KELLY-BUCK
COMPANY

Remedial Action Plan (RAP) – Step One:
Areas of Concern #AOC15, #AOC4 & #AOC6

Former Copes-Vulcan Facility
601 West Summit Avenue
Charlotte, North Carolina 28203
NCDENR ID# NONCD 000 1097

Submitted to:

The North Carolina Department of Environment and Natural Resources
Division of Waste Management
Inactive Hazardous Sites Branch
Superfund Section
1646 Mail Service Center
Raleigh, NC 27699-1646

Submitted by:

Remediating Party:

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Registered Environmental Consultant:

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December 2006

NORTH CAROLINA PROFESSIONAL SEAL 28510 ENGINEER MICHAEL J. LYDEN 1/4/07

KELLY-BUCK

▪ COMPANY ▪

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January 4, 2007

Mr. Kim T. Caulk, P.G.
Inactive Hazardous Sites Branch - REC Program
NCDENR - Division of Waste Management
401 Oberlin Road, Suite 150
Raleigh, North Carolina 27605

Transmittal of Remedial Action Plan – Step One
Copes-Vulcan Facility, # NONCD 000 1097

Dear Kim:

Enclosed is the Remedial Action Plan (RAP) – Step One for the Copes-Vulcan site in Charlotte. As indicated, this RAP addresses the proposed remedy for source areas of concern (AOCs) #15, #4 and #6. An addendum to the RAP will be submitted at a later date to address remaining AOCs and ground-water impacts. Please note that the proposed remedy specified in this RAP does not involve any of the criteria listed in Section 15A NCAC 13C .0306(i) of the REC Rules, for which Department concurrence would be required prior to approval.

I understand that you will be forwarding information to me so that we can distribute the Public Notice for this RAP. Please contact me at (216) 861-1716 if you have any questions or need additional information.

Very truly yours,

THE KELLY-BUCK COMPANY

By: Michael J. Lyden, P.E.
Principal Engineer

Enclosure – Remedial Action Plan – Step One

Copy (w/Encl.): Douglas E. Mix – Electrolux Home Products, Inc.
Douglas J. Ucci – Quantum Management Group, Inc.

The Kelly-Buck Company
2130 Superior Avenue • Suite 3A • Cleveland, OH 44114 • Phone: 216-861-1716 • Fax: 216-861-1715

REMEDIATING PARTY CERTIFICATION STATEMENT (.0306(b)(2)):

"I certify under penalty of law that I have personally examined and am familiar with the information contained in this submittal, including any and all documents accompanying this certification, and that, based on my inquiry of those individuals immediately responsible for obtaining the information, the material and information contained herein is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for willfully submitting false, inaccurate or incomplete information."

Douglas E. Mix
(Name of Remediating Party Official)

* D E Mix * 1-3-07
(Signature of Remediating Party Official) Date

** NOTE: The RSM certifies all documents LAST. Failure to do so is a violation of 15A NCAC 13C .0306(b)(2) of the REC Rules and subject to possible enforcement action against the REC and/or RSM.*

Ohio (Enter State)

Cuyahoga **COUNTY**

I, Beverly Fisher, a Notary Public of said County and State, do hereby certify that Douglas E. Mix did personally appear and sign before me this the 3rd day of January, 2007.

Beverly Fisher
Notary Public (signature)

BEVERLY FISHER
Notary Public, State of Ohio
Recorded in Cuyahoga County
My Commission Expires 12.02.2009

My commission expires: _____.

NOTARY PUBLIC STATE OF OHIO

REGISTERED SITE MANAGER CERTIFICATION STATEMENT (.0306(b)(1)):

"I certify under penalty of law that I am personally familiar with the information contained in this submittal, including any and all supporting documents accompanying this certification, and that the material and information contained herein is, to the best of my knowledge and belief, true, accurate and complete and complies with the Inactive Hazardous Sites Response Act G.S. 130A-310, et seq, and the voluntary remedial action program Rules 15A NCAC 13C .0300. I am aware that there are significant penalties for willfully submitting false, inaccurate or incomplete information."

Michael J- Lyden
(Name of Registered Site Manager)

* Michael J Lyden
(Signature of Registered Site Manager)

* 01/04/2007
Date

**** NOTE: The RSM certifies all documents LAST. Failure to do so is a violation of 15A NCAC 13C .0306(b)(2) of the REC Rules and subject to possible enforcement action against the REC and/or RSM.***

Ohio (Enter State)
CUYAHOGA **COUNTY**

I, PATRICIA M. Sterlieb, a Notary Public of said County and State, do hereby certify that Michael J. Lyden did personally appear and sign before me this the 4 day of JANUARY, 2007.

Patricia M. Sterlieb
Notary Public (signature)

(OFFICIAL SEAL)

My commission expires: Patricia Sternlieb
Notary Public - State of Ohio
My Commission Expires 07/ 29/ 2008

Patricia Sternlieb
Notary Public - State of Ohio
My Commission Expires 07/ 29/ 2008

North Carolina Department of Environment
and Natural Resources
Division of Waste Management
Superfund Section
Inactive Hazardous Sites Branch

REC-LEAD

PROPOSED REMEDIAL ACTION PLAN COMPLETION CERTIFICATION
15A NCAC 13C.0306(b)(5)(C)

Media (check all that apply): All Media___ Soil ✓ Ground water___ Surface water___ Sediment___

Site Name COPES - VULCAN Street Address 601 WEST SUMMIT AVE.

County MECKLENBURG CHARLOTTE, NC

Site ID No. NONCD - 000 - 1097

The proposed remedial action plan, which is the subject of this certification has, to the best of my knowledge, been completed in compliance with the Inactive Hazardous Sites Response Act G.S. 130A-310, et seq. and the voluntary remedial action program Rules 15A NCAC 13C .0300, and THE KELLY-BUCK COMPANY
[REC Name]
is in compliance with Rules .0305(b)(2) and .0305(b)(3), of this section. I am aware that there are significant penalties for willfully submitting false, inaccurate or incomplete information.

Michael Lyden 03/16/2007
RSM Signature Date

MICHAEL J. LYDEN, P.E.
RSM Name

THE KELLY-BUCK COMPANY 2130 SUPERIOR AVE. #3A
REC Name Mailing Address

#00109 CLEVELAND, OH 44114
REC No. City, State, ZIP

Ohio (Enter State)
Cuyahoga **COUNTY**

I, Leslie Gonzalez, a Notary Public of said County and State, do hereby certify that Michael J. Lyden did personally appear and sign before me this the 16 day of March, 2007.

Leslie Gonzalez
Notary Public (signature)
My commission expires:

NOTARY PUBLIC STATE OF OHIO
LESLIE GONZALEZ
Notary Public, State of Ohio
My Commission Expires
October 18, 2010 (OFFICIAL SEAL)

Form G - III

DWM

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EXECUTIVE SUMMARY

This Remedial Action Plan (RAP) has been developed for the former Copes-Vulcan facility located at 601 West Summit Avenue (Site) in Charlotte, North Carolina. Electrolux Home Products, Inc. (Electrolux) is implementing a voluntary remedial action (RA) at the site under the North Carolina Department of Environment and Natural Resources (NCDENR) Registered Environmental Consultant (REC) Program, pursuant to a July 24, 2003 Administrative Agreement between Electrolux and the NCDENR. The Kelly-Buck Company (Kelly-Buck) is the REC assigned to implement and oversee this RA.

Step One of the RA addresses three areas of concern (AOCs) identified during the remedial investigation (RI), which was completed in 2006. These areas are referred to as AOCs #15, #4 and #6, and will be addressed concurrent with the planned demolition of buildings located on the Site. Remaining site issues identified during the RI (i.e., other AOCs and ground-water impacts) will be addressed in an addendum to the RAP.

AOC #15 comprises an approximately 70,000 square foot (sq ft) area within the main building that contains a creosote-treated wood flooring system. The wood flooring, aggregate base materials and underlying soil in this area exhibit concentrations of semivolatile organic compounds (SVOCs) above Site remediation goals (RGs). AOC #4 comprises an approximately 2,200 sq ft area within AOC #15, where past handling of tetrachloroethene (PCE) has resulted in soil impacts above Site RGs. AOC #6 comprises two concrete-lined pits adjacent to AOC #15, with residues in the pits exhibiting concentrations of volatile organic compounds (VOCs), polychlorinated biphenyls (PCBs) and metals above Site RGs.

The objective of the Step One RA is to reduce constituent concentrations in AOCs #15, #4 and #6 to levels below site RGs.

As part of the development of this RAP, a feasibility study (FS) was completed in order to identify and evaluate potentially viable remedial alternatives for achieving this objective. Initially, remedial technologies were identified and screened using the criteria of effectiveness, implementability and cost. Following the initial screening, selected remedial alternatives were evaluated in greater detail using criteria specified by the NCDENR. Finally, a proposed remedy was chosen for implementation at the Site.

The selected remedy for AOCs #15, #4 and #6 involves excavation, removal and offsite disposal of soil and media exhibiting constituent concentrations exceeding Site RGs. Following this RA, confirmatory sampling will be conducted in accordance with NCDENR requirements to verify that remaining soil meets applicable Site RGs. Soil and other contaminated media generated during the RA will be characterized in accordance with NCDENR and EPA requirements prior to off-site transportation and disposal. Health and safety monitoring, engineering controls and decontamination measures will be implemented to protect workers, the surrounding community and the environment. Details associated with the remedial action, including engineering plans and specifications, a health and safety plan, waste characterization results and a sampling and analysis plan, are included with this RAP.

Remedial Action Plan (RAP) – Step One:
Areas of Concern #AOC15, #AOC4 & #AOC6

Former Copes-Vulcan Facility
601 West Summit Avenue
Charlotte, North Carolina 28203
NCDENR ID# NONCD 000 1097

1.0 INTRODUCTION

This Remedial Action Plan (RAP) has been prepared for the Copes-Vulcan site located at 601 West Summit Avenue (Site) in the City of Charlotte, Mecklenburg County, North Carolina (Figure 1). This Site is undergoing a voluntary remedial action (RA) by Electrolux Home Products, Inc. (Electrolux), pursuant to a 2003 Administrative Agreement with the North Carolina Department of Environment and Natural Resources (NCDENR).

The RA is being implemented in accordance with the NCDENR's Registered Environmental Consultant (REC) Program; specifically, NCGS 130A-310.9(c), 15A NCAC 13C .0300, and the NCDENR's REC Program Implementation Guidance. The Kelly-Buck Company (Kelly-Buck) is the REC assigned to this project (REC #00109).

The initial phase of work at the Site involved a remedial investigation (RI), which was completed at the Site between 2004 and 2006. The RI identified areas of concern (AOCs) where soil and other media contain chemical substances above Site-specific remediation goals (RGs). Impacts to ground water were also identified and delineated.

The current project phase involves design and implementation of appropriate remedial measures in order to address Site impacts and ensure that human health and the environment are adequately protected. This RAP has been prepared to describe the selection and design of those remedial measures. Specifically, this RAP has been prepared for Step One of the RA, which will address AOCs #15, #4 and #6 in conjunction with planned demolition of all Site buildings. An addendum to the RAP will be prepared to address remaining Site AOCs and identified ground-water impacts.

2.0 REMEDIAL INVESTIGATION RESULTS

2.1 RI Results - Overview

Details associated with the RI are provided in the following documents previously prepared and submitted to the NCDENR: Phase I RI Work Plan (Kelly-Buck, 2004); Phase I RI Report (Kelly-Buck, 2005); Phase II RI Work Plan Addendum (Kelly-Buck, 2005); and Phase II RI Report (Kelly-Buck, 2006).

A summary of the RI is as follows:

- The RI included completion of more than 100 soil borings and 30 ground-water monitoring wells; collection and laboratory analysis of several hundred samples of soil, ground water, surface water and other environmental media; and completion of other investigative work to identify and delineate site impacts.

- Chlorinated volatile organic compounds (VOCs), primarily tetrachloroethene (PCE), were detected in soil at several locations (AOCs #1, #4, #13 and #21). Ground-water impacts associated with these areas were found to extend vertically into unconsolidated deposits and underlying fractured bedrock, and downgradient to Irwin Creek, located approximately 500 ft west of the site.

- Polychlorinated biphenyls (PCBs) were detected in soil encompassing roughly 75,000 sq ft of area in the north-central portions of the Site (AOCs #1, #2, #12, #13 and #21). Most areas of impact are relatively shallow, and concentrations are not significantly above Site RGs; however, several areas of deeper impact and/or higher concentration have been identified. PCBs have not impacted ground water or surface water.

- Creosoted wood flooring and base materials cover approximately 70,000 sq ft of area inside the building, and contain polynuclear aromatic hydrocarbons (PAHs) above Site RGs (AOC #15). Underlying soil has been impacted to a degree, but no significant ground-water or surface-water impacts have been identified.

- Chromium compounds have impacted soil and ground water in a limited area in the north-central portion of the Site (AOC #3).

- Several additional AOCs were identified, and exhibit minor quantities and/or concentrations of contaminants in soil, but do not appear to have impacted ground water nor represent a significant environmental or human health concern.

2.2 RI Results – Step One AOCs

Sampling results specific to AOCs #15, #4 and #6 are discussed below. Figure 2 provides a current Site survey showing soil boring and monitoring well locations; Figure 3 shows the approximate limits of AOCs #15, #4 and #6; and Appendix A includes a tabulation of laboratory analytical data associated with these areas.

AOC #15 exhibits PAHs above Site RGs. Highest concentrations are associated with the creosoted flooring materials that cover approximately 70,000 sq ft of area. The flooring materials include several layers of wood flooring, along with underlying granular base layers (cinders and gravel) containing a heavy, asphalt-like binder. Soil beneath the flooring materials also exhibits PAHs above RGs, although at concentrations significantly lower than the flooring materials. The horizontal limits of underlying soil impacts correspond to the limits of the floor system. Vertically, the underlying soil is impacted to an estimated average depth of 1 to 2 ft, but

may extend somewhat deeper in areas, particularly in AOC #4, where PCE migration through the floor may have mobilized PAH compounds. Analytical testing involving the toxicity characteristic leaching procedure (TCLP) has indicated that the PAHs are very immobile and no significant ground-water impacts have been indicated (i.e., only several low-level detections of naphthalene have been observed in ground water, and may be associated with AOC #15).

AOC #4, a former solvent degreaser area, exhibits PCE in soil above Site RGs. An area measuring approximately 40 ft by 55 ft comprises AOC #4. The vertical limits of impacted soil are estimated to be approximately 3 ft, although deeper migration and associated ground-water impacts are present.

In AOC #6, manufacturing operations took place within two rectangular pits in the concrete floor and the area contained a solvent degreasing operation. Each pit measures approximately 30 ft by 8 ft by 6 ft deep. Residues in the pits exhibit constituent concentrations above Site RGs, including VOCs (primarily PCE), PCBs and metals. Soil beneath and adjacent to the pits exhibits only limited impacts.

3.0 REMEDIAL ACTION OBJECTIVES

The objective for Step One of the RA is to reduce constituent concentrations in AOCs #15, #4 and #6 to levels below Site-specific RGs. The RGs for this Site were developed using procedures described in the REC program implementation guidance (August 2006 update). Specific Site RGs applicable to AOCs #15, #4 and #6 are discussed in the following sections.

3.1 Remedial Goals - AOC #15

The creosote wood flooring system and underlying soil in AOC #15 contains SVOCs above health-based RGs. With the exception of naphthalene, the detected SVOCs exhibit low mobility and have not been detected in Site ground water. Therefore, applicable RGs for AOC #15 include both health-based and protection of ground water RGs for naphthalene, along with health-based RGs for the remaining SVOCs. Specific RGs for AOC #15 are tabulated below.

Remediation Goals for Soil – AOC#15

Constituent	Remediation Goal for Soil – Health-Based (ug/Kg – total analysis)	Remediation Goal for Soil – Protection of Ground Water (ug/Kg – total analysis)	Remediation Goal for Soil – Protection of Ground Water (ug/L – TCLP analysis)
SVOCs			
Acenaphthene	**740,000**	NA	NA
Acenaphthylene	**460,000**	NA	NA
Anthracene	**4,400,000**	NA	NA
Benzo(k)fluoranthene	**6,200**	NA	NA
Benzo(b)fluoranthene	**620**	NA	NA
Benzo(a)anthracene	**620**	NA	NA
Benzo(g,h,i)perylene	**460,000**	NA	NA
Benzo(a)pyrene	**62**	NA	NA
Chrysene	**62,000**	NA	NA
Dibenz[a,h]anthracene	**62**	NA	NA
Dibenzofuran	**30,000**	NA	NA
Fluoranthene	**460,000**	NA	NA
Fluorene	**540,000**	NA	NA
Indeno(1,2,3-cd)pyrene	**620**	NA	NA
2-Methylnaphthalene	**11,200**	NA	NA
Naphthalene	**11,200**	**420**	**21**
Phenanthrene	**460,000**	NA	NA
Pyrene	**460,000**	NA	NA

3.2 Remedial Goals - AOC #4

AOC #4 exhibits PCE and associated chlorinated VOCs in excess of health-based RGs, and these compounds have impacted Site ground water. Therefore, both health-based and protection of ground water RGs apply. Also, because AOC #4 is contained within the limits of the creosote wood flooring system, the RGs for AOC #15 apply as well. As a result, specific RGs for AOC #4 are tabulated below.

Remediation Goals for Soil – AOC#4

Constituent	Remediation Goal for Soil – Health-Based (ug/Kg – total analysis)	Remediation Goal for Soil – Protection of Ground Water (ug/Kg – total analysis)	Remediation Goal for Soil – Protection of Ground Water (ug/L – TCLP analysis)
VOCs			
1,1-Dichloroethane	**102,000**	**1,400**	**70**
1,1-Dichloroethene	**24,000**	**140**	**7**
cis-1,2-Dichloroethene	**8,600**	**1,400**	**70**
trans-1,2-Dichloroethene	**13,800**	**2,000**	**100**
1,1,1,2-Tetrachloroethane	**3,200**	**8.6**	**0.43**
Tetrachloroethene	**480**	**14**	**0.7**
Toluene	**132,000**	**20,000**	**1,000**
1,1,1-Trichloroethane	**400,000**	**4,000**	**200**
1,1,2-Trichloroethane	**730**	**100**	**5**
Trichloroethene	**53**	**56**	**2.8**
Vinyl chloride	**79**	**0.3**	**0.015**
SVOCs			
Acenaphthene	**740,000**	NA	NA
Acenaphthylene	**460,000**	NA	NA
Anthracene	**4,400,000**	NA	NA
Benzo(k)fluoranthene	**6,200**	NA	NA
Benzo(b)fluoranthene	**620**	NA	NA
Benzo(a)anthracene	**620**	NA	NA
Benzo(g,h,i)perylene	**460,000**	NA	NA
Benzo(a)pyrene	**62**	NA	NA
Chrysene	**62,000**	NA	NA
Dibenz[a,h]anthracene	**62**	NA	NA
Dibenzofuran	**30,000**	NA	NA
Fluoranthene	**460,000**	NA	NA
Fluorene	**540,000**	NA	NA
Indeno(1,2,3-cd)pyrene	**620**	NA	NA
2-Methylnaphthalene	**11,200**	NA	NA
Naphthalene	**11,200**	**420**	**21**
Phenanthrene	**460,000**	NA	NA
Pyrene	**460,000**	NA	NA

3.3 Remedial Goals - AOC #6

The concrete-lined pits in AOC #6 contain residues that exhibit VOCs, PCBs and several metals above health-based RGs. Sampling of soil underlying and surrounding these pits has indicated no significant migration of contaminants. The chlorinated VOCs detected in AOC #6 are

associated with ground-water impacts that have originated from other AOCs. While these impacts do not appear to have originated in AOC #6, protection of ground water RGs will nevertheless be included, to ensure that no VOCs remain in this area at concentrations which might contribute to Site ground-water impacts in the future. With the possible exception of manganese, remaining constituents detected in AOC #6 are not associated with Site ground-water impacts (manganese appears to be elevated in ground-water samples collected elsewhere onsite, but not in source area AOC #6). As a result, only health-based RGs will apply for these other compounds. Specific RGs for AOC #6 are tabulated below.

Remediation Goals for Soil – AOC#6

Constituent	Remediation Goal for Soil – Health-Based (ug/Kg – total analysis)	Remediation Goal for Soil – Protection of Ground Water (ug/Kg – total analysis)	Remediation Goal for Soil – Protection of Ground Water (ug/L – TCLP analysis)
VOCs			
1,1-Dichloroethane	**102,000**	**1,400**	**70**
1,1-Dichloroethene	**24,000**	**140**	**7**
cis-1,2-Dichloroethene	**8,600**	**1,400**	**70**
trans-1,2-Dichloroethene	**13,800**	**2,000**	**100**
1,1,1,2-Tetrachloroethane	**3,200**	**8.6**	**0.43**
Tetrachloroethene	**480**	**480**	**0.7**
Toluene	**132,000**	**20,000**	**1,000**
1,1,1-Trichloroethane	**400,000**	**4,000**	**200**
1,1,2-Trichloroethane	**730**	**100**	**5**
Trichloroethene	**53**	**56**	**2.8**
Vinyl chloride	**79**	**0.3**	**0.015**
PCBs			
PCB-1254 (Aroclor 1254)	**1,000**	NA	NA
PCB-1260 (Aroclor 1260)	**1,000**	NA	NA
Metals			
Arsenic	**6,000**	NA	NA
Barium	**1,080,000**	NA	NA
Cadmium	**7,400**	NA	NA
Copper	**620,000**	NA	NA
Lead	**400,000**	NA	NA
Manganese	**1,050,000**	NA	NA
Mercury	**4,600**	NA	NA
Nickel	**320,000**	NA	NA

4.0 FEASIBILITY STUDY

As part of the RA planning process, and in accordance with REC program requirements, a feasibility study (FS) was completed to aid in remedy selection for the Step One RA. The FS involved identification, evaluation and selection of appropriate remedial action alternatives in order to achieve the stated remedial action objectives. Specific steps completed during the FS process include: identification and screening of technologies; detailed evaluation of remedial alternatives using the eight evaluation criteria specified in the REC rules and implementation guidance; and remedy selection. The following sections summarize this work.

4.1 Identification and Screening Of Technologies

Due to the nature of contaminants in AOCs #15, #4 and #6, this FS focused on technologies available for treating soil contaminated with VOCs (primarily PCE) and SVOCs (primarily PAHs). The assembled technologies included: in situ and ex situ biological, chemical/physical and thermal treatment methods; containment; excavation and off-site disposal; and no action. Once assembled, the technologies were screened based on the following criteria: (1) effectiveness (ability of the treatment method to remove the material and reduce the waste loading); (2) implementability (ease at which the treatment method can be carried out); and (3) cost (including treatment, disposal, and maintenance). Based on the initial screening and scoring process, potentially viable remedial alternatives were retained for further evaluation. A summary of this initial screening process is presented in Table 1, and discussed below.

In Situ Biological Treatment

The primary advantage of in situ treatment is that it allows soil to be treated without being excavated and transported, resulting in significant cost savings. However, in situ treatment usually requires longer time periods, and the uniformity of treatment is less certain. Bioremediation technologies such as bioventing and enhanced bioremediation rely on the stimulation of microorganisms to grow and utilize the contaminants present as food and energy sources. Specifically, enhanced bioremediation has been shown to be effective at the degradation of certain VOCs and PAH compounds. Typically, this involves the addition of a combination of oxygen, nutrients or other amendments. The cost of these materials is typically low, and can be easily injected. Due to the potential for this treatment alternative to be effective at reducing contaminant concentrations, in situ biological treatment was retained for further evaluation.

In Situ Chemical/Physical Treatment

In situ chemical/physical treatment allows soil to be treated without being excavated and transported, resulting in significant cost savings; however, in situ treatment also requires longer time periods, and the uniformity of treatment is less certain. Chemical oxidation, a process

which relies on the addition of an oxidant to chemically convert the contaminants to less toxic components, has shown promise in the reduction of VOC and PAH contaminants in soil. This alternative involves injecting a strong chemical oxidizer, such as Fenton's Reagent or potassium permanganate ($KMnO_4$) in order to oxidize and degrade organic contaminants. In situ oxidation offers the advantages of being rapid, aggressive and insensitive to contaminant characteristics and concentrations. The oxidizing materials are readily available and are easily injected. Costs associated with material purchase and technology implementation are relatively low. This treatment alternative was retained for further evaluation.

Ex Situ Biological Treatment

Ex situ treatment typically involves excavating soils, placing in a treatment area and mixing with soil amendments such as oxygen and nutrients. This type of treatment often requires shorter treatment periods versus in situ options, and there is more certainty about uniformity of treatment. However, ex situ treatment requires removal of soil, leading to increased costs and additional worker exposure. Available technologies such as biopiles, composting and land farming are not commonly used treatment options for the treatment of chlorinated VOCs and higher molecular weight PAHs; therefore, this category was not retained for further evaluation.

