199**	
Aluminum-Dissolved	METALS	UG/L	NE	NE	NE	NE	NE	**53.3**		**56.1**		25.1	J	39.1	J	**65.2**		**71.5**		37.3	J	**101**		**99.4**		42.8	J	**72.5**	
Arsenic	METALS	UG/L	340	150	10	10	10	1.70	U	1.70	U	1.70	U	1.79	J	1.70	U	1.84	J	2.62	J	1.70	U	1.70	U	1.70	U	1.70	U
Arsenic-Dissolved	METALS	UG/L	340	150	10	10	10	1.70	U	1.70	U	1.70	U	1.70	U	1.70	U	1.70	U	2.82	J	1.70	U	2.22	J	1.70	U	1.70	U
Barium	METALS	UG/L	NE	NE	1,000	NE	2,000	**18.7**		**18.6**		**18.6**		**19.9**		**13.7**		**12.5**		**40.0**		**48.0**		**47.7**		**177**		**49.5**	
Barium-Dissolved	METALS	UG/L	NE	NE	1,000	NE	2,000	**18.0**		**17.6**		**17.3**		**18.1**		**12.3**		**12.5**		**40.8**		**46.9**		**46.4**		**53.4**		**48.7**	
Cadmium	METALS	UG/L	0.53	0.1	NE	NE	5	0.110	U	0.110	U	0.110	U	0.110	U	0.110	U	0.110	U	0.110	U	0.110	U	0.110	U	**1.57**		0.110	U
Cadmium-Dissolved	METALS	UG/L	0.53	0.1	NE	NE	5	0.110	U	0.110	U	0.110	U	0.110	U	0.110	U	0.110	U	0.110	U	0.110	U	0.110	U	0.110	U	0.110	U
Calcium	METALS	UG/L	NE	NE	NE	NE	NE	**2500**		**2430**		**2700**		**2390**		**1570**		**1370**		**13200**		**6810**		**6740**		**6590**		**5080**	
Calcium-Dissolved	METALS	UG/L	NE	NE	NE	NE	NE	**2440**		**2320**		**2310**		**2470**		**1390**		**1390**		**13600**		**6550**		**6700**		**3620**		**5280**	
Chromium	METALS	UG/L	580*	28*	NE	NE	100	2.00	U	2.00	U	2.00	U	2.00	U	3.12	J	3.21	J	2.00	U	2.04	J	2.22	J	5.11	J	2.00	U
Chromium-Dissolved	METALS	UG/L	580*	28*	NE	NE	100	2.00	U	2.00	U	2.00	U	2.00	U	2.00	U	2.21	J	2.00	U	2.00	U	2.40	J	2.00	U	2.00	U
Cobalt	METALS	UG/L	NE	NE	NE	NE	NE	0.252	J	0.267	J	0.247	J	0.272	J	0.281	J	0.229	J	0.428	J	0.863	J	0.847	J	**13.0**		0.890	J
Cobalt-Dissolved	METALS	UG/L	NE	NE	NE	NE	NE	0.237	J	0.243	J	0.226	J	0.248	J	0.220	J	0.202	J	0.327	J	0.809	J	0.837	J	0.248	J	0.840	J
Copper	METALS	UG/L	3.8	2.9	1,300	NE	NE	0.931	J	0.992	J	0.841	J	**1.07**		**1.85**		**1.18**		**7.12**		**27.2**		**26.6**		**35.7**		**2.08**	
Copper-Dissolved	METALS	UG/L	3.8	2.9	1,300	NE	NE	**1.24**		**1.21**		0.774	J	0.908	J	**1.29**		0.948	J	**2.76**		**17.8**		**19.0**		**1.82**		**2.13**	
Iron	METALS	UG/L	NE	NE	NE	NE	NE	**1120**		**1140**		**1040**		**954**		**888**		**577**		**119**		**486**		**463**		**1170**		**198**	
Iron-Dissolved	METALS	UG/L	NE	NE	NE	NE	NE	**648**		**659**		**284**		**418**		**534**		**464**		**114**		**319**		**475**		41.8	J	49.6	J
Lead	METALS	UG/L	14	0.54	NE	NE	NE	0.500	U	0.500	U	0.500	U	0.500	U	0.901	J	0.500	U	**2.68**		**3.77**		**3.90**		**41.8**		0.897	J
Lead-Dissolved	METALS	UG/L	14	0.54	NE	NE	NE	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.619	J	**2.40**		**2.42**		0.500	U	0.500	U
Magnesium	METALS	UG/L	NE	NE	NE	NE	NE	**915**		**897**		**894**		**846**		**613**		**585**		**1610**		**1510**		**1490**		**1760**		**1490**	
Magnesium-Dissolved	METALS	UG/L	NE	NE	NE	NE	NE	**895**		**847**		**845**		**913**		**562**		**602**		**1680**		**1460**		**1480**		**1400**		**1490**	
Manganese	METALS	UG/L	NE	NE	NE	NE	NE	**21.6**		**22.0**		**21.2**		**21.9**		**20.1**		**17.0**		**39.7**		**29.1**		**28.2**		**272**		**22.7**	
Manganese-Dissolved	METALS	UG/L	NE	NE	NE	NE	NE	**20.1**		**20.0**		**19.9**		**20.8**		**15.7**		**15.2**		**35.2**		**28.5**		**31.1**		**9.68**		**21.2**	
Mercury	METALS	UG/L	1.6	0.91	0.05	0.051	2	0.067	U	0.067	U	0.067	U	0.067	U	0.067	U	0.067	U	0.067	U	0.067	U	0.067	U	**1.18**		0.067	U
Mercury-Dissolved	METALS	UG/L	1.6	0.91	0.05	0.051	2	0.067	U	0.067	U	0.067	U	0.067	U	0.067	U	0.067	U	0.067	U	0.067	U	0.067	U	0.067	U	0.067	U
Nickel	METALS	UG/L	150	16	610	4,600	NE	0.615	J	0.547	J	0.500	U	0.741	J	0.885	J	0.715	J	1.18	J	1.33	J	1.21	J	**17.5**		1.30	J
Nickel-Dissolved	METALS	UG/L	150	16	610	4,600	NE	0.878	J	0.944	J	0.596	J	0.663	J	0.780	J	0.555	J	1.59	J	1.30	J	1.59	J	**2.04**		1.56	J
Potassium	METALS	UG/L	NE	NE	NE	NE	NE	**1280**		**1200**		**1190**		**1140**		**763**		**536**		**2720**		**2420**		**2380**		**2120**		**2230**	
Potassium-Dissolved	METALS	UG/L	NE	NE	NE	NE	NE	**1330**		**1180**		**1140**		**1220**		**674**		**555**		**2840**		**2330**		**2360**		**1990**		**2210**	
Sodium	METALS	UG/L	NE	NE	NE	NE	NE	**5470**		**5100**		**5190**		**4520**		**2440**		**2110**		**7480**		**9430**		**9220**		**14200**		**8720**	
Sodium-Dissolved	METALS	UG/L	NE	NE	NE	NE	NE	**5580**		**5100**		**4910**		**4930**		**2400**		**2210**		**7760**		**9300**		**9280**		**14500**		**8690**	
Vanadium	METALS	UG/L	NE	NE	NE	NE	NE	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	3.55	J	1.00	U	1.00	U	1.70	J	1.00	U
Vanadium-Dissolved	METALS	UG/L	NE	NE	NE	NE	NE	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	1.00	U	2.62	J	1.00	U	1.00	U	1.00	U	1.00	U
Zinc	METALS	UG/L	37	37	7,400	26,000	NE	4.07	J	4.22	J	4.16	J	4.48	J	9.23	J	3.65	J	9.09	J	**20.6**		**20.3**		**198**		**26.6**	
Zinc-Dissolved	METALS	UG/L	37	37	7,400	26,000	NE	6.80	J	5.77	J	3.50	U	7.75	J	7.26	J	3.58	J	**10.4**		**19.5**		**19.7**		**18.7**		**27.5**	
Di-n-butylphthalate	SVOA	UG/L	NE	NE	2,000	4,500	NE	3.00	U	3.00	U	3.00	U	3.00	U	3.00	U	3.00	U	7.97	J	3.00	U	3.00	U	3.00	U	3.00	U