Ex Situ Chemical/Physical Treatment

Ex situ chemical/physical treatment uses the physical properties of the contaminants or the contaminated medium to destroy (i.e., chemically convert), separate, or immobilize the contamination. Ex situ chemical/physical treatment often requires shorter treatment periods versus in situ treatment options, and there is more certainty regarding uniformity of treatment. However, ex situ treatment requires removal of soil, leading to increased costs and additional worker exposure. Available technologies such as chemical extraction, soil washing and solidification/stabilization are not commonly used options for the treatment of chlorinated VOCs and higher molecular weight PAHs; therefore, this category was not retained for further evaluation.

In Situ Thermal Treatment

In situ thermal treatment typically involves the use of electrical current, hot air or steam to heat the soil in order to enhance the volatilization rate of contaminants and facilitate extraction. While in situ thermal treatment offers quick cleanup times, this type of treatment can be cost intensive. Performance can also vary depending on the maximum temperature achieved, and soil characteristics such as moisture content, permeability and organic content. Available technologies such as steam injection, electromagnetic heating and hot air injection have not been widely shown to adequately treat VOC and PAH contaminants in soil; therefore, this treatment type was not retained for further evaluation.

Ex Situ Thermal Treatment

Ex situ thermal treatment uses high temperatures to volatilize and combust contaminants in soil. Technologies such as incineration and thermal desorption can provide a high degree of contaminant destruction and offers quick cleanup times. However, these technologies can be the most costly due to soil removal, equipment and energy costs. In addition, off-gas emissions and combustion residuals will typically require additional treatment, and could raise exposure concerns with the surrounding community. This option will not be retained for further evaluation.

Containment

Containment typically involves leaving some or all contaminated soil and media in place, in conjunction with engineering controls, such as a landfill cap or other cover, and land use restrictions. It is a widely implemented technology primarily because the cost for implementation is low. While this treatment type can be quickly and easily implemented, it does not adequately reduce or remove the contaminants. These methods are primarily suited for sites where the potential for off-site migration of contaminants does not exist, and are not suitable where the remedial objective involves reducing contaminant concentrations to Site-specific RGs. This treatment was not retained for further evaluation.

Other Treatment (Excavation & Off-Site Disposal)

This approach typically involves the excavation, removal and offsite disposal of contaminated soil at a permitted facility. While this option involves increased costs due to removal, transportation and disposal of contaminated soil, it does provide adequate removal and reduction of source volumes and concentrations at the Site. Other factors to consider include the generation of fugitive emissions during removal and transport, the distance that the media must be transported to a permitted facility, and the potential migration of contaminants during transfer. This is a well proven and readily implementable technology for the treatment of VOCs and PAHs in soil; therefore, this option was retained for further evaluation.

No Action

This option is chosen as a base option for which all other alternatives can be compared to. Under this option, contaminated soil and media would be left in place at the site without treatment or containment. A no action option would be appropriate for this Site if contaminant concentrations are not assumed to pose a threat to human health and the environment, and migration of contaminants off-site would not occur. This option may also include the continued monitoring of the site and constituents of concern. This option was retained for further evaluation.

4.2 Detailed Evaluation of Remedial Alternatives

Based on the above screening of potentially applicable technologies for the treatment of VOC and PAH-contaminated soil, four remedial alternatives were selected for further development and evaluation. These include: (1) in situ biological treatment (bioventing or biostimulation); (2) in situ chemical/physical treatment (chemical oxidation); (3) other treatment (excavation, removal and offsite disposal); and (4) no action. Each alternative was further evaluated based on the following eight NCDENR criteria (per REC Program Rules 15A NCAC 13C .0306(l)(3)):

- Protection of human health and the environment, including attainment of cleanup levels;
- Compliance with applicable federal, state and local regulations;
- Long-term effectiveness and permanence;
- Reduction of toxicity, mobility and volume;
- Short-term effectiveness, i.e., effectiveness at minimizing the impact of the site remedial action on the environment and the local community;
- Implementability: technical and logistical feasibility, including an estimate of time required for completion;
- Cost; and
- Community acceptance.

Results of this evaluation are summarized in Table 2, and are discussed below.

Remedial Alternative #1: Other Treatment (Excavation & Off-Site Disposal)

This alternative would involve the removal and offsite disposal of all soil, flooring and other materials that exhibit contaminant levels in excess of Site RGs. For AOCs #15, #4 and #6, this is estimated to involve approximately 8,000 to 10,000 tons of soil and base materials. Portions of the waste would require characterization sampling prior to disposal; for example, PCE-contaminated soil in AOC #4. It is currently assumed that all soil and other materials would be transported to a local licensed municipal landfill for disposal. Costs for this alternative are estimated at $1.1 to $1.4 million dollars.

As indicated on Table 2, Remedial Alternative #1 is best able to satisfy all eight of the NCDENR criteria. In particular, removal of contamination from the site and off-site disposal in a secure facility provides the greatest degree of protection to human health and environment, and complies with applicable regulations. Both of these criteria are considered threshold requirements which must be achieved by the selected remedy. Another advantage of Remedial Alternative #1 is that it offers a high degree of predictability that it will be effective at reducing contaminant concentrations and corresponding Site exposure risks. The main disadvantages to Remedial Alternative #1 are cost, along with the fact that the contaminants do not undergo permanent destruction.

Remedial Alternative #2: In Situ Chemical/Physical Treatment (Chemical Oxidation)

Remedial Alternative #2 would involve in situ chemical oxidation (ISCO) – specifically, the injection of a chemical oxidant such as Fenton's Reagent (hydrogen peroxide with an iron catalyst) or potassium permanganate into shallow soil beneath the 70,000 sq ft creosote wood flooring system. The chemical oxidant would react with and degrade (mineralize) the volatile and semivolatile contaminants. Vertical or horizontal injection points or infiltration galleries would be constructed throughout the treatment area, and one or more applications of the chemical oxidant would be performed. Initial treatability studies would be necessary to optimize and design the treatment system, and soil sampling and other monitoring would be performed during and after the treatments. The cost for implementation of this technology is estimated at $35 to $65 per ton of soil treated, or roughly $250,000 to $450,000 for treatment of about 6,600 tons of soil.

A drawback to implementing this alternative in AOCs #15, #4 and #6 is that it is not well suited for treating relatively high concentration source contamination. The creosoted wood flooring and base materials that contain relatively high levels of semivolatile PAHs cannot be effectively treated in this manner, and would require removal and offsite disposal prior to treating the underlying soil. This would add roughly $500,000 to the overall cost for this option. Another significant disadvantage is that the soil contamination is in the vadose zone, or unsaturated zone, making it more difficult for application and distribution of treatment chemicals throughout the impacted area.

Remedial Alternative #3: In Situ Biological Treatment

Remedial Alternative #3 would involve in situ biological treatment in AOCs #15, #4 and #6, most likely aerobic and anaerobic bioventing. Aerobic bioventing would be applied to creosote-impacted soil, wherein air is injected into the soil zone to stimulate degradation of lower vapor pressure PAHs. Anaerobic bioventing, which involves the injection of nitrogen gas and electron donor compounds (e.g., carbon dioxide or hydrogen) to stimulate anaerobic reductive dechlorination, would be applied in AOC #4 to degrade chlorinated VOCs. A network of air/gas injection points would be constructed over the impacted areas, and most likely operated for a period of several years. Relatively extensive treatability testing would be needed to optimize the design of such a system. Approximate costs for this approach would be on the order of $300,000 to $500,000.

As is the case with Remedial Alternative #2, this approach suffers from the difficulty in effectively treating soil in place, particularly in the shallow subsurface and distributed over a relatively large source area. In addition, aerobic bioventing is more effective in treating fuel-based organic compounds such as benzene, toluene, ethylbenzene and xylenes (BTEX). Even where aerobic bioventing has treated PAHs, it is less effective with the higher molecular weight compounds such as benzo(a)pyrene. Similarly, the anaerobic bioventing approach is relatively new, and does not yet indicate a high degree of assurance that it will effectively treat chlorinated

VOCs, particularly in higher concentration source areas, and in the vadose zone where delivery to the contaminant source is more difficult.

Remedial Alternative #4: No Action

The no action alternative is considered in some situations, typically where contaminant concentrations are already sufficiently low so that the cost or other considerations associated with additional action cannot be justified relative to the incremental degree of risk reduction. In the case of AOCs #15, #4 and #6, the following considerations apply. First, relatively high concentrations of creosote residues are currently contained within flooring materials inside the building in AOC #15. These residues have not been disturbed or exposed since their initial placement for many decades, and the current exposure risk is minimal. However, since the existing buildings containing these AOCs are to be demolished, there is a greater likelihood that these residues could become subjected to an increase in environmental exposure. Likewise, the residues in AOC #6 and the chlorinated VOCs present in soil beneath AOC #4 could potentially be exposed following building demolition. As a result, the No Action alternative is not appropriate to address these potential exposure risks.

4.3 Remedy Selection

Based on the above analysis and comparison of potentially viable options, Remedial Alternative #1 – Excavation and Off-Site Disposal – is selected for implementation of the Step One RA at the Site. This approach is described in greater detail in the remaining sections of this RAP.

5.0 DESCRIPTION OF PROPOSED REMEDY

Source-area contamination in AOC #15, AOC #4 and AOC #6 will be addressed by excavation, removal and off-site disposal of soil and other media exhibiting contaminant concentrations above RGs. The following paragraphs provide a brief description, or conceptual design, of the selected remedy. A detailed remedial design has been prepared for implementation of this option, and is provided as Appendix A - Volume II Plans and Specifications, Remedial Action Step One.

5.1 Removal of Creosoted Wood Flooring System and PAH-Impacted Soil (AOC #15)

The wood flooring system (creosote-treated wood flooring and creosoted base materials), and underlying soil to a depth of 1.0 ft, will be removed from AOC #15. Confirmatory soil sampling and laboratory analysis will be conducted to confirm adequate soil removal (i.e., constituent concentrations below applicable Site RGs). Based on the results of these analyses, additional soil removal may be conducted, as required, in order to achieve Site RGs. Upon removal, the wood flooring system, base materials and underlying soil will be transported to and disposed of in a Subtitle D licensed municipal solid waste landfill.

5.2 Removal of PCE-Impacted Soil (AOC #4)

Flooring materials and 3.0 ft of underlying soil will be removed from AOC #4. Following removal, confirmatory soil sampling and laboratory analysis will be conducted to confirm adequate soil removal. Based on the results of the analyses, additional soil removal may be conducted, as required, to achieve applicable Site RGs. Flooring materials and soil will be staged onsite, and will be sampled for analysis of extractable VOCs by TCLP. If USEPA toxicity characteristic (TC) limits are exceeded, the corresponding waste will be managed as a RCRA hazardous waste and transported to a Subtitle C facility for treatment and disposal. Conversely, waste volumes not exhibiting contaminant concentrations in excess of TC limits will be transported to a Subtitle D licensed municipal landfill for disposal (see Section 5.4 for further discussion).

5.3 Removal of Concrete Pits, Debris & Impacted Soil (AOC #6)

Solid residues, concrete and 1.0 ft of underlying and adjacent soil will be removed from AOC #6. Following removal, confirmatory soil sampling and laboratory analysis will be conducted to confirm adequate soil removal. Based on the results of the analysis, additional soil removal may be conducted, as required, to achieve applicable RGs. Residues, concrete and soil will be staged onsite, and will be sampled for of TCLP analysis of VOCs and metals. If USEPA TC limits are exceeded, the corresponding waste will be managed as a RCRA hazardous waste and transported to a Subtitle C facility for treatment and disposal. Conversely, waste volumes not exhibiting contaminant concentrations in excess of TC limits will be transported to a Subtitle D licensed municipal landfill for disposal (see Section 5.4 for further discussion).

5.4 Management and Disposal of Contaminated Media & Materials

A preliminary characterization was completed with respect to waste streams to be generated during remedial action activities in AOCs #15, #4 and #6. This review was carried out in accordance with EPA document #530-F-98-026, Management of Remediation Waste Under RCRA (EPA, 1998). Following is a summary of this review.

<u>No Listed RCRA Wastes:</u> Available information indicates that the sources of contamination in AOCs #15, #4 and #6 were active or otherwise occurred prior to the 1970's; therefore, no listed RCRA hazardous waste classifications apply. Specifically, creosote flooring was installed during initial building construction in the 1940's, and the use of PCE and other constituents in AOCs #4 and #6 took place during Whitin Machine Works tenure on the property from the 1940s to the early 1970s.

<u>No TSCA-Regulated PCB Wastes:</u> Testing of flooring materials, concrete, solid residues and soil in AOCs #15, #4 and #6 indicate no PCB concentrations above 50 parts per million (ppm).

Therefore, USEPAs Toxic Substances Control Act (TSCA) requirements will not apply to Step One of the RA.

Flooring and Soil in AOC #15 Designated as a Non-Hazardous Solid Waste: Testing during the RI indicates that flooring materials and soil in AOC #15 do not exhibit any characteristics of a RCRA hazardous waste; therefore, these materials have been characterized as a non-hazardous solid waste for disposal in a Subtitle D licensed municipal solid waste landfill.

Wastes Generated in AOC #4 Require Characterization Sampling: Flooring and soil in AOC #4 have the potential to leach PCE above the USEPA TC limit of 0.7 mg/L; therefore, these materials require characterization sampling and analysis prior to disposal. Any portions exceeding the TC limit will be managed in a Subtitle C facility as RCRA hazardous waste; otherwise, the waste will be disposed of in a Subtitle D licensed municipal solid waste landfill.

Wastes Generated in AOC #6 Require Characterization Sampling: Sampling of solid residues contained in the pits in AOC #6 have shown total concentrations of some constituents in excess of those thresholds capable of exhibiting a characteristic of toxicity; however, TCLP testing of those residues did not indicate any TC exceedances. To be certain of proper waste classification, these materials will require characterization sampling and analysis prior to disposal. Any portions exceeding a TC limit will be sent to a Subtitle C hazardous waste facility; otherwise, the waste will be disposed of in a Subtitle D licensed municipal solid waste landfill.

6.0 JUSTIFICATION FOR SELECTION OF PROPOSED REMEDY

The proposed remedy is supported by the previously discussed FS, including the eight comparison criteria as required by REC guidelines. The following discussion provides details in support of this selection.

Protection of Human Health and the Environment

Excavation and offsite disposal provides for the protection of human health and the environment by effectively removing the contaminant sources from the Site; thereby achieving Site RGs for soil and other contaminated media, eliminating the potential for human health risks associated with exposure to these chemicals, and preventing release and migration of contaminants into the environment.

Compliance with Applicable Federal, State and Local Regulations

The USEPA and NCDENR recognize excavation and offsite disposal as a viable means to remediate contaminated soil and other media. Removal and disposal in a licensed, secure facility provides for compliance with applicable federal, state and local regulations. All materials have been, or will be, properly characterized per North Carolina and USEPA regulations prior to off-site transportation and disposal. No additional permit requirements or waivers are currently required.

Long-Term Effectiveness and Permanence

The selected remedy meets the goal of eliminating risk associated with potential exposures to, and releases from, the chemicals of concern. This method is an effective, permanent solution for removal of impacted materials from the Site.

Reduction of Toxicity, Mobility and Volume

Excavation and removal provides the most readily implementable and cost-effective means of reducing exposure and migration as well as reducing the volume of impacted materials remaining on the Site. Due to the persistent nature of the contaminants (i.e., high molecular weight semivolatile organic compounds, chlorinated compounds), excavation and removal to a permitted off-site disposal facility does eliminate the uncontrolled exposure of these compound to the environment.

Short-Term Effectiveness

Excavation and off-site disposal provides a highly effective means for protection of human health and the environment. During the implementation of this remedy, the greatest potential risk posed would be the release of contaminated dust or surface runoff during excavation and handling of wastes. Therefore, engineering controls will be implemented to minimize any such releases, and work zone and Site perimeter air monitoring will be conducted to ensure that exposure of the local community does not occur.

Implementability

Excavation and offsite disposal is a well proven and readily implementable technology for the management of contaminated soil and materials. With properly trained personnel, this remedial alternative is expected to be carried out over a relatively brief 3-4 month period. No special equipment beyond common excavation equipment, will be necessary. Since a majority of this material has been tentatively identified as a non-hazardous waste, facilities permitted to receive this material will be available in relatively close proximity to the Site.

Cost

Excavation, loading and transportation of impacted soils and sub-flooring materials to a permitted disposal facility is a significant effort and not the least expensive alternative evaluated. A preliminary cost estimate for this remedy is approximately $1.4 million, as follows:

Contractor mobilization, establishment of site facilities, decontamination	$50,000
Excavation and disposal of contaminated soil and other materials	$1,040,000
Backfill & restoration	$148,000
Engineering procurement, construction management, sampling & analysis	$228,000
Approximate Total:	$1,466,000

Community Acceptance

As specified in the Volume II Plans and Specifications, Remedial Action – Step One and corresponding Health and Safety Plan, engineering controls and monitoring of remedial work will be conducted to ensure that exposure of the surrounding community and onsite workers to contaminants is minimized. Site work will only be conducted during hours permissible by local ordinances, and vehicles entering and leaving the site will be required to comply with all applicable traffic rules and regulations. The remedy is viewed as providing for community acceptance, in that it removes contaminants from the area, thereby minimizing future exposure concerns and potential negative stigma associated with the Site. The Site demolition is also viewed as being beneficial to the community by minimizing the potential for illicit activities to occur on the Site.

7.0 ACTIVITES NECESSARY FOR IMPLEMENTATION

Activities deemed necessary to implement the RA – Step One are summarized below. Additional details can be found in the Remedial Design prepared for this work (see Appendix A - Volume II Plans and Specifications, Remedial Action Step One).

Area Preparation

- Prior to remedial activities, the limits of excavation will be surveyed and staked and grade elevations will be established as necessary.
- A grid will be developed for each excavation area, for purposes of soil removal and confirmatory sampling.
- All existing monitoring wells within these areas of concern will be marked and secured prior to excavation activities.
- A truck and equipment decontamination area will be constructed.

Excavation and Removal Activities

- Temporary onsite staging areas will be identified for storage of excavated soil and other media prior to waste characterization sampling, analysis, transportation and offsite disposal.
- During excavation activities (i.e., loading and unloading), measures will be taken to minimize the generation of dust which may become airborne. Suppression methods include tarps, covers and water mist.
- Staging areas will be properly maintained to minimize or eliminate exposure to precipitation.

Confirmatory Sampling of Excavated Areas

- After initial excavation of contaminated materials, confirmatory sampling of in situ soil will be conducted to verify that soil meets all applicable Site RGs for contaminants of concern. Sampling points will be selected based on the grid developed for each area. Sampling type (i.e., grab, composite), method and required analysis will be per REC requirements. Based on these results, additional soil excavation and confirmatory sampling will be conducted, as necessary.

Permits and Other Authorizations

- A National Pollutant Discharge Elimination System (NPDES) General Permit to discharge stormwater associated with construction activities will be obtained for this remedial work through NCDENR. As part of this process, an Erosion and Sedimentation Control Plan (ESCP) will be prepared and submitted to the NCDENR or its delegated authority for approval.
- A RCRA Site Generator Number will be obtained in the event that it is needed for portions of the waste disposal.

Waste Analysis and Characterization

- Prior to offsite transport and disposal of excavated materials, all staged and containerized materials not already fully characterized (i.e., AOCs #4 and #6) will be sampled for purposes of waste characterization in accordance with NCDENR and RCRA guidelines. Based on these results, excavated material will be categorized as hazardous or non-hazardous for purposes of disposal.

Offsite Transportation and Disposal

Based on the final waste characterization results, pre-authorization and approval for disposal of nonhazardous and/or hazardous waste will be obtained prior to offsite transfer to a permitted treatment and disposal facility.

Site Restoration and Security

Following completion of removal activities and verification soil sampling, all excavated areas will be backfilled with clean soil, and graded and vegetated to prevent ponding of water. The Site will remain fenced and locked during and after the RA to prevent unauthorized access.

8.0 PROPOSED TREATABILITY STUDIES AND ADDITIONAL SITE CHARACTERIZATION

Pre-Characterization

Prior to the removal of flooring, soil, solid residues and concrete from AOCs #4 and #6, the following pre-characterization work will be completed to characterize these materials as hazardous or non-hazardous wastes for on-site management and off-site transportation and disposal purposes:

AOC #4

In AOC #4, a sampling grid will be established over the area as per Figure 4. At each grid node, individual samples will be collected of the wood flooring, cinders, and at each one foot interval of soil down to a depth of 3 feet (i.e., 0-1 ft, 1-2 ft and 2-3 ft). Samples will be field screened using a PID. For each material layer (wood, cinders, soil), the five samples exhibiting the highest PID readings for each layer will be submitted for laboratory analysis of TCLP VOCs. If results indicate that a sample is classified as non-hazardous, then the area represented by the grid node will be excavated and managed as a non-hazardous solid waste. Conversely, if results indicate that a sample is classified as a characteristic hazardous waste, then the area represented by the grid node will be excavated and managed as a hazardous waste.

AOC #6

A minimum of five grab samples will be collected for each material type (solid residues, concrete and surrounding soil), and field screened using a PID. For each type of material, the two samples exhibiting the highest PID readings will be submitted for laboratory analysis of TCLP VOCs, PCBs and metals. If laboratory results indicate that the solid material(s) are a non-hazardous waste, then the material shall be excavated and managed as a non-hazardous waste. Conversely, if results indicate that the solid material(s) are classified as a characteristic hazardous waste, then the material shall be excavated and managed as a hazardous waste.

After pre-characterization activities have been completed, a preconstruction report will be prepared and submitted to NCDENR.

9.0 PROCEDURES AND SCHEDULE FOR REMEDIAL ACTION

A proposed preliminary schedule outlining the RA – Step One is provided below. This schedule is approximate, and is subject to revision as necessary.

Preliminary Project Schedule

Activity	01/07	02/07	03/07	04/07	05/07	06/07	07/07	08/07	09/07
Mobilization, permits, prep.									
Building demolition									
Removal in Areas of Concern									
Sampling & Analysis									
Waste Transportation & Disposal									
Backfill & Site Restoration									

10.0 PROPOSED CRITERIA FOR REMEDIAL ACTION COMPLETION

Following excavation and removal of contaminated soil and media from AOCs #15, #4, and #6, post-remedial confirmatory sampling of soil will take place to confirm that in-situ soil meets applicable RGs for the contaminants of concern. Sampling protocols will be conducted in accordance with the Site Sampling and Analysis Plan (Appendix B). Sampling details are discussed below, and follow the 2006 REC Guidelines, Appendix B, and the August, 2006 DENR Inactive Hazardous Sites Program Guidelines for Assessment and Cleanup.

10.1 Confirmatory Sampling of Excavated Soil Areas

A sampling grid will be established over the base and sidewalls of each excavated area (See Figure 4). At each grid node, an individual soil sample will be collected from 0-3 inches into the base or sidewall of the excavation, as applicable. Additional biased samples may also be collected from other areas exhibiting signs of possible residual contamination, and/or from areas where previous RI sampling has indicated contaminants to be above Site RGs.

For each area, the unmixed grab samples collected from each base and sidewall node will be evaluated using field methods (i.e., screened with a photoionization detector (PID); evaluated for visible signs of contamination). In AOC #15, a minimum of ten individual base and sidewall soil samples exhibiting signs of greatest possible contamination (i.e., at least 25% of the total number of nodes), plus any biased samples, will be submitted for laboratory analysis of SVOCs. For AOC #4, a minimum of five individual base and sidewall samples selected from the field evaluation, plus any biased samples, will undergo laboratory analysis of VOCs and SVOCs. For AOC #6, at least five individual base and sidewall samples selected from the field evaluation, plus any biased samples, will undergo laboratory analysis of VOCs, PCBs and applicable metals.

10.2 Confirmatory Sampling Results and Interpretation

Based on the confirmatory sampling results, additional sampling and/or excavation of soil may be necessary if contaminants of concern are shown to be above Site RGs. If a sample shows constituents above RGs, the area will undergo additional excavation and sampling. This process will continue until sampling results show that remaining soil does not contain contaminants above Site RGs.

10.3 Waste Characterization of Excavated Material

For any waste materials in AOCs #4 and #6 that are not pre-characterized as described in Section 8.0 (e.g., access constraints), these materials will be staged, sampled and characterized per procedures described in Section 5.4. Specific sampling procedures for any post-removal waste characterization are described below.

Containerized Sampling

A minimum of two grab samples will be collected from each roll-off container or 25 cubic yards. Sample locations will be selected at random. At each sampling location, samples will be collected from two depths. For non-volatile analysis, the two depth increment samples at each location will be composited. For volatile analysis, each depth increment sample will be submitted separately.

Stockpile Sampling

Current RA plans do not include the use of stockpiles for staging excavated materials. However, if stockpiles are employed, characterization procedures will be as follows. The maximum stockpile volume is proposed to be 300 cubic yards. Each stockpile will be divided into 100 cubic yard segments. Within each segment, random selection will be used to locate three sampling locations. Additional samples may be selected based on visible evidence. Samples will be collected from two depths at each location, resulting in a minimum of six samples per segment. For non-volatile analysis, the six samples collected at each segment will be composited, resulting in three samples for each stockpile. For volatile analysis, the two unmixed samples exhibiting the highest PID readings from each segment will be selected, resulting in six samples for each stockpile.

11.0 COMMUNITY HEALTH AND SAFETY PLAN

Adequate measures to protect the surrounding community will be implemented, installed, and modified as necessary during all intrusive remedial activities. The following discussion is a summary of the requirements found in Appendix A (Project Health and Safety Plan).

- Only authorized personnel will be permitted on-site, and the Site will be locked and secured when no activities are occurring.
- Designated work zones will be established and decontamination procedures will be implemented to prevent off-site contaminant migration.
- Suppression measures and other engineering controls (e.g., water misting, etc.) will be implemented to prevent and/or reduce dispersion of contaminants.
- Air monitoring will be conducted to verify the effectiveness of engineering controls.
- Controls will be employed to minimize disturbances such as noise and vibration.

- Excavations will be secured with barriers, fencing, covers or other measures if unable to be backfilled the same day as opened.

12.0 DECONTAMINATION PROCEDURES

Decontamination of personnel and equipment will be conducted to reduce worker exposure to contaminants, prevent the migration of contaminants off-site and to other portions of the site, and to protect the health and safety of the surrounding community. Following is a summary of decontamination requirements (see Appendix A, Attachment 2, Health and Safety Plan).

- Separate facilities will be established for equipment leaving the site and for personnel, tools and equipment which are to remain onsite (i.e., leaving the Exclusion Zone).
- Pressure-washers, scrub brush with non-phosphate soap with water rinse and/or other devices will be used as needed for equipment decontamination.
- Facilities used to contain and collect decontamination residues will be constructed of impervious materials and be of sufficient size and shape to contain water and residues.
- All water and residues will be properly managed and characterized prior to disposal.

13.0 REFERENCES

Department of Environment and Natural Resources Division of Waste Management Superfund Section, Inactive Hazardous Sites Branch, August, 2006, Registered Environmental Consultant Program, Implementation Guidance.

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Kelly-Buck, 2005, Work Plan Addendum, Phase II Remedial Investigation, Former Copes-Vulcan Facility, 601 West Summit Avenue, Charlotte, North Carolina, dated June 1, 2005.

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TABLES

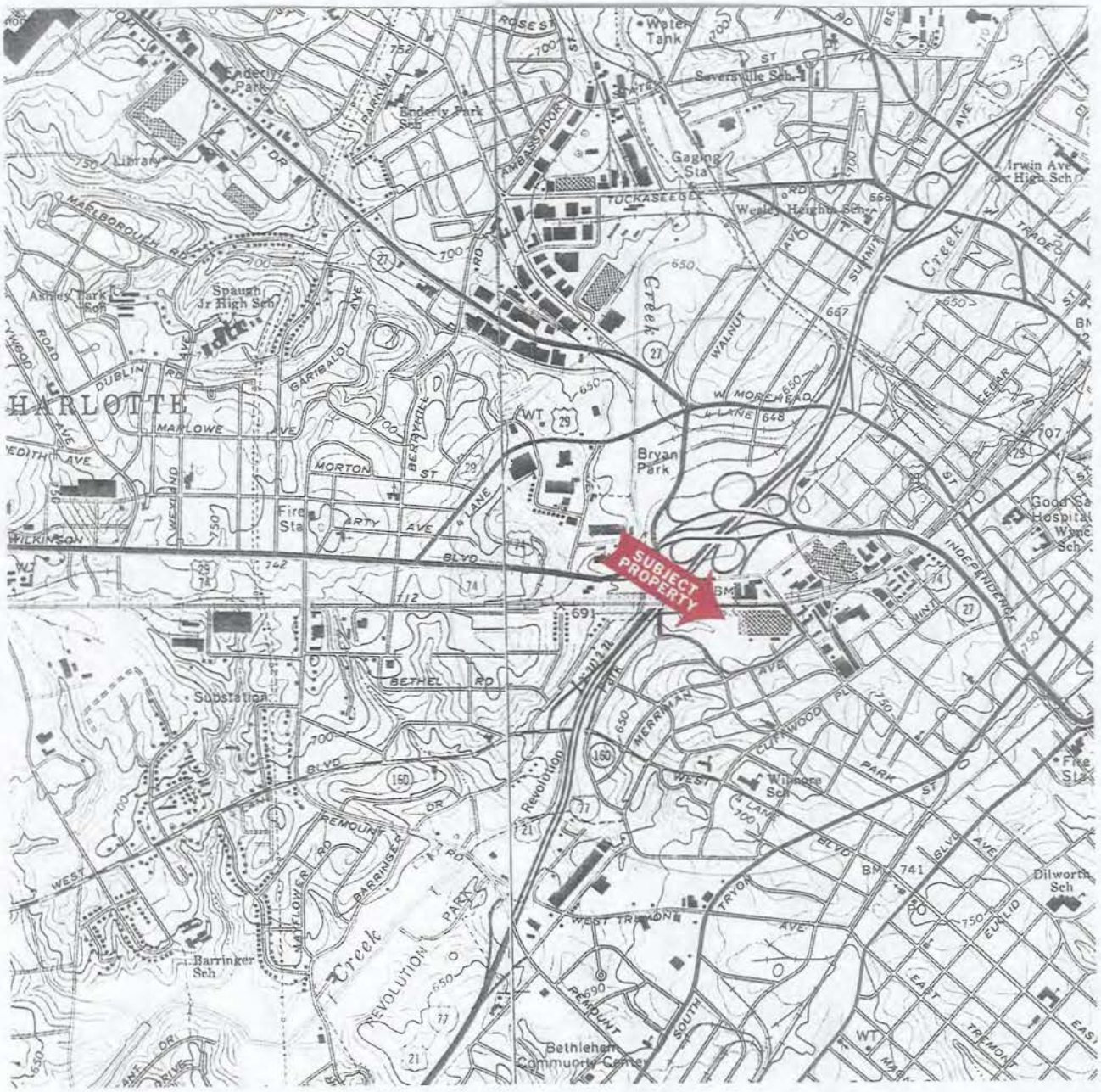
Table 1. Treatment Technology Screening

Scoring System: Good – 1 point Better – 2 points Best – 3 points		Effectiveness	Implementability	Cost	Total Score	Screening Status
Technology	***Description***					
a. In Situ Biological Treatment	Includes technologies such as bioventing, enhanced bioremediation and phytoremediation.	2	1	3	*6*	**Retained**
b. In Situ Chemical/Physical Treatment	Includes technologies such as chemical oxidation, soil flushing, soil vapor extraction and solidification/stabilization.	2	2	2	*6*	**Retained**
c. Ex Situ Biological Treatment	Includes technologies such as biopiles, composting and landfarming.	2	1	1	4	Not Retained
d. Ex Situ Chemical/Physical Treatment	Includes technologies such as chemical extraction, chemical reduction/oxidation, soil washing and solidification/stabilization.	1	1	1	3	Not Retained
e. In Situ Thermal Treatment	Includes thermal treatment technologies such as steam injection, electrical resistance heating, electromagnetic heating and hot air injection.	2	1	1	4	Not Retained
f. Ex Situ Thermal Treatment	Includes technologies such as incineration, open burning and thermal desorption.	2	1	1	4	Not Retained
g. Containment	Includes engineering controls (i.e., concrete cap, vegetative cover) and land use restrictions.	1	3	1	5	Not Retained
h. Other Treatment	Includes excavation, removal and off-site disposal.	3	2	2	*7*	**Retained**
i. No Action	Base option for which all other technologies can be compared to.	1	3	3	*7*	**Retained**

Table 2. Evaluation of Available Remedial Alternatives

Good ■ Better ▲ Best ● **Technology** **(ranked in order of preference)**	**Protection of Human Health and the Environment**	**Compliance with Applicable Federal, State and Local Regulations**	**Long-Term Effectiveness and Permanence**	**Reduction of Toxicity, Mobility and Volume**	**Short Term Effectiveness**	**Implementability**	**Cost**	**Community Acceptance**	**Status**
1. Other Treatment (Removal and Off-Site Disposal)	●	●	●	●	●	■	■	●	**Selected**
2. In Situ Chemical/Physical Treatment (Chemical Oxidation)	●	▲	▲	▲	▲	■	▲	▲	Not Selected
3. In Situ Biological Treatment (Biostimulation)	▲	▲	▲	▲	■	▲	▲	▲	Not Selected
4. No Action	■	■	■	■	■	●	●	■	Not Selected

FIGURES



APPROXIMATE SCALE 1 INCH = 2,000 FEET

Map Source: U.S. GEOLOGICAL SURVEY

APPROXIMATE NORTH

FIGURE 1. SITE LOCATION MAP

SUBJECT PROPERTY
CHARLOTTE, NORTH CAROLINA

Project No. 2001.01.07.10

The Kelly-Buck Company
2130 Superior Avenue #3-A
Cleveland, Ohio 44114
(216) 861-1716

KELLY-BUCK

THIS SURVEY IS CERTIFIED TO ONLY ELECTROLUX HOME PRODUCTS, INC.:

STATE OF NORTH CAROLINA, Mecklenburg County

This is to certify that this map or plat and the survey on which it is based were made in accordance with "Minimum Standard Detail Requirements for ALTA/ACSM Land Title Surveys," jointly established and adopted by ALTA, ACSM and NSPS in 1999, and includes items 1–4, 6, 7a, 8–10, and 11a of Table A thereof. Pursuant to the Accuracy Standards as adopted by ALTA, NSPS, and ACSM and in effect on the date of this certification, undersigned further certifies that proper field procedures, instrumentation, and adequate survey personnel were employed in order to achieve results comparable to those outlined in the "Minimum Angle, Distance, and Closure Requirements for Survey Measurements Which Control Land Boundaries for ALTA/ACSM Land Title Surveys.

I, Andrew G. Zoutewelle, do hereby certify that this map was drawn from an actual field survey performed under my supervision; that the precision is 1:15,000; that the angular precision is less than 7.5 seconds per angle; that this map meets GS-47 recording requirements.

Andrew G. Zoutewelle L-3098

LEGEND

ch. chord
L,R curve length & radius
s.f. square feet (by coordinates)
I.PIN/I.PIPE iron survey stake
conc. concrete
o/c air conditioner
MB, DB record map and deed references
SSMH Sanitary Sewer Manhole
MH Manhole
PM Power meter
NIP New Iron Pin/Pipe set
Light Pole
Power Pole
Ground light
Catch basin
Gas valve
Water valve
Water meter
Fire Hydrant
Underground water line
GAS— Underground gas line
T— Underground Telephone line
monitoring well (see detail)
soil boring location
x spot elevation
surface water/sediment sample

This plat is not subject to the provisions of the City of Charlotte Subdivision Ordinance and does not require the approval of the Charlotte-Mecklenburg Planning Commission. Further subdivision of this property may be subject to these provisions.

Planning Commission Staff Date

I, _____, Review Officer of City of Charlotte, certify that the map or plat to which this certification is affixed meets all statutory requirements for recording.

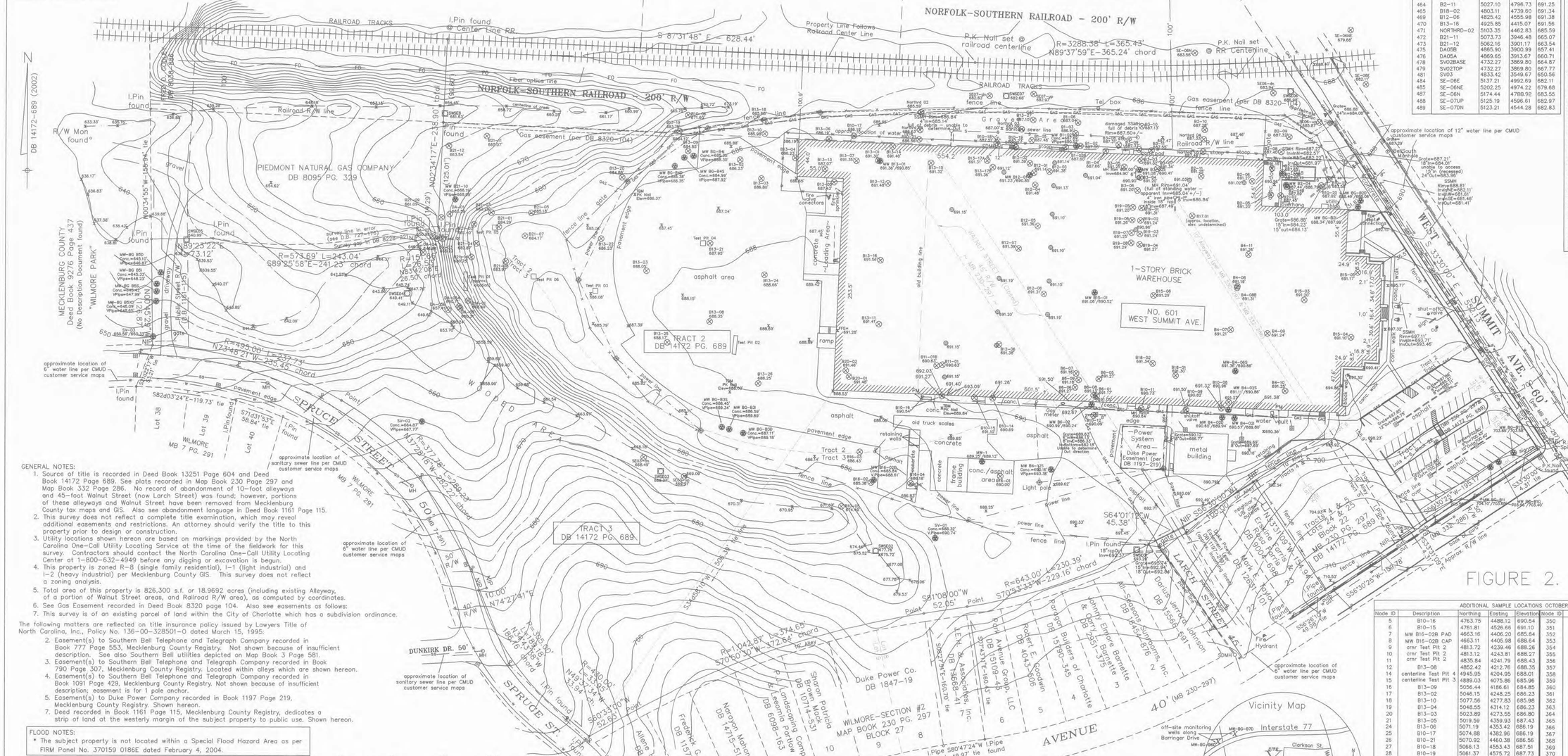
Review Officer Date

COPYRIGHT 2006

PHYSICAL SURVEY OF 601 WEST SUMMIT AVENUE

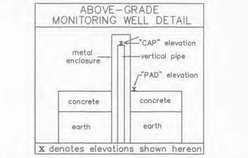
CHARLOTTE, MECKLENBURG COUNTY, N.C.
for ELECTROLUX HOME PRODUCTS, Inc.
Survey Date: March 25, 2004

Revised: July 21, 2004 (additional scope: spots, borings, etc.)
Revised: August 25, 2004 (additional boring, drain info.)
Revised: September 7, 2004 (additional mon. well/utility info)
Revised: October 8, 2004 (overlay city topo information)
Revised: November 11, 2005 (additional borings, pits, etc)
Revised: May 18, 2006 (additional borings information)
Revised: June 2/6, 2006 (address client comments)



ADDITIONAL SAMPLE LOCATIONS APRIL – MAY 2006									
Node ID	Description	Northing	Easting	Elevation	Node ID	Description	Northing	Easting	Elevation
426	B13–26	4778.63	4270.55	688.25	5	MW B12–01	5028.10	4592.13	691.23
427	B16–03	4696.84	4390.79	686.43	8	MW B2–04	5016.63	4897.90	687.44
428	B16–04	4659.30	4451.27	686.18	23	MW BG–B20	4997.66	4986.54	688.49
429	SV01 BASE	4593.92	4480.32	688.32	24	MW BG–B21	4990.32	4983.50	688.34
430	SV01 TOP	4593.63	4480.15	690.74	37	B12–01	5030.94	4597.48	691.14
436	B13–25	4827.52	4161.65	688.17	39	MW B15–01	4887.50	4671.02	691.06
437	B13–23	4912.86	4136.74	688.05	42	MW B3–02S	5035.55	4722.19	691.08
438	B13–21	4945.91	4212.90	687.95	44	MW B13–01	5044.90	4414.29	691.36
439	B13–24	4908.46	4277.66	688.66	44	B13–01	5045.39	4412.11	691.30
442	B13–18	5093.61	4276.93	685.65	56	B6–01	4764.32	4673.45	691.17
443	B13–19	5080.32	4176.26	683.75	57	B6–05	4764.67	4669.98	691.13
445	B13–22	4951.30	4082.72	686.23	58	B6–08	4784.34	4676.15	691.19
446	NORTHRD–01	5082.10	4461.71	686.63	59	B6–06	4774.31	4647.81	691.19
447	NORTHRD–03	5083.10	4582.49	687.09	60	B6–07	4790.73	4648.90	691.16
448	B13–27	5094.02	4596.27	687.10	61	B6–09	4783.18	4652.08	691.18
450	NORTHRD–04	5071.16	4799.76	687.33	65	MW–1	4685.57	4536.15	689.24
451	B2–10	5082.55	4800.92	687.28	69	B11–01	4801.06	4458.61	690.63
452	NORTHRD–05	5056.38	4798.92	687.48	74	MW B6–02	4753.81	4667.34	690.99
453	B2–09	5074.19	4901.53	687.32	91	B16–01	4660.30	4404.04	685.38
455	B13–20	5024.84	4107.27	684.88	95	MW B4–12S PAD	4676.08	4618.83	690.16
458	B12–05	4967.02	4602.00	691.36	96	MW B4–12S CAP	4676.05	4618.94	693.38
459	B12–07	4940.15	4579.32	691.39	108	MW BG–B4I PAD	5050.55	4193.40	685.35
460	B12–08	4885.84	4609.73	691.31	113	MW BG–B4I CAP	5050.67	4193.13	688.30
462	B13–17A	5045.39	4541.67	691.31	109	MW BG–B4S PAD	5048.53	4182.29	684.99
463	B13–17B	5037.68	4548.44	691.36	112	MW BG–B4S CAP	5048.68	4181.90	687.92
464	B2–11	5027.10	4796.73	691.25	110	MW BG–B4D PAD	5038.67	4170.72	685.38
465	B18–02	4803.11	4739.60	691.34	111	MW BG–B4D CAP	5038.51	4170.51	688.35
469	B12–06	4825.42	4555.98	691.38	121	MW BG–B3D PAD	4719.12	4252.87	687.11
470	B13–16	4925.85	4415.07	691.56	127	MW BG–B3D CAP	4719.24	4252.47	689.18
471	NORTHRD–02	5103.35	4462.83	685.59	122	MW BG–B3I PAD	4723.84	4236.26	686.59
472	B21–11	5073.73	3946.48	665.07	123	MW BG–B3I CAP	4723.82	4235.94	689.69
473	B21–12	5062.16	3901.17	663.54	125	MW BG–B3S PAD	4726.39	4227.30	686.45
475	DA05B	4865.90	3900.99	657.41	126	MW BG–B3S CAP	4726.39	4227.02	689.34
476	DA05A	4869.65	3913.67	660.71	136	MW B5D PAD	4909.51	3558.57	645.10
478	SV02BASE	4732.27	3869.80	664.87	141	MW B5D CAP	4909.91	3558.72	646.87
479	SV02TOP	4732.27	3869.80	667.77	137	MW B5I PAD	4895.95	3553.77	645.33
481	SV03	4833.42	3549.67	650.56	142	MW B5I CAP	4896.31	3553.76	648.23
484	SE–06E	5137.21	4992.69	682.11	138	MW B5S PAD	4887.17	3553.64	645.42
485	SE–06NE	5202.25	4974.22	679.68	139	MW B5S CAP	4887.39	3553.77	647.99
487	SE–06N	5174.44	4788.92	683.55	150	SWSE 05	4949.09	3588.93	640.99
488	SE–07UP	5125.19	4586.61	682.97	173	SWSE 08	5100.97	3896.46	661.63
489	SE–07DN	5123.21	4544.28	682.83	182	B10–06	5099.48	4186.65	671.60
					193	B1–02	5062.77	4652.84	687.55
					194	MW B1–02S PAD	5062.90	4649.41	687.69
					195	MW B1–02S CAP	5062.97	4649.13	690.52
					203	SWSE 04	4885.22	3852.10	649.41
					223	SWSE 03	4673.31	4154.04	669.37
					229	B10–05	4531.56	4368.89	674.46
					234	SWSE 02	4578.50	4409.64	677.76
					245	MW B4–02D	4738.51	4822.24	690.60
					246	MW B4–02I	4793.82	4826.93	690.57
					247	MW B4–02S	4748.07	4829.48	691.11
					255	SWSE 01	4580.11	4720.94	693.29
					266	MW BG–B1I	4679.23	5141.80	704.10
					267	MW BG–B1D	4685.67	5151.59	703.96
					268	MW BG–B1S	4696.58	5169.45	703.85
					292	SWSE 06	5128.79	4902.79	686.98
					293	SWSE 07	5122.86	4563.97	682.68
					294	BORING–no ID	4756.65	4829.88	691.27
					295	B4–04	4793.82	4837.67	691.36
					296	B4–10	4770.38	4897.05	691.25
					297	B4–11	4933.35	4853.49	691.26
					313	B16–01	4667.80	4557.76	690.00
					315	B4–09	4839.02	4876.18	691.24
					316	B4–08	4895.35	4840.15	691.19
					317	B4–07	4843.47	4832.31	691.21
					320	B15–05	4911.81	4983.31	691.17
					324	B15–04	4834.48	4975.41	691.10
					326	B14–01	4876.90	3924.49	668.49
					328	B15–03	4878.91	4919.77	691.20

ABOVE–GRADE MONITORING WELL DETAIL



(NOTE: For monitor wells installed flush wi the ground or floor surface, the elevations given are surface elevatior followed by top–of–pipe elevation, e.g. 651.68/651.17)

GENERAL NOTES:

1. Source of title is recorded in Deed Book 13251 Page 604 and Deed Book 14172 Page 689. See plats recorded in Map Book 230 Page 297 and Map Book 332 Page 286. No record of abandonment of 10–foot alleyways and 45–foot Walnut Street (now Larch Street) was found; however, portions of these alleyways and Walnut Street have been removed from Mecklenburg County tax maps and GIS. Also see abandonment language in Deed Book 1161 Page 115.
2. This survey does not reflect a complete title examination, which may reveal additional easements and restrictions. An attorney should verify the title to this property prior to design or construction.
3. Utility locations shown hereon are based on markings provided by the North Carolina One–Call Utility Locating Service at the time of the fieldwork for this survey. Contractors should contact the North Carolina One–Call Utility Locating Center at 1–800–632–4949 before any digging or excavation is begun.
4. This property is zoned R–8 (single family residential), I–1 (light industrial) and I–2 (heavy industrial) per Mecklenburg County GIS. This survey does not reflect a zoning analysis.
5. Total area of this property is 826,300 s.f. or 18.9692 acres (including existing Alleyway, of a portion of Walnut Street areas, and Railroad R/W area), as computed by coordinates.
6. See Gas Easement recorded in Deed Book 8320 page 104. Also see easements as follows:
7. This survey is of an existing parcel of land within the City of Charlotte which has a subdivision ordinance.

The following matters are reflected on title insurance policy issued by Lawyers Title of North Carolina, Inc., Policy No. 136–00–328501–0 dated March 15, 1995:

2. Easement(s) to Southern Bell Telephone and Telegraph Company recorded in Book 777 Page 553, Mecklenburg County Registry. Not shown because of insufficient description. See also Southern Bell utilities depicted on Map Book 3 Page 581.
3. Easement(s) to Southern Bell Telephone and Telegraph Company recorded in Book 790 Page 307, Mecklenburg County Registry. Located within alleys which are shown hereon.
4. Easement(s) to Southern Bell Telephone and Telegraph Company recorded in Book 1091 Page 429, Mecklenburg County Registry. Not shown because of insufficient description; easement is for 1 pole anchor.
5. Easement(s) to Duke Power Company recorded in Book 1197 Page 219, Mecklenburg County Registry. Shown hereon.
7. Deed recorded in Book 1161 Page 115, Mecklenburg County Registry, dedicates a strip of land at the westerly margin of the subject property to public use. Shown hereon.

FLOOD NOTES:

* The subject property is not located within a Special Flood Hazard Area as per FIRM Panel No. 370159 0186E dated February 4, 2004.

TOPO NOTE:

* The contour lines shown hereon were taken from City of Charlotte topographic map which is based upon aerial photography and should be considered approximate NAVD 1988 datum.