NOTES:

1 - All samples collected by GEL between April 1-2, 2014.

2 - "D" sample suffix indicates field duplicate.

3 - Criterion Maximum Concentration (CMC) and Criterion Continuous Concentration (CCC) for Protection of Freshwater Aquatic Life; Water & Organism, Organism Only, and Maximum Contaminant Level (MCL) for Protection of Human Health from Appendix: Water Quality Numeric Criteria for the Protection of Aquatic Life and Human Health (Regulation 61-68, South Carolina Water Classifications and Standrads, June 2004).

4 - "NE" indicates RSL or SSL not established for constituent.

5 - Results in BOLD indicate concentration exceeds laboratory reporting limit.

6 - "U" data qualifier indicates constiuent not detected above method detection limit.

7 - "J" data qualifier indicates concentration exceeds method detection limit, but not laboratory reporting limit.

8 - Total chromium MCL based on screening levels for chromium III.

9 - "Dissolved" suffix indicates constiuent analyzed for samples filtered in the field.

Indicates concentration exceeds CCC for Protection of Freshwater Aquatic Life or Water/Water & Organism for Protection of Human Health.

Indicates concentration exceeds CCC and CMC for Protection of Freshwater Aquatic Life.

TABLE 7. SUMMARY OF DETECTED CONSTITUENTS IN SEDIMENT SAMPLES
PHASE I BASELINE INVESTIGATION REPORT
BOILER ASH STAGING AREA
CONSENT AGREEMENT 13-04-SW
SONOCO PRODUCTS COMPANY