LEGAL DESCRIPTION

BEING all that certain tract or parcel of land located within the City of Charlotte, Mecklenburg County, N.C. and being more particularly described as follows:

BEGINNING at a new pk nail located at the intersection of the southwesterly margin of West Summit Avenue, said right of way having a width of 60 feet as recorded in Map Book 230 Page 297 of the Mecklenburg County Registry, and the northwesterly right of way margin of Merriman Avenue, said right of way having a width of 50 feet as recorded in Map Book 332 Page 286 of the Mecklenburg County Registry, and running thence from said point and place of BEGINNING along the southwesterly margin of the said Merriman Avenue South 56–30–25 West 195.17 feet to an existing iron pipe; thence South 33–31–09 East 4.31 feet to a new iron pipe located on the northwesterly right of way margin of the said Merriman Avenue as it narrows in width to 40 feet as recorded in Map Book 230 Page 297; thence continuing with the northwesterly margin of the said Merriman Avenue South 56–30–25 West 109.78 feet to an existing iron pipe; thence following the northeasterly boundary of Lot 23 of Wilmore Section #2 as recorded in the said Map Book 230 Page 297 of the Mecklenburg County Registry North 33–31–09 West 154.94 feet to a new iron pipe located in the northwesterly margin of a 10–foot alley as shown on the said Map Book 230 Page 297 of the Mecklenburg County Registry; thence following the northwesterly margin of the said 10–foot alley the following six (6) calls: (1) South 56–30–00 West 100.00 feet to a new iron pipe, (2) South 64–01–12 West 45.38 feet to an existing iron pin, (3) following the arc of a circular curve to the right having a radius of 643.00 feet and an arc length of 230.39 feet (chord bearing South 70–53–33 West 229.16 feet) to a point, (4) South 81–08–00 West 52.05 feet to a point, (5) following the arc of a circular curve to the left having a radius of 1,042.87 feet and an arc length of 374.65 feet (chord bearing South 70–50–30 West 372.64 feet) to a point and (6) South 60–33–00 West 52.63 feet to an existing iron pin; thence following the northwesterly right of way margin of Spruce Street, said right of way having a width of 40 feet as recorded in the said Map Book 230 Page 297, the following two (2) calls: (1) following the arc of a circular curve to the left having a radius of 430.00 feet and an arc length of 33.95 feet (chord bearing North 49–37–34 West 33.94 feet) to an existing iron pin and (2) following the arc of a circular curve to the right having a radius of 305.00 feet and an arc length of 189.18 feet (chord bearing North 34–43–38 West 186.16 feet) to a new iron

(continued above)

(Legal Description continued)

pipe; thence North 74–27–41 East 10.00 feet to a new iron pipe; thence following the northeasterly right of way margin of the said Spruce Street as it has been widened to 50 feet in width as recorded in Map Book 7 Page 291 of the Mecklenburg County Registry the following two (2) calls: (1) following the arc of a circular curve to the left having a radius of 377.78 feet and an arc length of 289.23 feet (chord bearing North 37–28–18 West 282.22 feet) to a point and (2) following the arc of a circular curve to the left having a radius of 495.00 feet and an arc length of 237.73 feet (chord bearing North 73–48–21 West 235.45 feet) to a new iron pipe; thence along the easterly boundary of the Mecklenburg County property as recorded in Deed Book 9276 Page 437 of the Mecklenburg County Registry and along the westerly boundary of a Public Street Right of Way as recorded in Deed Book 1161 Page 115 of the Mecklenburg County Registry North 00–45–29 West 126.87 feet to an existing iron pin; thence along the southerly and easterly boundaries of Piedmont Natural Gas Company as recorded in Deed Book 8095 Page 329 the following four (4) calls: (1) North 89–23–22 East 73.12 feet to an existing iron pin, (2) following the arc of a circular curve to the left having a radius of 573.69 feet and an arc length of 243.04 feet (chord bearing South 89–25–58 East 241.23 feet) to a new iron pipe, (3) following the arc of a circular curve to the right having a radius of 151.66 feet and an arc length of 26.53 feet (chord bearing North 83–42–08 East 26.50 feet to a new iron pipe and (4) North 02–34–17 East (passing existing iron pins at 14.29 feet and an additional 125.01 feet) a total distance of 238.90 feet to an existing iron pin located in the centerline of the Norfolk–Southern Railway Southbound track; thence following the centerline of the said Norfolk–Southern Railway Southbound track the following two (2) calls: (1) South 87–31–48 East 628.44 feet and (2) following the arc of a circular curve to the left having a radius of 3,288.38 feet and an arc length of 365.43 feet (chord bearing North 89–37–59 East 365.24 feet) to a new iron pipe set at the intersection of the centerline of the said Norfolk–Southern Railway and the southwesterly right of way margin of the aforesaid West Summit Avenue; thence along the southwesterly right of way margin of the said West Summit Avenue South 33–30–00 East 552.13 feet to the point and place of BEGINNING, containing 18.9692 acres as shown on a survey prepared by Andrew G. Zoutewelle dated March 25, 2004.

A.G. ZOUTEWELLE SURVEYORS
1418 East Fifth St. Charlotte, NC 28204
Phone: 704–372–9444 Fax: 704–372–9555

FIGURE 2. SITE SURVEY

ADDITIONAL SAMPLE LOCATIONS OCTOBER–NOVEMBER 2005									
Node ID	Description	Northing	Easting	Elevation	Node ID	Description	Northing	Easting	Elevation
5	B10–16	4763.75	4488.12	690.54	350	B10–09	4747.75	4779.17	690.82
6	B10–15	4761.81	4526.66	691.10	351	B10–08	4749.70	4821.23	690.96
7	MW B16–02B PAD	4663.16	4406.20	685.84	352	B18–01	4788.61	4766.83	691.30
8	MW B16–02B CAP	4663.11	4405.98	688.64	353	B3–06	5009.84	4721.32	691.20
9	cmr Test Pit 2	4813.72	4239.46	688.26	354	B19–05	4989.46	4715.90	691.20
10	cmr Test Pit 2	4813.12	4243.81	688.27	355	B19–06	4974.20	4715.23	691.26
11	cmr Test Pit 2	4835.84	4241.79	688.43	356	B19–02	4973.80	4724.95	691.24
12	B13–08	4852.42	4212.76	688.35	357	B19–03	4957.54	4724.20	691.24
14	centerline Test Pit 4	4945.95	4204.95	688.01	358	B19–07	4958.92	4714.51	691.25
15	centerline Test Pit 3	4889.03	4075.95	685.96	359	B19–08	4946.90	4713.96	691.29
16	B13–09	5056.44	4186.61	684.85	360	B19–04	4945.12	4724.03	691.27
17	B13–02	5046.15	4248.25	686.23	361	B15–06	4884.15	4740.51	691.29
18	B13–10	5077.56	4277.83	685.98	362	B20–01	4877.63	4739.45	691.48
19	B13–04	5048.55	4314.12	686.23	363	B20–02	4794.07	4374.12	691.46
20	B13–03	5023.89	4273.55	686.80	364	B13–11	4849.50	4413.14	691.41
21	B13–05	5019.59	4359.93	687.43	365	B13–12	5018.14	4423.84	691.48
24	B13–06	5071.19	4353.42	686.19	366	B12–04	5016.43	4598.74	691.48
25	B10–17	5074.88	4382.96	686.19	367	B12–02	5042.30	4592.43	691.39
26	B10–21	5070.92	4460.38	686.56	368	B12–01	5042.65	4474.75	691.36
27	B10–18	5066.13	4553.43	687.51	369	B13–14	5062.09	4429.45	691.40
28	B10–19	5061.37	4575.72	687.73	370	B13–07	5045.19	4386.32	691.37
29	B1–05	5069.71	4594.64	687.48	371	B13–13	5035.50	4348.91	687.97
30	B1–02	5063.14	4652.69	687.63	372	B12–03	5032.57	4616.11	691.38
31	B1–03	5078.24	4647.55	686.91	373	B3–05	5038.10	4705.73	691.25
32	B1–06	5090.83	4650.66	687.04	374	B3–04	5025.37	4724.44	691.20
33	B1–04	5057.09	4683.68	687.66	375	B19–01	4988.77	4726.12	691.31
34	B3–08	5064.76	4699.06	687.31	376	B3–03	5045.58	4725.74	691.32
35	B3–10	5086.76	4726.42	687.13	377	B3–07	5036.23	4744.61	691.34
36	B3–09	5058.99	4723.09	687.37	378	B2–06	5021.12	4857.60	691.27
37	B3–11	5057.73	4737.59	687.55	379	B2–05	5005.11	4879.93	691.20
329	centerline Test Pit 6	4906.10	4002.20	683.07	380	B2–07	5036.75	4881.25	691.16
330	B21–08	4924.18	3969.20	683.97	381	B4–08B	4893.62	4839.93	691.31
331	B21–04	4945.16	3934.09	682.87	382	B2–02	5004.30	4891.43	687.45
332	B21–05	4925.04	3928.50	680.75	383	B2–03B	5029.45	4893.22	687.65
333	B21–05	4981.95	3999.59	685.18	384	B2–03	5031.74	4893.44	687.65
334	B21–07	4954.35	3991.97	684.17	385	B2–08	5056.38	4892.15	687.40
335	B21–01	4965.30	3960.97	684.29	386	B10–22	5023.35	4949.12	687.58
336	centerline Test Pit 5	4964.19	3956.41	683.13	387	B10–20	5016.21	4939.65	687.02
337	B21–03	4982.10	3952.10	682.28	388	B2–04B	5014.55	4898.74	687.59
338	B21–02	4968.25	3931.46	681.40	389	SE06–up	5091.51	4937.46	685.87
339	DA–05	4867.69	3915.06	660.31	390	SE06–dn	5126.83	4882.59	683.94
340	B21–09	4976.41	3892.46	661.09	391	SE07–up	5127.41	4673.31	682.86
341	DA–01	4980.27	3902.41	663.59	392	SE07–dn	5126.34	4644.98	682.92
342	MW BGB5XD PAD	4875.48	3553.24	646.09	421	SE03–up	4957.31	4183.17	669.31
342	MW BGB5XD CAP	4875.48	3553.24	648.65	422	SE03–dn	4690.09	4133.63	668.49
343	MW B21–10 PAD	4997.96	3908.96	666.19	405	MW–BGB7D PAD	4831.86	2600.75	642.02
343	MW B21–10 CAP	4997.96	3908.96	668.68	405	MW–BGB7D CAP	4831.67	2600.41	645.27
344	DA–02	4953.47	3882.07	650.99	408	MW–BGB6D PAD	3385.33	1792.83	630.67
345	DA–03	4950.82	3887.30	655.23	409	MW–BGB6D CAP	3385.29	1793.04	633.25
346	DA–04	4934.25	3870.99	646.86	–	B1–02B	5061.78	4635.71	687.60
347	B10–14	4761.27	4548.60	690.69	–	B11–01B	4800.04	4481.77	690.63
348	B10–12	4740.61	4669.97	690.09	–	centerline Test Pit 1	4900.08	3921.71	671.50
349	B10–11	4749.21	4726.08	690.73	–	Tank 01	4950.70	3894.00	659.20

THIS SURVEY IS CERTIFIED TO ONLY ELECTROLUX HOME PRODUCTS, INC.:
STATE OF NORTH CAROLINA, Mecklenburg County
This is to certify that this map or plat and the survey on which it is based were made in accordance with "Minimum Standard Detail Requirements for ALTA/ACSM Land Title Surveys," jointly established and adopted by ALTA, ACSM and NSPS in 1999, and includes Items 1-4, 6, 7a, 8-10, and 11a of Table A thereof. Pursuant to the Accuracy Standards as adopted by ALTA, NSPS, and ACSM and in effect on the date of this certification, undersigned further certifies that proper field procedures, instrumentation, and adequate survey personnel were employed in order to achieve results comparable to those outlined in the "Minimum Angle, Distance, and Closure Requirements for Survey Measurements Which Control Land Boundaries for ALTA/ACSM Land Title Surveys.

I, Andrew G. Zoutewelle, do hereby certify that this map was drawn from an actual field survey performed under my supervision; that the precision is 1:15,000; that the angular precision is less than 7.5 seconds per angle; that this map meets GS-47 recording requirements.

Andrew G. Zoutewelle L-3098

LEGEND

ch.	chord
L,R	curve length & radius
s.f.	square feet (by coordinates)
I.Pin/I.PIPE	iron survey stake
conc.	concrete
o/c	air conditioner
MB, DB	record map and deed references
SSMH	Sanitary Sewer Manhole
MH	Manhole
PM	Power meter
NIP	New iron Pin/Pipe set
	Light Pole
	Power Pole
	Ground light
	Railroad R/W line
	Catch basin
	Gas valve
	Water valve
	Water meter
	Fire Hydrant
	Underground water line
GAS—	Underground gas line
—T—	Underground Telephone line
	monitoring well (see detail)
	soil boring location
x	spot elevation
	surface water/sediment sample

This plat is not subject to the provisions of the City of Charlotte Subdivision Ordinance and does not require the approval of the Charlotte-Mecklenburg Planning Commission. Further subdivision of this property may be subject to these provisions.

Planning Commission Staff Date

I, _____, Review Officer of City of Charlotte, certify that the map or plat to which this certification is affixed meets all statutory requirements for recording.

Review Officer Date

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PHYSICAL SURVEY OF 601 WEST SUMMIT AVENUE

CHARLOTTE, MECKLENBURG COUNTY, N.C.
for ELECTROLUX HOME PRODUCTS, Inc.
Survey Date: March 25, 2004

Revised: July 21, 2004 (additional scope: spots, borings, etc.)
Revised: August 25, 2004 (additional boring, drain info.)
Revised: September 7, 2004 (additional mon. well/utility info)
Revised: October 8, 2004 (overlay city topo information)
Revised: November 11, 2005 (additional borings, pits, etc)
Revised: May 18, 2006 (additional borings information)
Revised: June 2/6, 2006 (address client comments)

ADDITIONAL SAMPLE LOCATIONS APRIL - MAY 2006				
Node ID	Description	Northing	Easting	Elevation
426	B13-26	4778.63	4270.55	688.25
427	B16-03	4696.84	4390.79	688.43
428	B16-04	4659.30	4451.27	688.18
429	SVO1 BASE	4593.92	4480.32	688.32
430	SVO1 TOP	4593.63	4480.15	690.74
436	B13-25	4827.52	4161.65	688.17
437	B13-23	4912.86	4136.74	688.05
438	B13-22	4945.91	4912.80	687.95
439	B13-24	4908.46	4277.66	688.66
442	B13-16	5093.81	4276.93	685.65
443	B13-19	5080.32	4176.26	683.75
445	B13-22	4951.30	4082.72	686.23
446	NORTHRD-01	5082.10	4461.71	686.63
447	NORTHRD-03	5083.10	4582.49	687.09
448	B13-27	5094.02	4596.27	687.10
450	NORTHRD-04	5071.16	4799.76	687.33
451	B2-10	5082.55	4800.92	687.28
452	NORTHRD-05	5056.38	4798.92	687.48
453	B2-09	5074.19	4901.53	687.32
455	B13-20	5024.84	4107.27	684.88
458	B12-05	4967.02	4602.00	691.36
459	B12-07	4940.15	4579.32	691.39
460	B12-08	4885.84	4609.73	691.31
462	B13-17A	5045.39	4541.67	691.31
463	B13-17B	5037.68	4548.44	691.36
464	B2-11	5027.10	4796.73	691.25
465	B18-02	4803.11	4739.60	691.34
469	B12-06	4825.42	4555.98	691.38
470	B13-18	4925.85	4415.07	691.56
471	NORTHRD-02	5103.35	4462.83	685.59
472	B21-11	5073.73	3948.48	665.07
473	B21-12	5062.16	3901.17	663.54
475	DA05B	4865.90	3900.99	657.41
476	DA05A	4869.65	3913.67	660.71
478	SVO2BASE	4732.27	3869.80	664.87
479	SVO2TOP	4732.27	3869.80	667.77
481	SVO3	4833.42	3576.67	650.56
484	SE-05E	5137.21	4992.69	682.11
485	SE-06NE	5202.25	4974.22	679.68
487	SE-06N	5174.44	4789.92	683.55
488	SE-07UP	5125.19	4596.61	682.97
489	SE-07DN	5123.21	4544.28	682.83

5	MW B12-01	5028.10	4592.13	691.23
6	MW B2-04	5016.63	4897.90	687.44
23	MW BG-B2D	4997.66	4988.54	688.49
24	MW BG-B2	4990.32	4983.50	688.34
37	B12-02	5030.94	4597.48	691.14
39	MW B15-01	4887.50	4671.02	691.08
42	MW B3-02S	5035.55	4722.19	691.08
43	MW B13-01	5044.90	4414.29	691.36
44	B13-21	5045.38	4412.11	691.30
56	B6-01	4764.32	4673.45	691.17
57	B6-05	4764.67	4669.98	691.13
58	B6-08	4784.33	4674.15	691.19
59	B6-06	4774.31	4647.81	691.19
60	B6-07	4790.73	4648.90	691.18
61	B6-09	4783.18	4652.08	691.18
65	MW-1	4685.57	4536.15	689.24
69	B11-01	4801.08	4488.61	690.63
74	MW B6-02	4753.81	4667.34	690.99
91	B16-02	4663.30	4404.04	685.35
95	MW B4-12S PAD	4676.08	4618.83	690.16
96	MW B4-12S CAP	4676.05	4618.94	693.38
108	MW BG-B4I PAD	5050.55	4193.40	685.35
113	MW BG-B4I CAP	5050.67	4193.13	688.30
109	MW BG-B4S PAD	5046.53	4182.29	684.99
112	MW BG-B4S CAP	5048.66	4181.90	687.92
110	MW BG-B4D PAD	5038.67	4170.72	685.38
111	MW BG-B4D CAP	5038.51	4170.51	688.35
121	MW BG-B3D PAD	4718.12	4252.81	687.11
127	MW BG-B3D CAP	4719.24	4252.47	689.18
122	MW BG-B3I PAD	4723.84	4236.26	686.59
126	MW BG-B3I CAP	4723.82	4235.94	689.69
123	MW BG-B3S PAD	4726.39	4227.30	686.45
125	MW BG-B3S CAP	4726.39	4227.02	689.34
136	MW B5D PAD	4909.51	3558.57	645.10
141	MW B5D CAP	4909.91	3558.72	648.87
137	MW B5I PAD	4895.95	3553.77	645.33
140	MW B5I CAP	4896.31	3553.76	648.23
138	MW B5S PAD	4887.17	3553.64	645.42
139	MW B5S CAP	4887.39	3553.77	647.99
150	SWSE 05	4949.09	3588.83	640.99
173	SWSE 08	5100.97	3896.46	661.63
182	B10-06	5099.48	4166.60	671.60
193	B1-02	5062.77	4652.84	687.55
194	MW B1-02S PAD	5062.90	4649.41	687.69
195	MW B1-02S CAP	5062.97	4649.13	690.52
203	SWSE 04	4885.22	3852.10	649.41
223	SWSE 03	4673.31	4154.04	669.37
229	B10-05	4631.56	4368.89	674.49
234	B10-07	4578.50	4409.84	677.76
245	MW B4-02D	4738.51	4822.24	690.60
246	MW B4-02I	4737.77	4836.93	690.57
247	MW B4-02S	4748.07	4829.48	691.11
255	SWSE 01	4580.11	4720.94	693.29
266	MW B0-B1I	4679.23	5141.80	704.10
267	MW B0-B1D	4685.67	5151.59	703.98
268	MW B0-B1S	4696.56	5169.45	703.85
292	SWSE 06	5128.79	4902.79	686.98
293	SWSE 07	5122.86	4563.97	682.68
294	BORING-no ID	4756.65	4829.88	691.27
295	B4-06	4793.82	4837.67	691.36
296	B4-10	4770.38	4897.05	691.25
297	B4-11	4933.35	4853.49	691.26
313	B16-01	4667.80	4557.76	690.00
315	B4-09	4839.02	4876.16	691.24
316	B4-08	4895.35	4840.15	691.19
317	B4-07	4843.47	4832.31	691.21
320	B15-05	4911.81	4983.31	691.17
324	B15-04	4834.48	4975.41	691.10
326	B14-01	4876.90	3924.49	668.49
328	B15-03	4878.91	4918.77	691.20

ABOVE-GRADE MONITORING WELL DETAIL

(NOTE: For monitor wells installed flush with the ground or floor surface, the elevations given are surface elevation followed by top-of-pipe elevation, e.g. 651.68/651.17)

FIGURE 2. SITE SURVEY

GENERAL NOTES:

1. Source of title is recorded in Deed Book 13251 Page 604 and Deed Book 14172 Page 689. See plats recorded in Map Book 230 Page 297 and Map Book 332 Page 286. No record of abandonment of 10-foot alleyways and 45-foot Walnut Street (now Larch Street) was found; however, portions of these alleyways and Walnut Street have been removed from Mecklenburg County tax maps and GIS. Also see abandonment language in Deed Book 1161 Page 115.
2. This survey does not reflect a complete title examination, which may reveal additional easements and restrictions. An attorney should verify the title to this property prior to design or construction.
3. Utility locations shown hereon are based on markings provided by the North Carolina One-Call Utility Locating Service at the time of the fieldwork for this survey. Contractors should contact the North Carolina One-Call Utility Locating Center at 1-800-632-4949 before any digging or excavation is begun.
4. This property is zoned R-8 (single family residential), I-1 (light industrial) and I-2 (heavy industrial) per Mecklenburg County GIS. This survey does not reflect a zoning analysis.
5. Total area of this property is 826,300 s.f. or 18.9692 acres (including existing Alleyway, of a portion of Walnut Street areas, and Railroad R/W area), as computed by coordinates.
6. See Gas Easement recorded in Deed Book 8320 page 104. Also see easements as follows:
7. This survey is of an existing parcel of land within the City of Charlotte which has a subdivision ordinance.

The following matters are reflected on title insurance policy issued by Lawyers Title of North Carolina, Inc., Policy No. 136-00-328501-0 dated March 15, 1995:

2. Easement(s) to Southern Bell Telephone and Telegraph Company recorded in Book 777 Page 553, Mecklenburg County Registry. Not shown because of insufficient description. See also Southern Bell utilities depicted on Map Book 3 Page 581.
3. Easement(s) to Southern Bell Telephone and Telegraph Company recorded in Book 790 Page 307, Mecklenburg County Registry. Located within alleys which are shown hereon.
4. Easement(s) to Southern Bell Telephone and Telegraph Company recorded in Book 1091 Page 429, Mecklenburg County Registry. Not shown because of insufficient description; easement is for 1 pole anchor.
5. Easement(s) to Duke Power Company recorded in Book 1197 Page 219, Mecklenburg County Registry. Shown hereon.
7. Deed recorded in Book 1161 Page 115, Mecklenburg County Registry, dedicates a strip of land at the westerly margin of the subject property to public use. Shown hereon.

FLOOD NOTES:
* The subject property is not located within a Special Flood Hazard Area as per FIRM Panel No. 370159 0186E dated February 4, 2004.

TOPO NOTE:
* The contour lines shown hereon were taken from City of Charlotte topographic map which is based upon aerial photography and should be considered approximate NAVD 1988 datum.