CONSTITUENT	FRACTION	UNITS	ESV	SD-01		SD-02		SD-03		SD-04		SD-05		SD-06		SD-07		SD-07-D		SD-08		SD-09	
Chloride	G	MG/KG	NE	**9.49**		**8.63**		**12.6**		**5.81**		**10.4**		**17.1**		**14.3**		**17.6**		**73.5**		**3.66**	
Sulfate	G	MG/KG	NE	**17.4**		4.26	J	2.99	J	2.85	J	**13.7**		**14.8**		**20.3**		**16**		10.9	J	4.89	J
Cyanide, Total	G	UG/KG	NE	103	U	131	U	157	U	160	U	126	U	341	J	114	U	132	U	942	J	91.3	U
Hexavalent Chromium	G	MG/KG	NE	0.173	U	0.21	U	0.357	J	0.216	U	0.209	U	0.237	U	0.29	J	0.22	U	5.69	U	0.168	J
Aluminum	METALS	UG/KG	NE	**1,580,000**		**2,370,000**		**6,110,000**		**9,250,000**		**4,400,000**		**2,140,000**		**2,390,000**		**3,750,000**		**7,280,000**		**1,410,000**	
Antimony	METALS	UG/KG	12,000	465	U	540	U	587	U	**2,670**		561	J	**6,960**		460	U	1,600	J	4,510	J	380	U
Arsenic	METALS	UG/KG	7,240	1,330	J	**2,010**		**2,930**		**2,820**		585	J	**5,450**		**1,480**		**1,900**		2,070	J	923	J
Barium	METALS	UG/KG	NE	**10,400**		**20,100**		**32,900**		**29,600**		**6,760**		**50,700**		**18,100**		**30,400**		**208,000**		**8,660**	
Beryllium	METALS	UG/KG	NE	97.6	J	**202**		**398**		**341**		**199**		**361**		**227**		**331**		**2,970**		60.2	J
Cadmium	METALS	UG/KG	1,000	98.4	J	143	J	169	J	179	J	51.9	J	**1220**		247	J	267	J	673	J	31.7	J
Calcium	METALS	UG/KG	NE	**111,000**		**150,000**		**238,000**		**429,000**		**379,000**		**2,970,000**		**492,000**		**715,000**		**4,430,000**		**204,000**	
Chromium	METALS	UG/KG	52,300	**4,080**		**11,700**		**7,580**		**11,000**		**5,050**		**172,000**		**5,940**		**9,830**		**11,300**		**2,060**	
Cobalt	METALS	UG/KG	NE	**457**		**1,070**		**2,580**		**1,350**		266	J	**3,220**		**1,770**		**2,060**		**6,110**		**647**	
Copper	METALS	UG/KG	18,700	**8,630**		**20,100**		**8,700**		**14,600**		**2,660**		**2,120,000**		**59,700**		**77,500**		**52,600**		**2,350**	
Iron	METALS	UG/KG	NE	**1,440,000**		**2,420,000**		**3,660,000**		**3,190,000**		**557,000**		**2,910,000**		**2,670,000**		**4,360,000**		**1,250,000**		**1,810,000**	
Lead	METALS	UG/KG	30,200	**5,530**		**21,600**		**13,100**		**24,700**		**4,300**		**1,190,000**		**18,400**		**26,300**		**38,000**		**3,120**	
Magnesium	METALS	UG/KG	NE	**45,100**		**73,400**		**120,000**		**165,000**		**78,300**		**279,000**		**327,000**		**534,000**		**958,000**		**333,000**	
Manganese	METALS	UG/KG	NE	**4,910**		**6,760**		**17,100**		**17,600**		**8,720**		**28,500**		**26,500**		**42,300**		**73,500**		**26,800**	
Mercury	METALS	UG/KG	130	**74.5**		**121**		**58.8**		**67.2**		15.5	J	**116**		**63.9**		**160**		**740**		**40.5**	
Nickel	METALS	UG/KG	15,900	**1,090**		**1,960**		**3,800**		**3,150**		**1,280**		**7,910**		**2,290**		**3,730**		**13,100**		**954**	
Potassium	METALS	UG/KG	NE	51,200	J	**146,000**		**179,000**		**137,000**		66,800	J	**127,000**		**276,000**		**366,000**		99,700	J	**389,000**	
Selenium	METALS	UG/KG	NE	478	U	551	U	589	J	789	J	630	J	1,290	J	462	U	591	J	**6,790**		399	U