LEGAL DESCRIPTION

BEING all that certain tract or parcel of land located within the City of Charlotte, Mecklenburg County, N.C. and being more particularly described as follows:

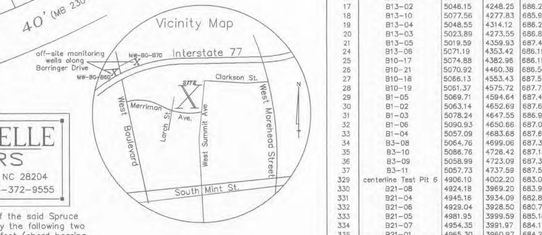
BEGINNING at a new pk nail located at the intersection of the southwesterly margin of West Summit Avenue, said right of way having a width of 60 feet as recorded in Map Book 230 Page 297 of the Mecklenburg County Registry, and the northwesterly right of way margin of Merriman Avenue, said right of way having a width of 50 feet as recorded in Map Book 332 Page 286 of the Mecklenburg County Registry, and running thence from said point and place of BEGINNING along the northwesterly margin of the said Merriman Avenue South 56-30-25 West 195.17 feet to an existing iron pipe; thence South 33-31-09 East 4.31 feet to a new iron pipe located on the northwesterly right of way margin of the said Merriman Avenue as it narrows in width to 40 feet as recorded in Map Book 230 Page 297; thence continuing with the northwesterly margin of the said Merriman Avenue South 56-30-25 West 109.78 feet to an existing iron pipe; thence following the northeasterly boundary of Lot 23 of Wilmore Section #2 as recorded in the said Map Book 230 Page 297 of the Mecklenburg County Registry North 33-31-09 West 154.94 feet to a new iron pipe located in the northwesterly margin of a 10-foot alley as shown on the said Map Book 230 Page 297 of the Mecklenburg County Registry; thence following the northwesterly margin of the said 10-foot alley the following six (6) calls: (1) South 56-30-00 West 100.00 feet to a new iron pipe, (2) South 64-01-12 West 45.38 feet to an existing iron pin, (3) following the arc of a circular curve to the right having a radius of 643.00 feet and an arc length of 230.39 feet (chord bearing South 70-53-33 West 229.16 feet) to a point, (4) South 81-08-00 West 52.05 feet to a point, (5) following the arc of a circular curve to the left having a radius of 1,042.87 feet and an arc length of 374.65 feet (chord bearing South 70-50-30 West 372.64 feet) to a point and (6) South 60-33-00 West 52.63 feet to an existing iron pin; thence following the northwesterly right of way margin of Spruce Street, said right of way having a width of 40 feet as recorded in the said Map Book 230 Page 297, the following two (2) calls: (1) following the arc of a circular curve to the left having a radius of 430.00 feet and an arc length of 33.95 feet (chord bearing North 49-37-34 West 33.94 feet) to an existing iron pin and (2) following the arc of a circular curve to the right having a radius of 305.00 feet and an arc length of 189.18 feet (chord bearing North 34-43-38 West 186.16 feet) to a new iron

(continued above)

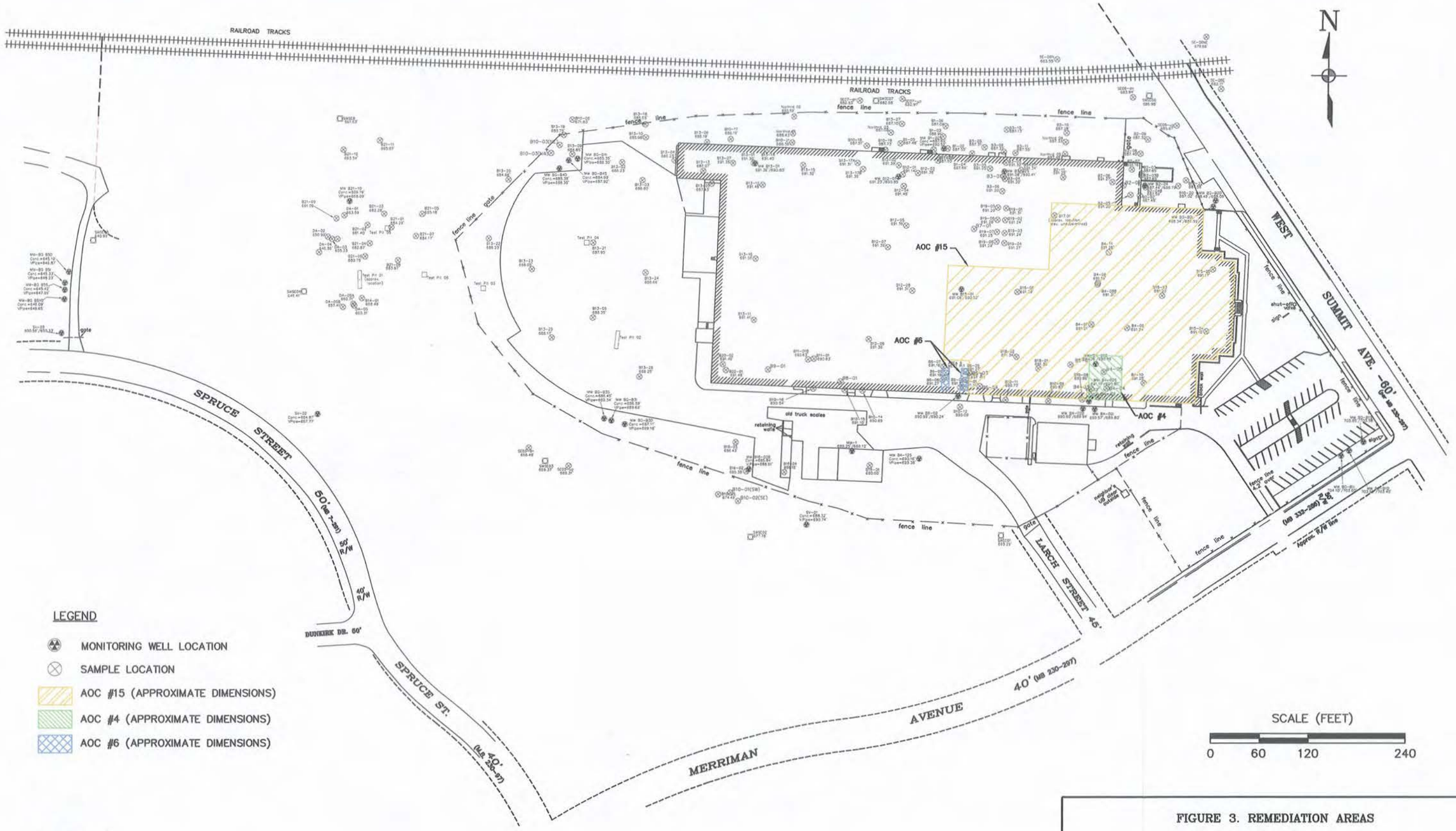
(Legal Description continued)

pipe; thence North 74-27-41 East 10.00 feet to a new iron pipe; thence following the northeasterly right of way margin of the said Spruce Street as it has been widened to 50 feet in width as recorded in Map Book 7 Page 291 of the Mecklenburg County Registry the following two (2) calls: (1) following the arc of a circular curve to the left having a radius of 377.78 feet and an arc length of 289.23 feet (chord bearing North 37-28-18 West 282.22 feet) to a point and (2) following the arc of a circular curve to the left having a radius of 495.00 feet and an arc length of 237.73 feet (chord bearing North 73-48-21 West 235.45 feet) to a new iron pipe; thence along the easterly boundary of the Mecklenburg County property as recorded in Deed Book 9276 Page 437 of the Mecklenburg County Registry and along the westerly boundary of a Public Street Right of Way as recorded in Deed Book 1161 Page 115 of the Mecklenburg County Registry North 00-45-29 West 126.87 feet to an existing iron pin; thence along the southerly and easterly boundaries of Piedmont Natural Gas Company as recorded in Deed Book 8095 Page 329 the following four (4) calls: (1) North 89-23-22 East 73.12 feet to an existing iron pin, (2) following the arc of a circular curve to the left having a radius of 573.69 feet and an arc length of 243.04 feet (chord bearing South 89-25-58 East 241.23 feet) to a new iron pipe, (3) following the arc of a circular curve to the right having a radius of 151.66 feet and an arc length of 26.53 feet (chord bearing North 83-42-08 East 26.50 feet to a new iron pipe and (4) North 02-34-17 East (passing existing iron pins at 14.29 feet and an additional 125.01 feet) a total distance of 238.90 feet to an existing iron pin located in the centerline of the Norfolk-Southern Railway Southbound track; thence following the centerline of the said Norfolk-Southern Railway Southbound track the following two (2) calls: (1) South 87-31-48 East 628.44 feet and (2) following the arc of a circular curve to the left having a radius of 3,288.38 feet and an arc length of 365.43 feet (chord bearing North 89-37-59 East 365.24 feet) to a new iron pipe set at the intersection of the centerline of the said Norfolk-Southern Railway and the southwesterly right of way margin of the aforesaid West Summit Avenue; thence along the southwesterly right of way margin of the said West Summit Avenue South 33-30-00 East 552.13 feet to the point and place of BEGINNING, containing 18.9692 acres as shown on a survey prepared by Andrew G. Zoutewelle dated March 25, 2004.

ADDITIONAL SAMPLE LOCATIONS OCTOBER-NOVEMBER 2005									
Node ID	Description	Northing	Easting	Elevation	Node ID	Description	Northing	Easting	Elevation
5	B10-16	4763.75	4488.12	690.54	350	B10-09	4747.75	4779.17	690.82
6	B10-15	4761.81	4526.66	691.10	351	B10-08	4749.70	4821.23	690.96
7	MW B16-02B PAD	4663.16	4406.20	685.84	352	B18-01	4788.61	4766.83	691.30
8	MW B16-02B CAP	4663.11	4405.98	688.64	353	B3-06	5009.84	4721.32	691.20
9	orrr Test Pit 2	4813.72	4239.46	688.26	354	B19-05	4989.46	4715.90	691.20
10	orrr Test Pit 2	4813.12	4243.81	688.27	355	B19-06	4974.20	4715.23	691.28
11	orrr Test Pit 2	4835.84	4241.79	688.43	356	B19-02	4973.80	4724.95	691.24
12	B13-08	4852.24	4212.78	688.35	357	B19-03	4957.54	4724.20	691.24
14	centerline Test Pit 4	4945.65	4204.95	688.01	358	B19-07	4958.92	4714.51	691.25
15	centerline Test Pit 3	4889.03	4075.86	685.98	359	B19-08	4946.90	4713.98	691.29
16	B13-09	5056.44	4186.61	684.85	360	B19-04	4945.12	4724.03	691.27
17	B13-02	5048.15	4248.25	686.23	361	B15-06	4884.15	4740.51	691.29
18	B13-10	5077.56	4277.83	685.98	362	B20-01	4786.90	4377.83	691.48
19	B13-04	5048.55	4314.12	686.23	363	B20-02	4794.07	4374.12	691.46
20	B13-03	5023.89	4273.55	686.80	364	B13-11	4849.50	4413.14	691.41
21	B13-05	5019.59	4359.93	687.43	365	B13-12	5018.14	4423.84	691.48
24	B13-06	5071.19	4353.42	686.19	366	B12-04	5016.43	4598.74	691.48
25	B10-17	5074.88	4382.96	686.19	367	B12-02	5042.30	4592.43	691.38
26	B10-21	5070.92	4460.38	686.56	368	B13-15	5042.65	4474.75	691.36
27	B10-18	5066.13	4553.43	687.51	369	B13-14	5062.09	4429.45	691.40
28	B10-19	5061.37	4575.72	687.73	370	B13-07	5045.19	4388.32	691.37
29	B1-05	5069.71	4594.64	687.48	371	B13-13	5035.50	4348.91	687.07
30	B1-02	5063.14	4652.69	687.63	372	B12-03	5032.57	4616.11	691.38
31	B1-03	5078.24	4647.55	686.91	373	B3-05	5038.10	4705.73	691.25
32	B1-06	5090.93	4650.66	687.04	374	B3-04	5025.37	4724.44	691.20
33	B1-04	5057.09	4683.68	687.66	375	B19-01	4988.77	4726.12	691.31
34	B3-08	5064.76	4699.06	687.31	376	B3-03	5045.58	4725.74	691.32
35	B3-10	5086.76	4726.42	687.13	377	B3-07	5036.23	4744.61	691.34
36	B3-09	5058.99	4723.09	687.37	378	B2-06	5021.12	4857.60	691.27
37	B3-11	5057.73	4737.59	687.55	379	B2-05	5005.11	4879.31	691.20
329	centerline Test Pit 6	4906.10	4002.20	683.07	380	B2-07	5036.75	4881.25	691.16
330	B21-08	4924.18	3969.20	683.97	381	B4-08B	4893.62	4839.93	691.31
331	B21-04	4945.16	3934.09	682.87	382	B2-02	5004.30	4891.43	687.45
332	B21-06	4929.04	3928.50	680.75	383	B2-03B	5029.45	4893.22	687.65
333	B21-05	4981.95	3999.59	685.18	384	B2-03	5031.74	4893.44	687.65
334	B21-07	4954.35	3991.97	684.17	385	B2-08	5056.38	4892.15	687.40
335	B21-01	4965.30	3960.97	684.29	386	B10-22	5023.35	4949.12	687.58
336	centerline Test Pit 5	4964.19	3956.41	683.13	387	B10-20	5016.21	4939.65	687.02
337	B21-02	4982.10	3972.10	682.28	388	B2-04B	5014.55	4898.74	687.59
338	B21-02	4968.25	3931.46	681.40	389	SE08-up	5091.51	4937.46	685.87
339	DA-05	4867.69	3915.06	660.31	390	SE06-dr	5126.83	4882.59	683.94
340	B21-09	4976.41	3892.46	661.09	391	SE07-up	5127.41	4673.31	682.86
341	DA-01	4980.27	3902.41	663.59	392	SE07-dn	5126.34	4644.98	682.92
342	MW BGB5X0 PAD	4875.48	3553.24	646.09	421	SE03-up	4667.31	4183.17	689.31
343	MW BGB5X0 CAP	4875.48	3553.24	648.65	422	SE03-dn	4690.09	4133.63	688.49
344	MW B21-10 PAD	4997.96	3908.96	666.19	405	MW-BGB7D PAD	4831.86	2600.75	642.02
345	MW B21-10 CAP	4997.96	3908.96	668.09	406	MW-BGB7D CAP	4831.67	2600.41	645.27
344	DA-02	4953.47	3882.07	650.99	408	MW-BGB6D PAD	3385.33	1792.83	630.67
345	DA-03	4950.82	3887.30	655.23	409	MW-BGB6D CAP	3385.29	1793.04	633.25
346	DA-04	4934.25	3870.99	646.86	–	B1-02B	5061.78	4635.71	687.60
347	B10-14	4761.27	4548.60	690.69	–	B11-01B	4800.04	4481.77	690.63
348	B10-12	4740.61	4659.97	690.09	–	centerline Test Pit 1	4900.08	3921.71	671.50
349	B10-11	4749.21	4726.08	690.73	–	Tank 01	4950.70	3894.00	659.20



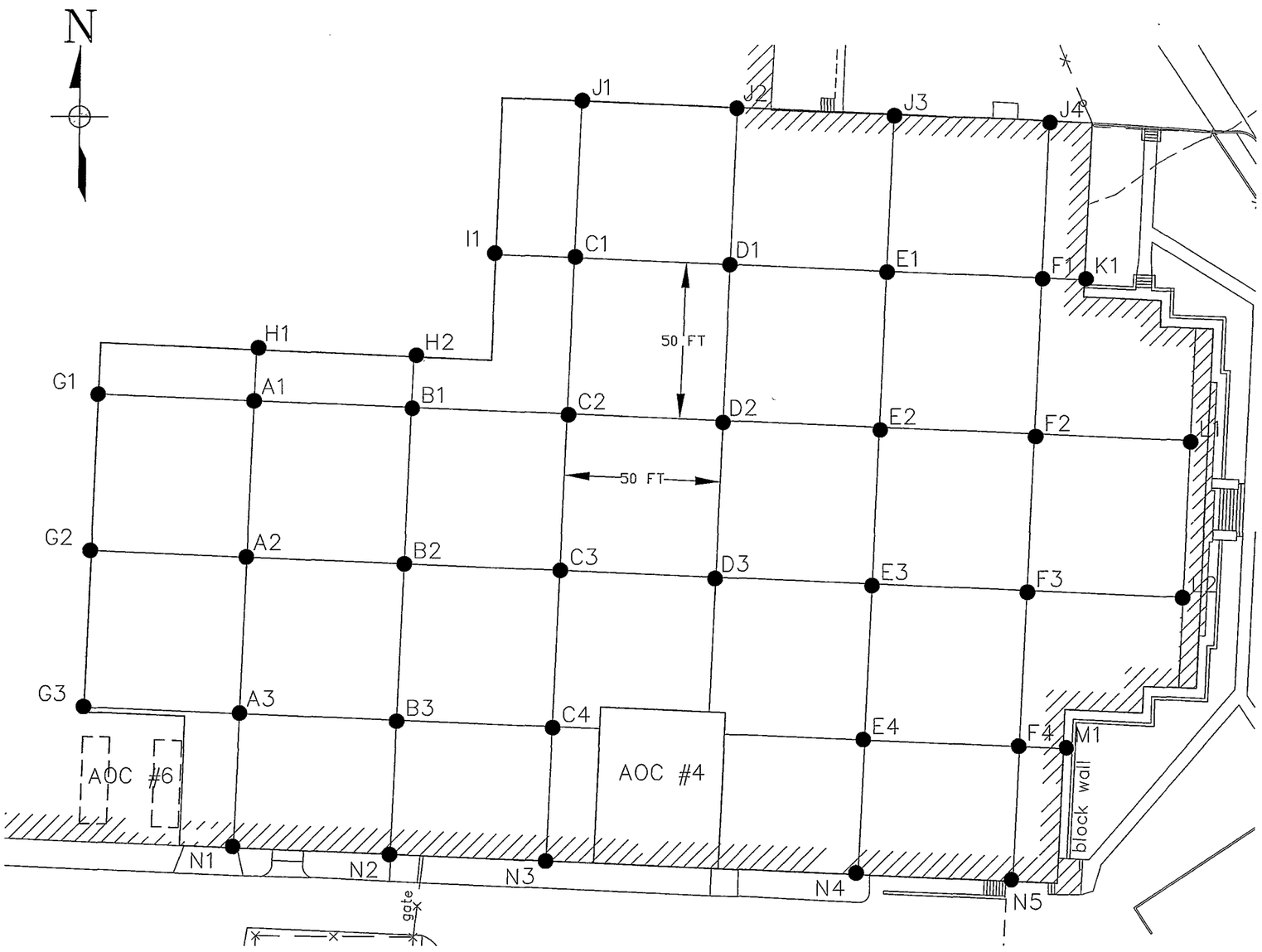
A.G. ZOUTEWELLE SURVEYORS
1418 East Fifth St. Charlotte, NC 28204
Phone: 704-372-9444 Fax: 704-372-9555



KELLY-BUCK
COMPANY
Civil & Environmental Engineers
2130 Superior Ave., Suite 3-A
Cleveland, OH 44114
(216) 861-1716

FIGURE 3. REMEDIATION AREAS

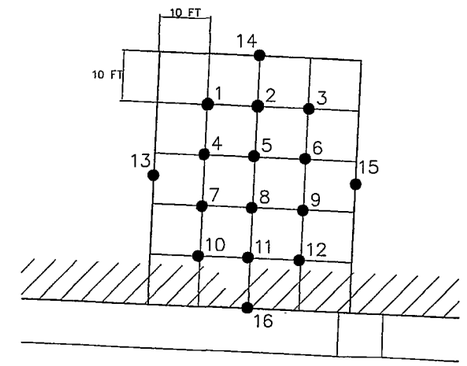
FORMER COPES-VULCAN FACILITY
REMEDIAL ACTION PLAN – STEP ONE
601 WEST SUMMIT AVENUE
CHARLOTTE, NC



AREA OF CONCERN #15 SAMPLING GRID

SCALE (FEET)

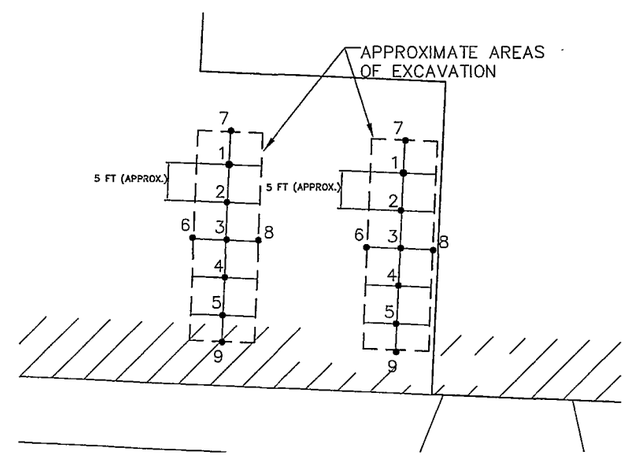
0 20 40 80



AREA OF CONCERN #4 SAMPLING GRID

SCALE (FEET)

0 15 30 60



AREA OF CONCERN #6 SAMPLING GRID

SCALE (FEET)

0 10 20 40

1A ● Sampling Location/Designation Number

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FIGURE 4. PRE-CHARACTERIZATION AND CONFIRMATORY SAMPLING LOCATIONS

FORMER COPES-VULCAN FACILITY

REMEDIAL ACTION PLAN – STEP ONE

601 WEST SUMMIT AVENUE

CHARLOTTE, NC

APPENDIX A

VOLUME II –PLANS & SPECIFICATIONS
REMEDIAL ACTION – STEP ONE
FORMER COPES-VULCAN FACILITY, CHARLOTTE, NC

1.0 GENERAL REQUIREMENTS

1.1 BASIS FOR WORK, ROLES & RESPONSIBILITIES

(A) The Volume II Plans & Specifications define the requirements for completion of the specified demolition and associated environmental remediation and other related work (Remedial Action) at the Former Copes-Vulcan Facility, located at 601 West Summit Avenue, Charlotte, Mecklenburg County, North Carolina (Site). A Site Plan is included as Attachment 1 to the Volume II Plans & Specifications.

(B) The Remedial Action is being implemented by Electrolux Home Products, Inc. (OWNER), with assistance by Quantum Management Group, Inc. (OWNER'S REPRESENTATIVE), under the North Carolina Department of Environment and Natural Resources (NCDENR) Registered Environmental Consultant (REC) program, pursuant to a July 24, 2003 Administrative Agreement between the OWNER and the NCDENR.

(C) The Kelly-Buck Company (OWNER'S ENGINEER) is the REC responsible for implementing and overseeing the Remedial Action on behalf of the OWNER and the OWNER'S REPRESENTATIVE, and for certifying to the NCDENR that the Remedial Action has been completed in accordance with REC program requirements.

(D) CONTRACTOR shall implement, perform and complete all elements of the Remedial Action as specified in the Volume II Plans & Specifications, to the full satisfaction of OWNER, OWNER'S REPRESENTATIVE and OWNER'S ENGINEER, and in full compliance with all applicable local, State and Federal laws, regulations and requirements.

(E) These Plans & Specifications represent requirements in addition to those described in Volume I of the Project Manual. Both the Volume II and Volume I requirements shall be in effect at all times during the Remedial Action. Should any requirements pertaining to the Remedial Action described herein overlap or conflict with Volume I, the requirements of this Volume II shall apply.

1.2 CONTACT INFORMATION

(A) The following contacts apply during performance of all Remedial Action work specified herein:

OWNER:	OWNER'S REPRESENTATIVE:	OWNER'S ENGINEER:
Mr. Douglas E. Mix	Mr. Douglas Ucci	Mr. Michael J. Lyden, P.E.
Vice President Regulatory Affairs	Senior Associate	Principal Engineer
Electrolux Home Products, Inc.	Quantum Management Group, Inc.	The Kelly-Buck Company
20445 Emerald Pkwy.	3550 Burch Avenue	2130 Superior Avenue
P.O. Box 35920	Second Floor	Suite 3A
Cleveland, Ohio 44135-0920	Cincinnati, OH 45208	Cleveland, OH 44114
voice: (216) 898-2373	voice; (513) 871-7203	voice: (216) 861-1716
fax: (216) 898-2393	fax; (513) 871-7204	fax: (216) 861-1715
mobile: (440) 915-2961	mobile: (513) 919-8134	mobile: (216) 272-1345

(B) Prior to the initiation of any Remedial Action work, CONTRACTOR shall specify in writing a single point of contact (CONTRACTOR'S REPRESENTATIVE) for the Remedial Action.

(C) All required submittals, notifications, approvals, interpretations and other communications associated with the Remedial Action shall be in writing, and shall only be between OWNER, OWNER'S ENGINEER, OWNER'S REPRESENTATIVE and CONTRACTOR'S REPRESENTATIVE, as defined in Sections 1.2(A) and 1.2(B).

1.3 NOTIFICATIONS, SUBMITTALS & APPROVALS

(A) Prior to the start of any Remedial Action work, CONTRACTOR shall submit, for review by OWNER, OWNER'S REPRESENTATIVE and OWNER'S ENGINEER, a detailed Operations Plan. This document shall describe CONTRACTOR'S proposed methods, procedures and schedule for implementation of the Remedial Action. The Operations Plan shall describe, at a minimum, the following:

i. The means, methods, equipment, facilities and personnel that will be employed in order to complete all tasks of the Remedial Action.

ii. An overall work schedule, and a description of the sequencing of individual work tasks and elements.

iii. A CONTRACTOR Health & Safety Plan (CONTRACTOR'S HASP) that will be implemented during the Remedial Action (see Section 1.5).

iv. Locations of personnel and equipment decontamination facilities, methods to be used for personnel and equipment decontamination, and methods for containment, testing and disposal of decontamination fluids and residues.

v. Locations and means for storage and staging of excavated soil, flooring materials and other contaminated or potentially contaminated materials and media awaiting testing and/or offsite transport.

vi. Traffic routes for trucks and other vehicles entering and leaving the site, and traffic control methods to prevent hazards to pedestrians and vehicles.

vii. Methods to prevent spillage and dispersal of contaminated materials and media, exposure of contaminated materials and media to precipitation and surface water runoff, and collection, containment and disposal of any water that may enter excavations or other potentially contaminated work areas during the Remedial Action.

viii. Control measures to minimize soil erosion and sedimentation during the Remedial Action, and plans for compliance with NCDENR requirements for Construction Stormwater Discharges under the National Pollutant Discharge Elimination System (NPDES). At a minimum, these requirements include procurement of a Construction Stormwater Permit and preparation and implementation of an Erosion and Sedimentation Control Plan (ESCP).

ix. Methods to prevent airborne emissions of dust, vapors or other forms of air emission, along with methods and locations associated with monitoring and documenting an absence of exposure to site personnel and the surrounding community.

x. All proposed transportation, treatment and disposal companies and facilities to be used during the project, including, but not limited to: EPA Subtitle D licensed solid waste disposal facilities; EPA Subtitle C RCRA hazardous waste treatment and disposal facilities; licensed municipal or industrial wastewater treatment facilities; recycling facilities; transportation companies that will transport all solid and liquid wastes from the Site to these facilities.

xi. The specific location of the source of clean soil that CONTRACTOR proposes to use for backfill of excavated areas during the Remedial Action, along with documentation that the soil is free of any hazardous substances, pollutants and other potential or known contaminants as defined by the U.S. Environmental Protection Agency and the NCDENR.

xii. Any alternative approaches that CONTRACTOR wishes to propose; however, these must be clearly identified as "Alternatives," and will be subject to the specific written approval of OWNER'S ENGINEER. Aside from specific approval of any proposed Alternatives, the acceptance of CONTRACTOR'S Operations Plan shall in no way imply allowance of any deviations from the Volume II Plans and Specifications or the requirements in Volume I.