Silver	METALS	UG/KG	2,000	156	J	164	U	178	U	164	U	158	U	360	J	139	U	165	U	471	U	241	J
Sodium	METALS	UG/KG	NE	23,200	U	43,000	J	34,700	J	29,700	J	26,400	U	61,900	J	43,400	J	69,400	J	209,000	J	19,300	U
Thallium	METALS	UG/KG	NE	91	J	100	U	177	J	110	U	99.1	U	220	J	84	U	99.1	U	309	U	72.5	U
Vanadium	METALS	UG/KG	NE	**4,980**		**6,380**		**12,100**		**16,300**		**7,970**		**2,610**		**6,060**		**11,300**		**6,380**		**2,180**	
Zinc	METALS	UG/KG	124,000	**10,700**		**22,000**		**19,000**		**14,200**		**3,630**		**393,000**		**51,300**		**93,500**		**78,200**		**10,700**	
Anthracene	SVOA	UG/KG	330	145	U	182	U	188	U	191	U	178	U	544	J	144	U	189	U	516	U	127	U
Benzo(a)anthracene	SVOA	UG/KG	330	**623**		182	U	188	U	191	U	178	U	**3,880**		159	J	333	J	516	U	127	U
Benzo(a)pyrene	SVOA	UG/KG	330	**503**		231	J	251	J	191	U	178	U	**3,530**		144	U	201	J	516	U	127	U
Benzo(b)fluoranthene	SVOA	UG/KG	NE	469	J	267	J	276	J	191	U	178	U	**5,050**		188	J	390	J	516	U	127	U
Benzo(ghi)perylene	SVOA	UG/KG	NE	179	J	182	U	188	U	191	U	178	U	**1,700**		144	U	189	U	516	U	127	U
Benzo(k)fluoranthene	SVOA	UG/KG	NE	155	J	182	U	188	U	191	U	178	U	212	U	144	U	189	U	516	U	127	U
bis(2-Ethylhexyl)phthalate	SVOA	UG/KG	182	1450	U	1820	U	1880	U	1910	U	1780	U	6,090	J	1,440	U	1890	U	5160	U	1270	U
Carbazole	SVOA	UG/KG	NE	145	U	182	U	188	U	191	U	178	U	523	J	144	U	189	U	516	U	127	U
Chrysene	SVOA	UG/KG	NE	**1200**		485	J	**658**		191	U	178	U	**4,000**		169	J	277	J	516	U	127	U
Dibenzo(a,h)anthracene	SVOA	UG/KG	330	145	U	182	U	188	U	191	U	178	U	601	J	144	U	189	U	516	U	127	U
Fluoranthene	SVOA	UG/KG	330	449	J	400	J	188	U	191	U	178	U	**5,710**		**520**		566	J	516	U	127	U
Indeno(1,2,3-cd)pyrene	SVOA	UG/KG	NE	145	U	182	U	188	U	191	U	178	U	**1,700**		144	U	189	U	516	U	127	U
Phenanthrene	SVOA	UG/KG	330	145	U	182	U	188	U	191	U	178	U	**2,180**		207	J	245	J	516	U	127	U
Pyrene	SVOA	UG/KG	330	338	J	291	J	188	U	191	U	178	U	**4,760**		361	J	453	J	516	U	127	U
1,1,1-Trichloroethane	VOA	UG/KG	NE	0.341	U	0.488	U	0.463	U	0.563	U	0.687	U	**2.64**		0.381	U	0.473	U	1.55	U	0.257	U
2-Butanone	VOA	UG/KG	NE	**20.8**		**20.6**		**13.1**		**28.6**		**13.2**		**34.6**		1.91	U	5.79	J	**66.4**		3.88	J
Acetone	VOA	UG/KG	NE	**93.5**		**60.9**		**39.7**		**89.6**		**49.3**		**112**		2.15	J	**30**		**258**		**58.3**	
Carbon disulfide	VOA	UG/KG	NE	1.7	U	2.44	U	2.31	U	2.81	U	3.44	U	6.92	J	1.91	U	2.37	U	9.71	J	1.29	U
cis-1,2-Dichloroethylene	VOA	UG/KG	NE	0.341	U	0.488	U	0.463	U	0.563	U	0.687	U	0.515	U	0.381	U	0.473	U	1.81	J	0.257	U
Methylene chloride	VOA	UG/KG	NE	2.27	U	3.25	U	3.09	U	3.75	U	6.39	J	3.43	U	2.54	U	3.15	U	10.3	U	1.71	U
Styrene	VOA	UG/KG	NE	0.341	U	0.488	U	1.27	J	1.48	J	1.79	J	0.515	U	0.381	U	0.473	U	1.55	U	0.257	U
Tetrachloroethylene	VOA	UG/KG	NE	0.341	U	0.488	U	0.463	U	0.563	U	0.687	U	0.67	J	0.762	J	0.852	J	1.55	U	0.514	J
Toluene	VOA	UG/KG	NE	0.397	J	0.488	U	0.463	U	0.6	J	0.687	U	**1.89**		0.381	U	0.473	U	1.55	U	0.257	U
Xylenes (total)	VOA	UG/KG	NE	0.341	U	0.488	U	0.463	U	0.563	U	0.687	U	4.96	J	0.381	U	0.473	U	1.55	U	0.257	U

NOTES:

1 - All samples collected by GEL April 2, 2014.
2 - "D" sample suffix indicates field duplicate.
3 -Ecological Screening Values (ESV) (Waste Management Division Sediment Screening Values for Hazardous Waste Sites from Ecological Risk Assessment Bulletins--Supplement to RAGS, Region 4, EPA, November 2001).
4 - "NE" indicates RSL or SSL not established for constituent.
5 - Results in BOLD indicate concentration exceeds laboratory reporting limit.
6 - "U" data qualifier indicates constiuent not detected above method detection limit.
7 - "J" data qualifier indicates concentration exceeds method detection limit, but not laboratory reporting limit.
8 - Total chromium MCL based on screening levels for chromium III.
9 - "Dissolved" suffix indicates constiuent analyzed for samples filtered in the field.
Indicates concentration exceeds Ecological Screening Value.

APPENDICES – On Enclosed CD

APPENDIX I

Phase I Baseline Investigation Work Plan and DHEC Approval Letter

APPENDIX II

ERM Phase I and Phase II Ash Staging Area Reports

APPENDIX III

Soil Boring Logs, Monitoring Well Construction Diagrams, and Water Well Records

APPENDIX IV

Soil, Boiler Ash, Wastewater Solid, and Sludge Sample Certificates of Analysis and Chain of Custody Forms

APPENDIX V

Groundwater Certificates of Analysis, Chain of Custody Forms, and Groundwater Sampling Field Data Sheets

APPENDIX VI

Surface Water and Sediment Sample Certificates of Analysis and Chain of Custody Forms