1.4 START & STOP WORK PROVISIONS

(A) CONTRACTOR shall not be permitted to initiate or conduct any Remedial Action work described in the Volume II Plans & Specifications prior to satisfying all requirements for notifications, submittals and approvals contained herein, nor prior to receiving a written Notice to Proceed from OWNER'S ENGINEER.

(B) No Remedial Action work shall be conducted at the Site unless the OWNER'S ENGINEER or his designated representatives are present onsite, unless alternate arrangements have been agreed to in writing by the OWNER'S ENGINEER.

(C) At any time when the OWNER, OWNER'S REPRESENTATIVE or OWNER'S ENGINEER feel that the work is not proceeding in accordance with the Volume II Plans & Specifications, or for other reasons deemed appropriate, they may issue CONTRACTOR a Stop Work Order. The Stop Work Order shall list the reasons for stoppage, and the CONTRACTOR shall immediately secure the Site and suspend all work until the deficiencies have been remedied to the satisfaction of the OWNER, OWNER'S REPRESENTATIVE or OWNER'S ENGINEER.

1.5 PROTECTION OF HEALTH, SAFETY, PUBLIC WELFARE & THE ENVIRONMENT

(A) Protection of health, safety, public welfare and the environment shall be of paramount importance during the conduct of this Remedial Action. CONTRACTOR shall plan and implement all appropriate measures at all times to ensure that this objective is met.

(B) OWNER'S ENGINEER has prepared a Health and Safety Plan (HASP) for use by OWNER'S ENGINEER during Remedial Action work. This document is included as Attachment 2 to the Volume II Plans & Specifications. A tabulation of laboratory analytical data associated with testing of soil, flooring and other media and materials in the work areas is also included as

Attachment 3 to the Volume II Plans & Specifications. CONTRACTOR shall prepare and implement its own site-specific HASP (CONTRACTOR'S HASP), which at a minimum, shall include all of the elements contained in the OWNER'S ENGINEER'S HASP. As indicated in Section 1.3, the CONTRACTOR'S HASP shall be submitted to OWNER'S ENGINEER prior to beginning work. The following is a summary of some, but not all, of the health and safety measures required to be implemented during Remedial Action activities, in order to protect the health, safety and welfare of site personnel and the surrounding community. This list is not exhaustive, and CONTRACTOR is required to carefully review and determine all appropriate health and safety requirements for this project.

i. Site work zones shall be formally defined and marked to establish limits of work activity where there is the potential for contaminant exposure during Remedial Action activities. These zones include: Exclusion Zone; Contamination Reduction Zone; and Support Zone.

ii. Air monitoring shall be conducted during all intrusive work activities in order to protect worker health and safety and evaluate the potential for migration of contaminants beyond the work area toward property boundaries. CONTRACTOR shall be responsible for conducting air monitoring in accordance with CONTRACTOR'S HASP and shall promptly provide, as soon as available, all air sampling and other monitoring results to OWNER'S ENGINEER.

iii. Decontamination of personnel and equipment shall be conducted to limit worker exposure to contaminants and to prevent migration of contaminants to other portions of the Site. Designated and appropriate decontamination facilities shall be installed in accordance with CONTRACTOR'S HASP.

1.5 PROTECTION OF UTILITIES, MONITORING WELLS & OTHER FEATURES

(A) The approximate locations of certain existing underground utilities are shown on the Site Plan (Attachment 1). This information is incomplete and approximate, and CONTRACTOR shall not rely on its accuracy. CONTRACTOR is required to identify, locate and protect all utilities in the work areas, and where applicable, ensure that they have been properly decommissioned, prior to beginning work. CONTRACTOR is also required to notify the North Carolina One Call Center at (800) 632-4949 for marking of all underground utilities prior to the initiation of work. For additional information, refer to the utility decommissioning specifications in Volume I.

(B) Existing ground-water monitoring wells are shown on the Site Plan (Attachment 1). These include wells in the work areas (e.g., flooring and soil removal areas), as well as other onsite locations such that they have the potential to be damaged during the Remedial Action. CONTRACTOR shall take all necessary measures to mark and protect all onsite monitoring wells from any damage. If any such damage occurs, CONTRACTOR shall promptly notify OWNER'S ENGINEER, who will provide specific directions regarding repairs or replacement of wells (at the discretion of the OWNER'S ENGINEER), and all associated costs will be back-charged to this Contract on a time and material basis.

2.0 REMEDIAL ACTION WORK

2.1 REMOVAL OF CREOSOTED WOOD FLOORING & PAH-IMPACTED SOIL (AOC #15)

(A) A creosote-treated wood flooring system is located in the east portion of the main building. This area is identified as Area of Concern (AOC) #15 on the Site Plan (Attachment 1 to the Volume II Plans & Specifications). The wood flooring system and underlying soil contain concentrations of polynuclear aromatic hydrocarbons (PAHs) above NCDENR-defined preliminary remediation goals (PRGs) - see data tabulation in Attachment 3 to the Volume II Plans & Specifications. All creosote-treated wood flooring system components, and all underlying soil exhibiting PAH concentrations above NCDENR PRGs, shall be fully removed and disposed of by CONTRACTOR as part of this Remedial Action, and as further described in the Volume II Plans & Specifications.

(B) The wood flooring system includes multiple layers of creosote-treated wood flooring and sub-flooring, along with layers of creosoted granular base materials (cinders and gravel). The area encompassed by the wood flooring system is approximately 70,000 square feet (sq ft), and is shown on the Site Plan (Attachment 1 to the Volume II Plans & Specifications). The total thickness of the wood flooring system (wood and creosoted granular base materials) is approximately 1.0 ft to 1.5 ft. These dimensions are estimates, and CONTRACTOR shall be responsible for determining and removing the full thickness and extent of this wood flooring system, including any system components that might be covered by other flooring surfaces, or otherwise not readily apparent.

(C) The PAH concentrations are significantly higher in the creosoted wood flooring system materials than in the underlying soil, and are easily dispersed (particularly the cinder layer, which is generally present between the wood and gravel layers). CONTRACTOR shall not be permitted to mix or co-mingle the flooring and base materials into the underlying soil layer. CONTRACTOR shall develop and utilize removal methods that will prevent mixing of creosoted base materials with soil, and shall describe these methods in the Operations Plan. At a minimum, it is anticipated that CONTRACTOR will propose methods that include full removal of wood and base materials from a given section of flooring prior to any soil disturbance or removal.

(D) After the creosoted flooring and aggregate base materials have been fully removed from the entire wood floor area, or from a designated sub-area, if applicable per CONTRACTOR'S Operations Plan, OWNER'S ENGINEER will inspect the excavated area to verify that removal of flooring system materials has been adequately completed. If identified by OWNER'S ENGINEER, CONTRACTOR shall be responsible for removal of any additional wood and/or base materials to the satisfaction of OWNER'S ENGINEER prior to proceeding with any soil removal.

(E) Once the removal of creosoted flooring and base materials has been deemed complete by OWNER'S ENGINEER, the removal of underlying soil impacted by PAHs shall be completed by CONTRACTOR. This will begin with the OWNER'S ENGINEER first establishing grade elevations within the area prior to any soil removal. These grade elevations will serve as the datum from which OWNER'S ENGINEER will determine and verify quantities of soil subsequently removed.

(F) After the area or sub-area has been surveyed, CONTRACTOR shall proceed to remove an initial depth of soil equal to 1.0 ft. This soil removal volume is identified as Initial Soil Removal – AOC #15. OWNER'S ENGINEER will then re-survey the area to confirm adequate removal depth, and OWNER'S ENGINEER will collect confirmation soil samples for laboratory

analysis. If necessary, following receipt of analytical results, OWNER'S ENGINEER will instruct CONTRACTOR to complete additional soil removal in all or portions of the AOC #15 work area, and to depths and dimensions specified by OWNER'S ENGINEER. Any additional soil removal is collectively identified as Contingent Soil Removal – AOC #15, and all removal quantities will be determined by OWNER'S ENGINEER.

(G) CONTRACTOR shall identify in its Operations Plan whether removal of the wood flooring system (wood and granular base materials) and impacted soil will occur before, or after, building demolition per Volume I of the Project Manual. In either case, CONTRACTOR shall anticipate and all potential issues that may arise, and shall describe methods proposed to address these issues in the Operations Plan. For example, if CONTRACTOR proposes removal work prior to building demolition, CONTRACTOR shall be required to provide an engineering report prepared by a North Carolina-licensed structural engineer indicating the maximum allowable depth of flooring and soil removal, along with any other precautions necessary to prevent structural instability. Conversely, if the removal is proposed following building demolition, adequate measures to prevent exposure of contaminated media and materials to precipitation, surface water runoff and other exposure routes shall be required.

2.2 REMOVAL OF PCE-IMPACTED SOIL (AOC #4)

(A) Within the limits of the creosoted wood floor (AOC #15) there is a separate area of concern identified as AOC #4 (see Site Plan – Attachment 1 to the Volume II Plans & Specifications). In AOC #4, which measures approximately 40 ft by 55 ft in surface dimensions, soil beneath the wood floor system exhibits volatile organic compounds (VOCs), including tetrachloroethene (PCE) and other compounds (see data tabulation in Attachment 3 to the Volume II Plans & Specifications). Soil in this area exhibiting VOCs above NCDENR PRGs shall be fully removed and disposed of by CONTRACTOR as part of this Remedial Action, and as further described in the Volume II Plans & Specifications.

(B) Wood flooring materials and soil within AOC #4 have the potential to exhibit leachable concentrations of PCE and other compounds in excess of U.S. EPA and NCDENR thresholds for disposal in a municipal solid waste landfill. As a result, all flooring materials and underlying soil within AOC #4 shall be removed by CONTRACTOR separately from removal work associated with AOC #15. All flooring materials and soil removed from AOC #4 shall be segregated and managed separately by CONTRACTOR by placing in lined, covered, liquid-tight roll-off containers suitable for storage of hazardous wastes, as defined by U.S. EPA (i.e., RCRA-compliant roll-off containers), pending sampling by OWNER'S ENGINEER to determine proper disposal methods.

(C) OWNER'S ENGINEER will mark the limits of AOC #4 prior to the start of work. CONTRACTOR shall then remove all wood flooring and base materials from AOC #4, and OWNER'S ENGINEER will proceed to inspect and survey grade elevations, as per the procedures and requirements described in Section 2.1 for AOC #15. CONTRACTOR shall then proceed to remove soil from this area to a depth of 3.0 ft. This soil removal volume is identified as Initial Soil Removal – AOC #4. OWNER'S ENGINEER will then re-survey this area to confirm complete removal, and OWNER'S ENGINEER will collect soil samples for laboratory analysis. Following receipt of analytical results, OWNER'S ENGINEER will instruct CONTRACTOR to complete additional soil removal, if necessary, in all or portions of the AOC #4 work area, and to depths and dimensions specified by OWNER'S ENGINEER. Any additional soil removal is collectively identified as Contingent Soil Removal – AOC #4, and all removal quantities will be determined by OWNER'S ENGINEER.

2.3 REMOVAL OF CONCRETE PITS, DEBRIS & IMPACTED SOIL (AOC #6)

(A) An area immediately west of the wood floor limits has two concrete-lined pits, each measuring roughly 30 ft by 8 ft by 6 ft deep. This area is identified as AOC #6 (see Site Plan – Attachment 1 to the Volume II Plans & Specifications). Solid residues contained in the pits and underlying soil exhibit metals and organic compounds above NCDENR PRGs (see data tabulation in Attachment 3 to the Volume II Plans & Specifications). These residues and soil shall be fully removed and disposed of by CONTRACTOR as part of this Remedial Action, and as further described in the Volume II Plans & Specifications.

(B) CONTRACTOR shall remove all loose solid debris and residues from the concrete-lined pits and place this material in RCRA-compliant roll-off containers pending sampling by OWNER'S ENGINEER to determine proper disposal methods. Once the solid debris and residues have been removed, CONTRACTOR shall demolish the concrete walls and floors of the pits, remove this concrete debris, and place it in RCRA-compliant roll-off containers pending sampling by OWNER'S ENGINEER to determine proper disposal methods.

(C) OWNER'S ENGINEER will then determine dimensions and grade elevations of the soil exposed beneath and adjacent to the two former pits in AOC #6. CONTRACTOR shall then proceed to remove soil from these former pits in AOC #6 to a depth of 1.0 ft vertically and horizontally into the base and side-walls, respectively, of the exposed soil surfaces. This soil removal volume is identified as Initial Soil Removal – AOC #6. OWNER'S ENGINEER will then re-survey this area to confirm adequate removal, and OWNER'S ENGINEER will collect soil samples for laboratory analysis. Following receipt of analytical results, OWNER'S ENGINEER will instruct CONTRACTOR to complete additional soil removal, if necessary, in all or portions of the AOC #6 work area, and to depths and dimensions specified by OWNER'S ENGINEER. Any additional soil removal is collectively identified as Contingent Soil Removal – AOC #6, and all removal quantities will be determined by OWNER'S ENGINEER.

2.4 REMOVAL OF CONCRETE FOOTINGS & FOUNDATIONS

(A) CONTRACTOR shall remove all concrete column footings, block wall foundations and other concrete structures, slabs, masses and debris exposed, removed or otherwise encountered during the removal of wood flooring system materials and soil associated with the Remedial Action.

(B) CONTRACTOR shall dispose of these concrete materials in a licensed municipal solid waste landfill, except for the concrete pit debris and walls/floor associated with AOC #6 (described in Section 2.3), which shall be staged in RCRA-compliant roll-off containers pending sampling by OWNER'S ENGINEER to determine proper disposal methods.

2.5 FLUSHING & REMOVAL OF FLOOR DRAINS, SEWERS & UNDERGROUND PIPING

(A) CONTRACTOR shall flush and remove all floor drains, sewers and underground piping encountered within the limits of work areas AOC #15, #4 and #6 during the Remedial Action. Piping shall be flushed using potable water. All wastewater and solid residues generated during this activity shall be collected by CONTRACTOR and stored in RCRA-compliant tanks. OWNER'S ENGINEER will then collect samples of the wastewater (and solid residues if applicable) for laboratory analysis to determine proper disposal methods. CONTRACTOR shall then proceed to complete proper transportation and disposal of the wastewater and any associated soild residues in accordance with that determination.

(B) All piping, once it has been deemed by OWNER'S ENGINEER to have been adequately flushed and drained, shall be disposed off by CONTRACTOR in a licensed municipal solid waste landfill.

2.6 MANAGEMENT & DISPOSAL OF CONTAMINATED MEDIA & MATERIALS

(A) CONTRACTOR shall be responsible for proper onsite management, transportation and disposal of all soil, water, other solid and liquid environmental media, solid and hazardous wastes, residues and other materials generated during the Remedial Action.

(B) Information currently available to OWNER and OWNER'S ENGINEER indicates the following with respect to requirements for management of these materials:

i. Wood flooring and aggregate base materials in AOC #15 (excluding sub-area AOC #4): Classified as a non-hazardous solid waste. Disposal in an EPA Subtitle D municipal solid waste landfill is required.

ii. Soil beneath wood flooring in AOC #15 (excluding sub-area AOC #4): Classified as a non-hazardous solid waste. Disposal in an EPA Subtitle D municipal solid waste landfill is required.

iii. Wood flooring and aggregate base materials (within AOC #4): Requires staging in RCRA-compliant roll-off containers pending sampling and analysis by OWNER'S ENGINEER. If determined to be hazardous waste, disposal in an EPA Subtitle C RCRA hazardous waste treatment and disposal facility is required. Otherwise, disposal in an EPA Subtitle D municipal solid waste landfill is required.

iv. Soil beneath wood flooring (within AOC #4): Requires staging in RCRA-compliant roll-off containers pending sampling and analysis by OWNER'S ENGINEER. If determined to be hazardous waste, disposal in an EPA Subtitle C RCRA hazardous waste treatment and disposal facility is required. Otherwise, disposal in an EPA Subtitle D municipal solid waste landfill is required.

v. Concrete debris and residues from floor pits in AOC #6: Requires staging in RCRA-compliant roll-off containers pending sampling and analysis by OWNER'S ENGINEER. If determined to be hazardous waste, disposal in an EPA Subtitle C RCRA hazardous waste treatment and disposal facility is required. Otherwise, disposal in an EPA Subtitle D municipal solid waste landfill is required.

vi. Soil beneath and adjacent to concrete within AOC #6: Requires staging in RCRA-compliant roll-off containers pending sampling and analysis by OWNER'S ENGINEER. If determined to be hazardous waste, disposal in an EPA Subtitle C RCRA hazardous waste treatment and disposal facility is required. Otherwise, disposal in an EPA Subtitle D municipal solid waste landfill is required.

vii. Wastewater and solid residues generated from flushing of floor drains and sewers: Requires staging in RCRA-compliant containers pending sampling and analysis by OWNER'S ENGINEER. If determined to be hazardous waste, disposal in an EPA Subtitle C RCRA hazardous waste treatment and disposal facility is required. Otherwise, disposal in an EPA Subtitle D municipal solid waste landfill (solid residues) and pretreatment in a permitted industrial or municipal wastewater treatment facility (liquid wastewater) is required.

viii. Wastewater generated from personnel and equipment decontamination: Requires staging in RCRA-compliant containers pending sampling and analysis by OWNER'S ENGINEER. If determined to be hazardous waste, disposal in an EPA Subtitle C RCRA hazardous waste treatment and disposal facility is required. Otherwise, disposal in an EPA Subtitle D municipal solid waste landfill (solid residues) and pretreatment in a permitted industrial or municipal wastewater treatment facility (liquid wastewater) is required.

(C) CONTRACTOR is required to identify in its Operations Plan all waste transportation, treatment and disposal companies and specific facilities that will be used during the project (see Section 1.3). CONTRACTOR will be responsible for obtaining all required authorizations and approvals from those companies and facilities for each waste stream generated during the work. Laboratory analytical data has been provided with the Volume II Plans & Specifications, and the results of additional testing that has been identified herein for completion by OWNER'S ENGINEER (e.g., verification testing of staged wastes in containers) will be provided to CONTRACTOR following testing. Beyond this, any additional testing required for waste profiling and acceptance by CONTRACTOR'S transportation and disposal facilities will be the sole responsibility of CONTRACTOR, and must be determined and addressed by CONTRACTOR prior to the initiation of this Remedial Action work. As an example, should a disposal facility require test data on a parameter such as flash point, paint filter test, etc., CONTRACTOR shall be responsible for the collection and analysis of applicable samples, and submittal of resulting data to the disposal facility.

(D) All manifests, shipping documents and other documentation associated with the management, transportation and disposal of all waste materials generated during the Remedial Action shall be provided by the CONTRACTOR to the OWNER'S ENGINEER at the conclusion of the project.

2.7 BACKFILL & RESTORATION

(A) Once OWNER'S ENGINEER has notified CONTRACTOR that an excavation area is ready to be backfilled, CONTRACTOR shall proceed to promptly backfill that area to match the existing grade elevations of surrounding surfaces, and shall level the areas to provide smooth transitions between disturbed and undisturbed areas. Backfilled areas shall be provided with a positive slope toward the outer perimeter of backfilled areas, taking subsequent settlement into account, so that adequate surface drainage is provided, and so that no areas of standing water develop.

(B) CONTRACTOR shall identify in its Operations Plan the specific location of the source of clean backfill proposed for use, and supply sampling results and/or other documentation that the source is free from hazardous substances (see Section 1.3). OWNER reserves the right to conduct its own testing of the proposed backfill, and to reject any and all portions deemed unacceptable. Provided that the backfill source is acceptable to OWNER, CONTRACTOR shall provide confirmation with each load delivered to the Site that it was obtained from the approved source location, and is certified to be free of any hazardous substances.

(C) Backfill shall be placed and compacted in maximum 8-inch lifts using machine-mounted compaction equipment. Backfill shall contain no rocks or stones larger than 3 inches and shall be free of frozen lumps, organic matter, trash, chunks of highly plastic clay, snow, ice, contamination or other unsatisfactory material. Backfill material shall consist of inert, cohesive soil with a liquid limit less than 40. No recycled concrete or other manmade materials, whether generated from the site or elsewhere, shall be permitted for use as backfill.

(D) CONTRACTOR shall promptly re-establish topsoil and grass cover over all bare soil areas following backfilling and grading operations, to the satisfaction of OWNER, OWNER'S REPRESENTATIVE and OWNER'S ENGINEER.

3.0 MEASUREMENT & PAYMENT

3.1 BASIS FOR PAYMENT

(A) Payment for all work described in Volume II of the Plans & Specifications is covered by the following Bid Form Items and Sub-Items:

i. Base Scope of Work, Item #4 – Remedial Action (Volume II)

Sub-Item # 4.1 – Removal & Disposal of Wood Flooring System & 1.0 ft Soil Depth, AOC #15: Includes removal, staging, transportation and disposal of all wood flooring, base materials, plus underlying soil to a depth of 1.0 ft, from AOC #15 (assumes non-hazardous solid waste for staging, transportation & disposal in a Subtitle D municipal landfill & excludes interior area AOC #4). Includes all other incidental work required for completion. Price is a lump sum.

Sub-Item # 4.2 – Removal & Disposal of Wood Flooring System & 3.0 ft Soil Depth, AOC #4: Includes removal, staging, transportation and disposal of all wood flooring, aggregate base materials, plus underlying soil to a depth of 3.0 ft, from AOC #4 (staging in RCRA-compliant containers; however, assumes non-hazardous solid waste for transportation & disposal in a Subtitle D municipal landfill). Includes all other incidental work required for completion. Price is a lump sum.

Sub-Item # 4.3 – Removal & Disposal of Residues, Concrete & 1.0 ft Soil Depth, AOC #6: Includes removal, staging, transportation and disposal of all solid debris, residues, concrete side-walls & base, plus soil to a depth of 1.0 ft vertically beneath, as well as 1.0 ft horizontally into each of the side-walls, for two, approximately 30 ft by 8 ft by 6 ft deep concrete pits in AOC #6 (staging in RCRA-compliant containers; however, assumes non-hazardous solid waste for transportation & disposal in a Subtitle D municipal landfill). Includes all other incidental work required for completion. Price is a lump sum.

Sub-Item # 4.4 – Removal & Disposal of Concrete Footings & Foundations: Includes removal, staging, transportation and disposal of all concrete footings & foundations exposed or encountered during work in AOCs #15, 4 & 6 (excludes pit bottoms & side-walls in AOC #6, and assumes non-hazardous solid waste for staging, transportation & disposal in a Subtitle D municipal landfill). Includes all other incidental work required for completion. Price is a lump sum.

Sub-Item # 4.5 – Flushing, Removal & Disposal of Drains, Sewers, Piping & Residues: Includes flushing, removal, staging, transportation and disposal of all floor drains, sewers, underground piping & associated residues and wastewater encountered and generated during work in AOCs #15, 4 & 6 (staging in RCRA-compliant containers; however, assumes non-hazardous wastewater & solid waste for transportation & treatment & disposal in a licensed wastewater treatment facility and Subtitle D municipal landfill, respectively). Includes all other incidental work required for completion. Price is a lump sum.

Sub-Item # 4.6 – Collection & Disposal of Personnel & Equipment Decontamination Residues: Includes collection, staging, transportation and disposal of all wastewater & other wastes & residues from personnel & equipment decontamination & other work associated with the Remedial Action (staging in RCRA-compliant containers; however, assumes non-hazardous wastewater & solid waste for transportation & treatment & disposal in a licensed wastewater treatment facility and Subtitle D municipal landfill, respectively). Includes all other incidental work required for completion. Price is a lump sum.

ii. Base Scope of Work, Item #5 – Backfill & Site Restoration

Sub-Item # 5.1 – Backfill Placement & Grading: Includes procurement, placement and grading of backfill of all excavation and removal areas in accordance with Volumes I & II of the Plans & Specifications. Includes all other incidental work required for completion. Price is a lump sum.

Sub-Item # 5.2 – Seeding & Final Cleaning: Includes placement and re-establishment of topsoil and vegetative cover over all excavation and removal areas in accordance with Volumes I & II of the Plans & Specifications. Includes all other incidental work required for completion. Price is a lump sum.

iii. Unit Pricing Schedule (Used in the Event of Authorized Scope Changes)

Sub-Item # UA.1 – Contingent Soil Removal & Disposal as Non-Hazardous Solid Waste: Includes excavation, staging, removal, transportation and disposal of additional soil beyond Initial Soil Removal work in AOCs #15, 4 and/or 6, if and as instructed by OWNER'S ENGINEER. Assumes non-hazardous solid waste for staging, transportation & disposal in a Subtitle D municipal landfill. Price is per cubic yard in-place volume as measured and determined by OWNER'S ENGINEER.

Sub-Item # UA.2 – Contingent Soil Management in RCRA-Compliant Containers: Includes incremental additional cost for onsite staging and management of any soil removed under Sub-Item UA.1, should OWNER'S ENGINEER direct CONTRACTOR to manage onsite in RCRA-compliant roll-off containers pending sampling by OWNER'S ENGINEER. Price is per cubic yard in-place volume as measured and determined by OWNER'S ENGINEER.

Sub-Item # UA.3 – Contingent Soil Transportation & Disposal as RCRA Hazardous Waste: Includes incremental additional cost for offsite transportation and treatment/disposal in a

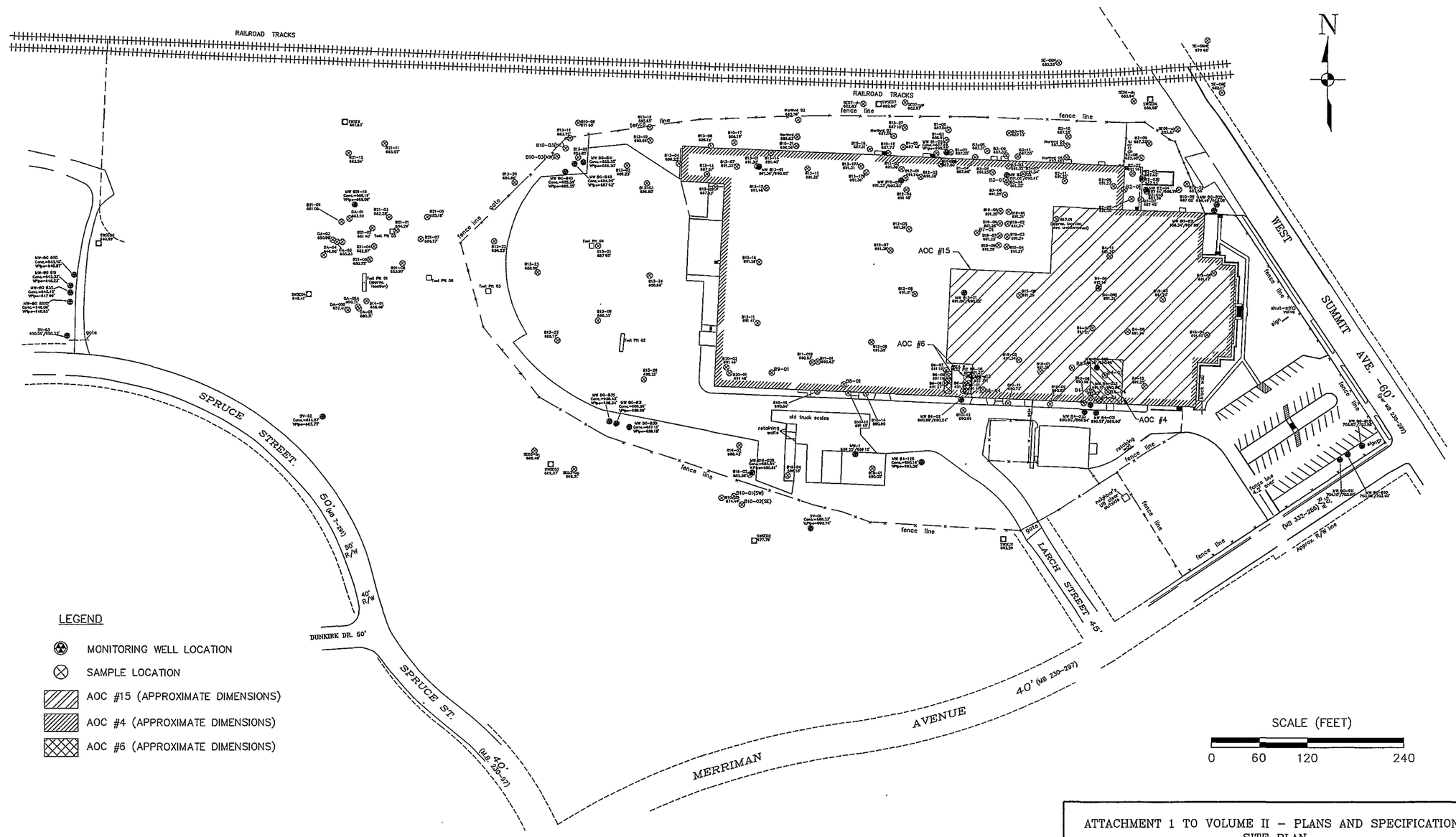
RCRA-permitted Subtitle C facility, of any soil removed under Sub-Item UA.1, should OWNER'S ENGINEER direct CONTRACTOR to manage as a RCRA hazardous waste. Price is per cubic yard in-place volume as measured and determined by OWNER'S ENGINEER.

Sub-Item # UB – Contingent Wastewater Transportation & Disposal as RCRA Hazardous Waste: Includes incremental additional cost for transportation and treatment in a RCRA-permitted Subtitle C facility, of any wastewater and/or residues described in Sub-Items 4.5 and 4.6, should OWNER'S ENGINEER direct CONTRACTOR to manage as a RCRA hazardous waste. Price is per gallon as measured and determined by OWNER'S ENGINEER.

Sub-Item # UC – Contingent Backfill Placement, Grading, Seeding & Final Cleaning: Includes incremental additional cost for procurement, placement and grading of any additional backfill for contingent soil removal work completed under Sub-Item UA.1. Also includes any additional placement and re-establishment of topsoil and vegetative cover for such areas, per Sub-Items 5.1 and 5.2.

– END OF SECTION –

Attachment 1 to Volume II Plans and Specifications:
Site Plan



LEGEND

- MONITORING WELL LOCATION
- SAMPLE LOCATION
- AOC #15 (APPROXIMATE DIMENSIONS)
- AOC #4 (APPROXIMATE DIMENSIONS)
- AOC #6 (APPROXIMATE DIMENSIONS)

KELLY-BUCK
COMPANY
Civil & Environmental Engineers
2130 Superior Ave., Suite 3-A
Cleveland, OH 44114
(216) 861-1716

ATTACHMENT 1 TO VOLUME II – PLANS AND SPECIFICATIONS
SITE PLAN

FORMER COPES-VULCAN FACILITY
STEP 1 – REMEDIAL ACTION
601 WEST SUMMIT AVENUE
CHARLOTTE, NC

COPYRIGHT - DATE 11/17/96 KELLY-BUCK COMPANY C:\MY DOCUMENTS\PROJECTS\2001\1313 REMEDIAL ACTION\ATTACHMENT 1 SITE PLAN

Attachment 2 to Volume II Plans and Specifications:
Health and Safety Plan

KELLY-BUCK
COMPANY

HEALTH AND SAFETY PLAN
REMEDIAL ACTION – STEP ONE
FORMER COPES-VULCAN FACILITY
601 WEST SUMMIT AVENUE
CHARLOTTE, NORTH CAROLINA

Prepared by:

KELLY-BUCK COMPANY
2130 SUPERIOR AVENUE, SUITE 3A
CLEVELAND, OHIO 44114
(216) 861-1716

KELLY-BUCK PROJECT NO. 2001.01.07.11

DECEMBER 2006

NOTICE: THIS HEALTH AND SAFETY PLAN HAS BEEN PREPARED FOR USE BY KELLY-BUCK PERSONNEL DURING STEP ONE REMEDIAL ACTION WORK AT THE COPES-VULCAN SITE. CONTRACTOR IS REQUIRED TO PREPARE AND FULLY IMPLEMENT ITS OWN HEALTH AND SAFETY PLAN WHICH, AT A MINIMUM, SHALL INCLUDE ALL OF THE REQUIREMENTS AND PROVISIONS DESCRIBED IN THIS DOCUMENT. IT IS THE SOLE RESPONSIBILITY OF CONTRACTOR TO PREPARE AND IMPLEMENT ITS OWN HEALTH AND SAFETY PLAN FOR THIS PROJECT.

SITE HEALTH AND SAFETY PLAN
ABSTRACT

Site Address:
601 West Summit Avenue
Charlotte, Mecklenburg County, North Carolina 28202

Project Manager:
Michael J. Lyden, P.E.
Kelly-Buck Company
2130 Superior Avenue, Suite 3A
Cleveland, OH 44114
(216) 861-1716 (office)
(216) 272-1345 (cellular)
(440) 835-2327 (home)

Site Safety & Health Officer:
Stanley W. King, E.I.
Kelly-Buck Company
2130 Superior Avenue, Suite 3A
Cleveland, OH 44114
(216) 861-1716 (office)
(419) 704-5519 (cellular)
(419) 704-5519 (home)

Emergency Contacts:

EMS & Fire:
Dial 911

Fire Station 2:
1817 South Boulevard
(704) 336-2580

Local Hospital:

Carolinas Medical Center (CMC)
1000 Blythe Boulevard
Charlotte, NC (See Figure 4 for map and directions)

Total Distance: 2.5 Miles
Total Estimated Time: 8 minutes

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1.0 INTRODUCTION

This Health and Safety Plan (HASP) has been developed to guide the health and safety practices of The Kelly-Buck Company (OWNER'S ENGINEER) personnel conducting field activities during the Remedial Action – Step One at the Copes-Vulcan site located in Charlotte, North Carolina. This HASP has been prepared in accordance with Occupational Safety and Health Administration (OSHA) Regulations, 29 CFR 1910.120 (Hazardous Waste Operations and Emergency Response).

The Step One Remedial Action is part of a voluntary remedial action program being implemented at the site by Electrolux Home Products, Inc. (OWNER), under the North Carolina Department of Environment and Natural Resources (NCDENR) Registered Environmental Consultant (REC) Program. The Remedial Action – Step One is designed to address contaminated soil and structural materials (i.e., flooring) in several Areas of Concern (AOCs) identified during the Remedial Investigation.

This HASP identifies potential hazards associated with the planned work and describes procedures and precautions to be followed in order to protect site workers, the surrounding public and the environment. The HASP may be updated during the progression of the work as deemed appropriate.

1.1 Site Description

The Copes-Vulcan site is located at 601 West Summit Avenue in the City of Charlotte, Mecklenburg County, North Carolina (Figure 1). The property measures approximately 19 acres, and is situated within a mixture of industrial, commercial and residential properties just southwest of the Charlotte Central Business District.

Site structures include a 185,000 square feet (sq ft) manufacturing and office building and two smaller utility buildings. Landscaped areas, paved driveways and parking lots surround the structures; the rest of the property is undeveloped, wooded land. The building is currently vacant.

To the north and east of the site are active railroad tracks, along with industrial facilities and commercial properties along West Summit Avenue. To the south and west of the site are residential properties and a small city park, followed by Interstate Route 77.

1.2 Site History

From the mid-1940's until the 1970's, the site was occupied by Whitin Machine Works, who manufactured textile machinery. From the late-1970s until the early-1990's, Copes-Vulcan, Inc. manufactured industrial valves, boiler cleaning equipment and electronic components at the site.

From 1992 until 2001, the property was owned by a private developer, who leased portions of the main building to commercial tenants. The property is currently vacant.

A Remedial Investigation was completed at the site in 2006, and identified Areas of Concern (AOCs) and associated soil and ground-water contamination. A Remedial Action Plan (RAP) and Remedial Design (RD – i.e., Volume II Plans & Specifications, Remedial Action – Step One) were subsequently prepared to detail the planned work.

1.3 Project Work Scope

The work scope for Step One of the Remedial Action is summarized as follows (see Remedial Action Plan and Volume II Plans & Specifications for additional details):

1. Removal of creosoted wood flooring system materials (wood and aggregate base materials) and underlying soil containing elevated polynuclear aromatic hydrocarbon (PAH) compounds from approximately 70,000 square feet (sq ft) of area inside the main building. This area is referred to as Area of Concern (AOC) #15.
2. Removal of wood flooring system materials and underlying soil impacted by tetrachloroethene (PCE) from a roughly 2,200 sq ft area in the building (AOC #4).
3. Removal of solid residues, concrete and underlying soil associated with two, approximately 8 ft by 30 ft by 6 ft deep pits inside the building (AOC #6).
4. Collection of confirmatory samples from excavation side walls and bottoms in the targeted removal areas, and surveying to determine removal quantities.
5. Collection of samples from containerized soil, water, solid wastes and other media for waste characterization.
6. Offsite transportation of soil and other materials to the appropriate facilities for treatment and/or disposal.

2.0 ORGANIZATIONAL STRUCTURE

2.1 Roles and Responsibilities

All personnel and visitors on this site must comply with the requirements of this HASP. The specific responsibilities and authority of management, safety and health, and other personnel on this site are detailed in the following paragraphs. A summary of current organizational assignments is shown below.

Table 1. Site Organizational Structure

Assignment	Name
Owner	Douglas E. Mix – Electrolux Home Products, Inc.
Owner's Representative	Douglas J. Ucci – Quantum Management Group, Inc.
Project Manager	Michael J. Lyden, P.E. – Kelly-Buck Company
Site Safety & Health Officer	Stanley W. King, E.I. – Kelly-Buck Company
Field Personnel	Michael J. Lyden, P.E. – Kelly-Buck Company Stanley W. King, E.I. – Kelly-Buck Company Sarah E. Ballog – Kelly-Buck Company Jennifer M. Zavoda, P.E. – Kelly-Buck Company Other field personnel (to be determined)
Outside Contractors	Surveyor Remediation Contractor Drilling Contractor (if applicable) Other contractors (to be determined)
Other Site Personnel & Visitors	Electrolux representatives; NCDENR representatives, others (to be determined)

Project Manager (PM)

The PM has responsibility and authority to direct all work operations. The PM coordinates safety and health functions with the Site Safety and Health Officer (SSHO), has the authority to oversee and monitor the performance of the SSHO, and bears ultimate responsibility for the proper implementation of this HASP. The specific duties of the PM are: preparing and coordinating the site work plan; providing site personnel with work assignments and overseeing their performance; coordinating safety and health efforts with the SSHO; ensuring effective emergency response actions (if applicable); serving as primary site liaison with public officials and site contractors.

Site Safety and Health Officer (SSHO)

The SSHO has full responsibility and authority to develop and implement this HASP and to verify compliance The SSHO reports to the Project Manager. The SSHO is on-site or readily accessible to the site during all work operations and has the authority to halt site work if unsafe conditions are detected. The specific responsibilities of the SSHO are: managing the safety and health functions on the site; serving as the site's point of contact for safety and health matters; ensuring site monitoring, worker training, medical surveillance, and effective selection and use of PPE; assessing site conditions for unsafe acts and conditions and providing corrective action; assisting the preparation and review of this HASP; maintaining effective safety and health records as described in this HASP; directing and controlling emergency response activities and personnel.

Other Site Personnel, Outside Contractors & Visitors

All site workers are responsible for complying with this HASP, using the proper PPE, reporting unsafe acts and conditions, and following the lines of authority established for the project.

3.0 SITE CHARACTERIZATION AND JOB HAZARD ANALYSIS

3.1 Site Characterization

Environmental assessments and remedial investigations have been completed at the site, and have provided information relative to environmental conditions and potential hazards. Petroleum and hazardous substances detected at the site are listed below.

Table 2. Identified Petroleum and Hazardous Substances

Substance	*Purpose*
Volatile organic compounds (VOCs), primarily tetrachloroethene (perchloroethylene, or PCE), trichloroethylene (TCE) and associated compounds	Vapor degreaser operations; metal cleaning and preparation
Semivolatile organic compounds (SVOCs), primarily polynuclear aromatic hydrocarbons (PAHs)	Coal tar creosote compounds used in wood flooring system; also lubricants, cutting oils and other metal processing residues
Polychlorinated biphenyls (PCBs)	Electrical equipment, along with additives or contaminants in other oils handled at facility
Acids, bases, chromium (hexavalent & trivalent forms), other metals in insoluble and soluble salt forms (cyanide compounds not identified but considered possible)	Electroplating; metal cleaning and preparation; painting
Petroleum lubricants; other oils & coolants	Machine lubricants; drawing fluids; cutting oils and coolants associated with metal machining; quench oil for heat treating

Information from the Remedial Investigation and other past work at the site is summarized as follows:

- Chlorinated volatile organic compounds (CVOCs), primarily tetrachloroethene (perchloroethene or PCE), trichloroethene (TCE), cis-1,2-dichloroethene (DCE) and vinyl chloride (VC) are present in soil and ground water in association with former solvent handling areas beneath the building (primarily AOCs #4 and #13), and handling/disposal areas to the west and north of the building (AOCs #13, #21 and #1). Maximum detected concentrations of CVOCs at the site are in the range of 2,500 parts per million (ppm) (i.e., shallow soil in AOC #21).

- Semivolatile organic compounds (SVOCs), primarily polynuclear aromatic hydrocarbon (PAH) compounds, are present in creosoted wood flooring, sub-flooring, granular base materials and underlying soil in approximately one-third of the main building (AOC #15). Maximum concentrations of PAHs and related SVOCs detected at the site are in the range of 8,000 ppm (i.e., creosoted cinder base material in AOC #15).

- Polychlorinated biphenyls (PCBs) are present in flooring materials and soil beneath portions of the building (primarily AOCs #2, #12, and #13, and to a limited extent, in residues contained in floor pits in AOC #6), and in soil to the north and west of the building. Maximum concentrations of PCBs detected at the site are in the range of 800 ppm (i.e., soil in AOC #12 and #13).

- Elevated chromium (total and hexavalent) is present in flooring, soil and ground water in the vicinity of a former electroplating operation in the northeast portion of the main building (AOC #3). Maximum concentrations of chromium detected at the site are in the range of 120,000 ppm (total chromium) and 200 ppm (hexavalent chromium), and involve soil in AOC #3.

- Elevated metals, including antimony (maximum 12 ppm), arsenic (maximum 75 ppm), barium (maximum 2,600 ppm), cadmium (maximum 34 ppm), copper (maximum 1,800 ppm), lead (maximum 2,500 ppm), manganese (maximum 3,400), mercury (maximum 27 ppm), nickel (maximum 7,600 ppm) and thallium (maximum 15 ppm) – mostly detected in small quantities of sludges or residues in pits, and sporadically in site soil.

Areas of concern are shown on Figure 2.

3.2 Job Hazard Analysis

Table 6 summarizes health hazard information for the chemical substances known or suspected to be present at the site. Table 7 contains the job hazard analysis, recommended control measures and protective equipment for the planned work activities, subdivided by task or operation.

Tables 6 and 7 will be modified as necessary during the project; for example, if the scope of work is changed by adding, eliminating, or modifying tasks; new chemical, physical or other hazards are identified; or monitoring data indicate changes in the concentration and/or likelihood of exposure.

3.3 Employee Notification of Hazards and Overall Site Information Program

The information in this HASP is made available to all affected employees prior to beginning intrusive work activities. Modifications to the HASP are communicated during routine briefings.

4.0 SITE CONTROL MEASURES

This site control program is designed to reduce the spread of hazardous substances from contaminated areas to clean areas, to identify and isolate contaminated areas of the site, to facilitate emergency evacuation and medical care, to prevent unauthorized entry to the site, and to deter vandalism and theft.

The site control program includes the elements specified in 29 CFR 1910.120(d) and provides the following site-specific information:

- a site map, indicating site perimeter and work zones
- site access procedures
- site security
- site work zones including standard operating procedures
- use of the buddy system, where appropriate
- both internal (on-site) and external communications

The Site Safety & Health Officer is responsible for evaluating site conditions and for verifying that the site control program functions effectively. The site control program is updated regularly to reflect current site conditions, work operations, and procedures.

4.1 Site Map

A map of the site showing site boundaries, site entry and exit points, and planned work areas is provided as Figure 2.

4.2 Site Access, Safety & Security

Access to designated work zones is restricted to reduce the potential for exposure to safety and health hazards. Entry and exit to designated work zones is monitored by the Site Safety & Health Officer.

When the site is not operating, access is controlled by locking of all gates at site entry points.

Each contractor shall provide to the SSHO a list of employees that will be onsite each day. The list shall be updated as required. Employees who leave the site for any reason shall notify the SSHO prior to departure and shall notify the SSHO immediately when upon arrival back onsite. This will allow the SSHO to maintain an accurate list of personnel that are onsite at all times.

Visitors to the site must register with the SSHO and are escorted at all times when entering controlled work areas. Visitors are expected to comply with the requirements of this HASP. Visitors who wish to enter contaminated areas of the site must provide documentation that they have the required training and medical evaluation and must receive a site-specific briefing about

protecting themselves from site hazards, recognizing site zone demarcations, and following emergency evacuation procedures prior to entry.

A speed limit of 10 miles-per-hour (mph) has been established for all vehicles on the property.

4.3 Site Work Zones

This site shall be divided into three work zones, as follows:

- Exclusion Zone: areas known to be contaminated, or having the potential for contaminant exposure during the work activity.
- Contamination Reduction Zone: the area between the Exclusion Zone and the Support Zone, where personnel and equipment will be decontaminated.
- The Support Zone: the site areas which are not contaminated, or not subject to contaminant exposure during the work activity.

Exclusion Zone

During RA activities, an Exclusion Zone will be formally defined for activities and work areas where there is a significant chance for exposure to hazards (e.g., excavation). In those instances, the perimeter of the Exclusion Zone will extend approximately 25 feet from the location of the work activity, adjusted as necessary to guard surrounding personnel and/or accommodate site constraints. Where the work area is confined to a particular location for an extended period of time, the perimeter of the Exclusion Zone will be marked with hazard tape, cones, or similar markers. All personnel entering these areas must wear the prescribed level of personal protective equipment.

For relatively non-intrusive RI activities, such as sampling of ground water, surface water or soil, a formal Exclusion Zone will not be delineated, due to the limited likelihood of exposure to personnel other than those doing the actual work.

Contamination Reduction Zone

The Contamination Reduction Zone is located between the Exclusion Zone and the Support Zone, for decontamination of workers and equipment. The Contamination Reduction Zone also serves as a buffer between the Exclusion Zone and Support Zone, to limit the potential for spread of contamination.

When establishing the Contamination Reduction Zone, consider factors such as air flow from the Exclusion Zone toward the Support Zone, work site configurations, traffic patterns, and other activities or processes that could result in the transfer of contaminants. The Contamination Reduction Zone boundaries should be clearly marked (e.g., lines, placards, hazard tape and/or signs) and/or enclosed by physical barriers, such as chains, barricades or ropes.

Support Zone

The Support Zone encompasses all clean or unaffected areas beyond the outer boundary of the Exclusion Zone and Contamination Reduction Zone. There should be no contamination in this zone. Administrative, clerical and other support functions are based in the Support Zone.

4.4 Site Communications

Cellular phone service shall be provided at each work area where there is likelihood of exposure to chemical or physical hazards (e.g., excavation). A current list of emergency contact numbers is posted in the Field Office.

4.5 Sanitation

Potable water shall be made available at all times for worker consumption (drinking water), general washing and clean-up. Adequate toilet facilities shall be made available on-site if existing facilities are not present.

4.6 Illumination

Artificial illumination shall be provided as required to adequately illuminate work areas while remedial activities are in progress. Minimum illumination intensities shall conform to those listed in 29 CFR 1910.120, paragraph (m).

5.0 MEDICAL MONITORING AND TRAINING REQUIREMENTS

5.1 Medical Monitoring

All personnel performing intrusive activities on this site must be active participants in a Medical Monitoring Program which complies with 29 CFR 1910.120. Each individual must have completed an annual surveillance examination and/or an initial baseline examination within the last year prior to performing any intrusive work on this site covered by this HASP.

Should respirator use be required, affected workers are required to have received medical examinations in accordance with 29 CFR 1910.134(e) to ensure they are physically capable of performing the work and using the equipment.

5.2 Training Requirements

All personnel covered by this HASP must have completed the appropriate training requirements as specified in 29 CFR 1910.120 (Hazardous Waste Operations and Emergency Response [HAZWOPER]). General site workers (e.g., equipment operators, general laborers, supervisory

personnel, etc.) engaged in activities which expose or may expose the workers to hazardous substances or health hazards shall receive, at a minimum, 40 hours of offsite training within the last year to perform work on the site covered by this HASP. On-site managers and supervisors directly responsible for supervising individuals engaged in hazardous waste operations must have completed the specified 8-hour supervisory training course. Occasional site workers, who are assumed to be onsite for a specific limited task (e.g., land surveying, etc.) and are unlikely to be exposed to hazardous substances over permissible exposure limits shall receive, at a minimum, 24 hours of offsite training within the last year. The annual, 8-hour refresher training course shall be completed for general and occasional site workers, as required.

Documentation that training requirements have been fulfilled shall be provided to the SSHO for each employee intended to work onsite. A copy of the training completion certificate which includes the name of the employee, title of the training course and date(s) of training is sufficient.

A site safety meeting will be held at the beginning of the project to discuss pertinent health and safety issues. Additional site safety meetings/briefings will be held as needed or if changes in site conditions or project scope occur.

6.0 INDUSTRIAL HYGEINE PROGRAM

Air monitoring shall be used to identify and quantify airborne levels of hazardous substances in order to examine, reduce and prevent the migration of contaminants into the environment and surrounding community and to determine the appropriate level of employee protection needed on-site during RA activities.

All air monitoring data shall be recorded on appropriate field logs and sampling results shall be provided to the SSHO on a daily basis. If the sampling instrument has data-logging capabilities, the data shall be downloaded to a computer on a daily basis and transmitted to the SSHO. Air monitoring instruments shall be calibrated and maintained in accordance with the manufacturer's specifications.

Wipe samples shall be collected to evaluate the effectiveness and adequacy of personal protective equipment. Collection of wipe samples is discussed in Section 6.4.

6.1 Ambient Air Sampling

Air monitoring shall be performed prior to beginning intrusive RA site activities, such as soil excavation and other remediation work. Additional measurements may be needed over a period of time to establish background conditions.

Fence Line or Property Line Sampling Locations

Air sampling shall be conducted at the site fence line to evaluate the potential for contaminant migration during intrusive site activities. If work is conducted outside the fence, sampling points shall be established along the site property line, as appropriate.

One air sampling point shall be located along the southern fence line (i.e., between the work area and the residential neighborhood to the south-southwest of the site) in close proximity to the work area at all times during remediation work to monitor the potential for contaminant migration towards residential areas. One additional sampling point shall be located downwind of the work area, and shall be relocated as necessary to adjust for changing wind patterns. If the downwind sampling location is towards the southern fence line, then two sampling points shall be placed in that direction. A wind sock or other wind direction indicator shall be installed at the site prior to the start of remediation work to assist in the determination of the downwind direction. A third sampling point shall be established in order to monitor background concentrations. Specific monitoring requirements for fence line and property line locations are described elsewhere in this HASP.

Personnel Sampling

Worker exposure sampling shall be conducted during intrusive activities and parameters shall be selected based on the adjacent area(s) of concern. Sampling methods shall provide instantaneous results whenever possible. If sampling results indicate workers are exposed to contaminants above regulatory limits, work shall cease, workers shall exit the area immediately and contact the SSHO. Existing engineering control measures shall be modified or additional engineering control measures shall be installed, to reduce concentrations to acceptable levels. If concentrations cannot be reduced to acceptable levels using engineering controls, appropriate personal protective equipment (PPE), as discussed in Section 7.0, shall be used. Subsequent air sampling shall be conducted to verify control measure effectiveness.

6.2 Specific Sampling Requirements for Areas of Concern

The following specific sampling requirements shall be implemented during intrusive work activities in the respective areas of concern. The SSHO reserves the right to revise these requirements as needed, depending upon sampling data, site conditions, work scope, or other information. The following discussion is not intended to be a comprehensive list of requirements for RA activities and will be updated as necessary.

Concentration limits for chemicals of concern, requirements for exceeding the limits and minimum sampling frequencies have been summarized in Table 3 for fence line and property line sampling. The discussion of personnel sampling requirements, exposure limits and personal protective equipment (PPE) requirements has been summarized in Table 4.

Should results of fence line monitoring indicated that contaminant concentrations are sustained at one-half of the respective limit, additional engineering controls, alternate work methods and/or additional suppression techniques shall be implemented.

Personnel sampling shall occur immediately prior to Exclusion Zone entry and repeated as needed to ensure worker health and safety. Sampling shall be repeated should changes in work activities occur that could potentially alter exposure conditions.

All Work Areas

Fence line sampling for particulate matter shall be conducted continuously during intrusive site work activities. The particulate monitor shall be fitted with appropriate filters so as to sample only for PM-10 (particulate matter less than 10 micrometers in diameter). In addition, the monitor shall be configured to the following specifications: (1) an averaging time of ten (10) seconds shall be used, meaning the instrument will display an average particulate concentration over a fifteen second period, and (2) a data-logging interval of ten (10) seconds shall be used to record the particulate concentration. See Section 6.4 for suggested sampling instruments. In addition to the continuous fence line monitoring, a minimum of one air sample per week shall be collected and submitted for laboratory gravimetric analysis of PM-10.

Table 3 includes PM-10 concentration limits and the required actions due to exceeding the limits. At any time, if visible dust or particulates are observed migrating from the work area, existing suppression methods shall be modified or additional methods shall be implemented immediately. Visible dust or particulates shall not be permitted to be generated in a work area or to migrate from that work area.

In the Exclusion Zone, air monitoring for particulates not otherwise regulated (PNOR) must be conducted continuously when workers are present. See Table 4 for exposure limits and PPE requirements.

AOC #4 – Southeast Degreaser Area

Monitoring for volatile organic compounds (VOCs) shall be conducted at the property fence line during intrusive work activities in AOC #4. This shall include at least hourly measurements with a direct-reading instrument plus a minimum of two samples per week shall be collected for laboratory analysis of tetrachloroethylene (PCE). Acceptable direct-reading instruments include a photoionization detector (PID) using appropriate correction factors or a colormetric indicator tube. A sorbent tube with sampling pump or Summa® canister can be used to collect fence line air samples for VOC laboratory analysis. If a Summa® canister is used for sample collection, the canister shall be configured such that an air sample is collected over an eight-hour period. All sampling methods shall be conducted in accordance with standardized procedures as dictated by a certified laboratory. Additional samples shall be collected at the discretion of the SSHO. Fence line sampling requirements found under AOC #15 shall be implemented concurrently with

those listed here, since AOC #4 is within the limits of AOC #15. Table 3 includes fence line concentration limits, required actions due to exceeding the limits, and sampling frequency requirements.

Personnel monitoring in the Exclusion Zone shall include sampling for airborne concentrations of PCE, naphthalene and coal tar pitch volatiles (CTPV, a sub-set of semi-volatile organic compounds (SVOCs)). Since AOC #4 is located within the limits of AOC #15, personnel exposure to naphthalene and CTPV must also be evaluated. Monitoring for PCE and/or naphthalene can be conducted with a PID using instrument specific correction factors. Colormetric indicator tubes can be used to estimate airborne concentrations of PCE. In addition, a minimum of one personnel sample per day shall be collected using an appropriate sorbent tube or other media and sampling pump and submitted for laboratory analysis of PCE, naphthalene and CTPV. All sampling methods shall be conducted in accordance with standardized procedures as dictated by a certified laboratory.

A total particulate matter (as opposed to PM-10) action level of 1 mg/m^3 and an exposure limit of 5 mg/m^3 (above background) shall be enforced for activities conducted specifically in AOC #4. Any dust generated during intrusive work is assumed to be contaminated with SVOCs, since AOC #4 is surrounded by AOC #15. If particulate monitoring indicates concentrations exceed 1 mg/m^3, dust suppression methods shall be modified or other engineering controls installed. If particulate monitoring indicates sustained concentrations exceed 5 mg/m^3, workers shall exit the area immediately, suppression methods modified and/or and Level C PPE with appropriate particulate cartridge shall be issued.

Table 4 includes occupational exposure limits and PPE requirements if the limits are exceeded.

AOC #6 – South-Central Degreaser

Monitoring for VOCs shall be conducted at the property fence line during intrusive work activities in AOC #6. If work in AOC #15 is conducted concurrently with work in AOC #6, then fence line sampling shall include naphthalene and CTPV. This shall include at least hourly measurements with a direct-reading instrument plus a minimum of two samples per week shall be collected for laboratory analysis of PCE, trichloroethylene (TCE) and naphthalene. Acceptable direct-reading instruments include a PID using appropriate correction factors (for PCE, TCE and naphthalene) or a colormetric indicator tube (for PCE and TCE only). A sorbent tube with sampling pump or Summa® canister can be used to collect fence line air samples for VOC analysis. If a Summa® canister is used for sample collection, the canister shall be configured such that an air sample is collected over an eight-hour period. Appropriate sampling media and pump shall be used to collect CTPV samples. All sampling methods shall be conducted in accordance with standardized procedures as dictated by a certified laboratory. Additional samples shall be collected at the discretion of the SSHO. Table 3 includes fence line concentration limits, required actions due to exceeding the limits, and sampling frequency requirements.

Personnel monitoring in the Exclusion Zone shall include sampling for airborne concentrations of PCE and TCE. If work in AOC #15 is conducted concurrently with work in AOC #6, then personnel sampling shall include naphthalene and CTPV. Monitoring for PCE, TCE, and/or naphthalene can be conducted with a PID using instrument specific correction factors. Colormetric indicator tubes can be used to estimate air borne concentrations of PCE and TCE. In addition, a minimum of one personnel sample per day shall be collected using an appropriate sorbent tube or other media and sampling pump and submitted for laboratory analysis of PCE, TCE, naphthalene (if applicable) and CTPV (if applicable). All sampling methods shall be conducted in accordance with standardized procedures as dictated by a laboratory.

Wipe samples shall be collected to determine effectiveness of PPE against personnel exposure to polychlorinated biphenyls (PCBs). See Section 6.6.

A total particulate matter (as opposed to PM-10) action level of 1 mg/m^3 and an exposure limit of 5 mg/m^3 (above background) shall be enforced for activities conducted specifically in AOC #6. Any dust generated during intrusive work is assumed to be contaminated with VOCs, PCBs, SVOCs and/or metals. If particulate monitoring indicates concentrations exceed 1 mg/m^3, dust suppression methods shall be modified or other engineering controls installed. If particulate monitoring indicates sustained concentrations exceed 5 mg/m^3, workers shall exit the area immediately, suppression methods modified and/or Level C PPE with appropriate particulate cartridge shall be issued.

Table 4 includes occupational exposure limits and PPE requirements if the limits are exceeded.

AOC #15 – Wood Floor

Monitoring for naphthalene and CTPV shall be conducted at the property fence line during intrusive work activities in AOC #15. For naphthalene, this shall include at least hourly measurements with a direct-reading instrument plus a minimum of two samples per week for laboratory analysis. Acceptable direct-reading instruments include a PID using appropriate correction factors. A minimum of two CTPV samples per week shall be submitted for analysis and sampling methods shall follow those specified by the laboratory. Additional samples shall be collected at the discretion of the SSHO. Table 3 includes fence line concentration limits, required actions due to exceeding the limits, and sampling frequency requirements.

Personnel monitoring in the Exclusion Zone shall include sampling for airborne concentrations of naphthalene and CTPV. Monitoring for naphthalene can be conducted with a PID using instrument specific correction factors. A minimum of one personnel sample per day shall be collected using an appropriate sorbent tube or other media and sampling pump and submitted for laboratory analysis of naphthalene and CTPV. All sampling methods shall be conducted in accordance with standardized procedures as dictated by a laboratory.

A total particulate matter (as opposed to PM-10) action level of 1 mg/m^3 and an exposure limit of 5 mg/m^3 (above background) shall be enforced for activities conducted specifically in AOC #15. Any dust generated during the floor and sub-base material removal activities is assumed to be contaminated with CTPV (i.e., SVOCs). If particulate monitoring indicates concentrations exceed 1 mg/m^3, dust suppression methods shall be modified or other engineering controls implemented. If particulate monitoring indicates sustained concentrations exceed 5 mg/m^3, workers shall exit the area immediately, suppression methods modified and/or Level C PPE with appropriate particulate cartridges shall be implemented.

Table 4 includes occupational exposure limits and PPE requirements if the limits are exceeded.

Table 3. Summary of Fence Line/Property Line Concentrations and Sampling Frequencies

Area(s) of Concern	Chemical Of Concern	Concentration Limit:	Response to Exceeding the Limit:	Minimum Sampling Frequencies[1]:
Back-ground	**PM-10**	n/a	n/a	Continuous
Back-ground	**VOCs, CTPV, etc.**	n/a	n/a	At discretion of SSHO
All Areas	**PM-10,** particulate matter less than 10 micrometers in diameter (Fence-line Sampling)	24-hour average = 150 µg/m^3 (see note 2) 15-minute average = 1 mg/m^3 (see note 2)	At one-half of concentration limit, modify suppression measures; If exceeded, cease all work operations immediately and modify suppression measures	Continuous at stationary locations; One per week to lab for gravimetric analysis
#4, #6	**Tetrachloroethylene (PCE)**	8-hour average = 10 ppm^3 15-minute average = 20 ppm^3	At one-half of concentration limit, modify suppression measures; If exceeded, cease all work operations immediately and modify suppression measures	Once per hour with PID or colormetric indicator tubes; Two samples per work week for laboratory analysis
#6	**Trichloroethylene (TCE)**	8-hour average = 10 ppm^3 15-minute average = 20 ppm^3	At one-half of concentration limit, modify suppression measures; If exceeded, cease all work operations immediately and modify suppression measures	Once per hour with PID or colormetric indicator tubes; Two samples per work week for laboratory analysis

Area(s) of Concern	Chemical Of Concern	Concentration Limit:	Response to Exceeding the Limit:	Minimum Sampling Frequencies[1]:
#6	**Polychlorinated Biphenyls (PCBs)**	See PM-10 sampling requirements	-	-
#6	**Various Metals**	See PM-10 sampling requirements	-	-
#15	**Coal Tar Pitch Volatiles**, a subset of SVOCs (chrysene, benzo(a)pyrene, pyrene, phenanthrene, anthracene, & acridine)	See PM-10 sampling requirements	See PM-10 sampling requirements	Two samples per work week for laboratory analysis
#15	**Naphthalene**	8-hour average = 0.020 ppm[4] 15-minute average = 1.5 ppm[5]	At one-half of concentration limit, modify suppression measures; If exceeded, cease all work operations immediately and modify suppression measures	Once per hour with PID (Colormetric indicator tubes not permitted); Two samples per work week for laboratory analysis

1 – Minimum sampling frequencies during all intrusive work activities; additional sampling may be required at the discretion of the SSHO.

2 – The 24-hour and 15 minute average particulate concentrations were adapted from the document entitled *Heath-based Guidelines for Air Management, Public Participation, and Risk Communication During the Excavation of Former Manufactured Gas Plants*, as published by the Wisconsin Bureau of Environmental and Occupational Health (WBEOH), Department of Health and Family Services. These values were developed to protect the surrounding community during excavation of soil contaminated with poly-nuclear aromatic hydrocarbons, similar to what was observed in AOC #15. In addition, the 24-hour average of 150 $\mu g/m^3$ is the National Ambient Air Quality Standard (NAAQS) for PM-10.

3 – The limits imposed for PCE and TCE were derived using a ten-fold reduction from the published OSHA PEL and ceiling (or short-term) exposure limits for an occupational setting. Since OSHA values are used to protect the safety of *healthy* workers, these values cannot be directly applied to protect the safety of the general public. As such, fence line concentrations were calculated as one-tenth of the respective limit, to allow an adequate margin of safety for exposure to the general public.

4 – The naphthalene 8-hour average fence line concentration was adapted from the WBEOH publication entitled *Heath-based Guidelines for Air Management, Public Participation, and Risk Communication During the Excavation of Former Manufactured Gas Plants*. The value is a Department of Health and Family Services derived 14 day acute exposure limit.

5 – The limits imposed for naphthalene was derived using a ten-fold reduction from the National Institute of Occupational Safety and Health (NIOSH) short-term exposure limit (STEL) for an occupational setting. Since NIOSH values, similar to OSHA values, are used to protect the safety of *healthy* workers, these values cannot be directly employed to protect the safety of the general public. As such, the 15-minute fence line concentration was calculated as one-tenth of the STEL, to allow an adequate margin of safety for exposure to the general public.

Table 4. Summary of Worker Exposure Limits and PPE Requirements

Area(s) of Concern	Chemical Of Concern	Exposure Limit	If monitoring results exceed:	Minimum PPE Level Required[1,2]:
All Areas	**Particulates Not Otherwise Regulated**	PEL = 15 mg/m^3 (total) PEL = 5 mg/m^3 (respirable)	Respective PEL	Level C with appropriate particulate cartridges
#4, #6, #15	**Particulate Matter (total)** *Specific Only to AOC #4, #6 and #15*	Action Level = 1 mg/m^3 Exposure Limit = 5 mg/m^3 *Specific Only to AOC #4, #6 and #15*	Action Level	Adjust suppression measures
			Exposure Limit	Level C with appropriate particulate cartridges
#4, #6	**Tetrachloroethylene (PCE)**	PEL = 100 ppm Ceiling = 200 ppm 5 min/three hrs = 300 ppm IDLH = 150 ppm (Ca)	PEL	Level C with organic vapor cartridges
#6	**Trichloroethylene (TCE)**	PEL = 100 ppm Ceiling = 200 ppm 5 min/two hrs = 300 ppm IDLH = 1,000 ppm (Ca)	PEL	Level C with organic vapor cartridges
#6	**Polychlorinated Biphenyls (PCBs)**	PEL for 54% Cl = 0.5 mg/m^3 (Skin) REL = 0.001 mg/m^3 IDLH = 5 mg/m^3 (Ca)	Any work area with PCB contamination present	Modified Level D - Absolute minimum
#6	**Various Metals**	Varies	Any work area with contaminant present	Modified Level D - Absolute minimum
#15	**Coal Tar Pitch Volatiles** (chrysene, benzo(a)pyrene, pyrene, phenanthrene, anthracene, & acridine)	PEL = 0.2 mg/m^3 REL = 0.1 mg/m^3 IDLH = 80 mg/m^3 (Ca)	See AOC #15 Particulate Matter Requirements	Level C with organic vapor & appropriate particulate cartridges
#15	**Naphthalene**	PEL = 10 ppm (50 mg/m^3) REL = 10 ppm (50 mg/m^3) STEL = 15 ppm (75mg/m^3) IDLH = 250 ppm	PEL	Level C with organic vapor & appropriate particulate cartridges

1 – See Section 7.0 for a description of PPE levels
2 – Before PPE is used, engineering controls shall first be modified or installed to reduce concentrations. If controls are not successful, then proper PPE shall be used.
PEL – Permissible Exposure Limit, OSHA 8-hour workday, 40 hour work week time-weighted average exposure limit
REL – Recommended Exposure Limit, NIOSH 10-hour workday, 40 hour work week, time-weighted average exposure limit
IDLH – Immediately Dangerous to Life or Health, concentration at which an exposure will cause severe injury or death
Ca – Indicates chemical is a confirmed or potential occupational carcinogen

Skin – Indicates chemical presents an exposure hazard through skin absorption
STEL – Short Term Exposure Limit, concentration at which an employee will not be exposed for more than 15 minutes
Ceiling – maximum concentration for employee exposure – not to be exceeded at any time; if instantaneous sampling is not feasible, sampling shall be conducted as a 15 minute time weighted average which shall not be exceeded
Cl – indicates percent weight of chlorine for PCB compound, Aroclor 1242, etc.
Table 4 will be updated and/or revised as necessary

6.3 Nuisance Odor Management

The offsite migration of nuisance odors shall not occur during intrusive work activities. This is especially important for work involving removal and handling of the creosoted flooring system in AOC #15, as this area contains chemicals with relatively low odor thresholds. If nuisance odors appear to be a concern (i.e., strong odors observed by personnel within the Exclusion Zone with likelihood of offsite migration), assessment of odors at the fence line shall be evaluated once per hour. A person shall physically walk the downwind fence line to determine if odors are migrating offsite from the work zone. Should nuisance odors be observed migrating offsite, additional suppression measures, such as surfactants or foaming agents, shall be required.

6.4 Sampling Methods and Instruments

One individual sampling method may not provide the level of results and accuracy needed to ensure the safety of the workers and surrounding community. Typically, more than one technique may be required to fully evaluate airborne contaminant concentrations. The following discussion is intended to review some typical instruments and equipment that may be used for air sampling purposes and does not promote any instrument, technology, manufacturer or company.

Use of sampling instruments and equipment, including calibration techniques, shall conform to the manufacturer's recommendations and requirements. Sampling methods shall conform to established and accepted methods.

On-site Analysis and Detection

Sampling for VOCs shall be conducted using one or more (as appropriate) of the following methods:

- A photo-ionization detector (PID) shall have data logging capabilities, alarm settings, and quick response times, such as the MiniRAE 2000 manufactured by Rae Systems, Inc. or other similar instrument. PIDs typically read total VOCs present in an air sample, but proper use of ***instrument specific*** correction factors shall be used to estimate concentrations of individual compounds. It is important to note that compounds of interest and associated correction factors must be known prior to sampling. In addition, the correction factor should be keyed into the instrument prior to use to prevent the need for on-site calculations.

- Colormetric indicator tubes, such as The Draeger-Tube System® manufactured by Draeger Safety, Inc., or other similar technology, shall be used to provide near-instant concentrations of individual VOCs. Since each tube is chemical specific, contaminants must be known prior to analysis. Proper pump cycles and techniques shall be used to ensure accurate sampling.

- Diffusion indicator tubes, such as Draeger Diffusion Tubes manufactured by Draeger Safety, Inc., or other similar technology, provide a simple means of evaluating time-weighted average exposures to VOCs without the use of pumps and laboratory analysis.

Sampling for SVOCs (for naphthalene only) shall be conducted using the following method:

- A photo-ionization detector (PID) shall have data logging capabilities, alarm settings, and quick response times, such as the MiniRAE 2000 manufactured by Rae Systems, Inc or other similar instrument. A PID typically does not read airborne concentrations of SVOCs, however, naphthalene is one compound which can be detected. Proper use of ***instrument specific*** correction factors shall be used to estimate concentrations of naphthalene in Area of Concern #15 **only**. The correction factor should be keyed into the instrument to prevent the need for on-site calculations.

Sampling for airborne concentrations of particulate matter shall be conducted at the fence-line and/or property line for offsite migration and for employee exposure in the work zone.

- The fence line/property line particulate sampling device shall provide real-time data, have data-logging capabilities, and have an in-line sampling cassette to collect particulates for subsequent laboratory analysis. A suggested instrument is the Casella USA Microdust Pro with environmental enclosure, as manufactured by Casella USA.

- Employee exposure particulate sampling devices shall provide the same properties as above. A suggested instrument is the Haz-Dust IV, manufactured by SKC, Inc.

- Whenever feasible, a sample for laboratory analysis (gravimetric and/or chemical) should be collected concurrently with the sampling device. Parameters for chemical analysis shall be selected based on proximity to areas of concern.

Laboratory analyses

Sampling ambient air using an air pump and collection device (e.g., sorbent tuber, filter cassette, Summa® canister, etc.) according to established methods with subsequent laboratory analysis is another method to evaluate worker exposure to contaminants. This sampling method is suggested to supplement and support on-site sampling methods which provide immediate results.

6.5 PID Use to Evaluate VOC Exposure

A method to evaluate airborne concentrations of VOCs is to use a PID and measure the total concentration of compounds present, disregarding any specific correction factors as previously discussed. Since this method cannot differentiate individual chemicals, conservative action levels have been established when using this technique. The action levels provided refer to sustained concentrations above background in breathing zone air. A sustained concentration is defined as a consistent reading for one minute or more. These are listed in Table 5 below.

Table 5. PID Action Levels

PID reading (sustained concentration in breathing zone above background, in ppm)	Action
0-5	Continue work in level D. Implement engineering controls where possible.
5-25	Discontinue work, monitor breathing zone to assess whether VOC concentrations stabilize below 5 ppm within 15 minutes; if so, resume operations in Level D and continue to monitor; if not, withdraw from area and contact Site Safety & Health Officer.
>25	Discontinue work, withdraw from work area, and monitor breathing zone to assess whether VOC concentrations stabilize below 25 ppm within 15 minutes; if so, resume operations in appropriate level of personal protection and continue to monitor; if not, withdraw from area and contact Project Manager/Site Safety & Health Officer.

6.6 PPE Effectiveness and Evaluation

In order to evaluate the effectiveness of PPE to prevent worker exposure to hazardous substances, two main methods shall be utilized. First, potentially affected workers will be monitored for signs of exposure, such as headaches, dizziness, etc. If these symptoms are observed, the emergency response plan, as detailed in Section 9.0, shall be implemented. Changes to work practices and/or PPE requirements will be made accordingly. In addition, collection of wipe samples may be required to determine PPE effectiveness.

Wipe samples shall be analyzed onsite using specified methods whenever feasible. One method to test wipe samples for PCBs is the EnSys PCB Wipe Test System as manufactured by Standard Diagnostics, Inc. SKC, Inc. supplies wipe sampling media for onsite detection of various metals.

If an onsite analytical technique is not available, wipe samples shall be submitted for laboratory analysis.

Sample collection shall be performed according to established methods.

Wipe Sampling – Personnel

Wipe samples shall be collected from personnel that directly enter the Exclusion Zone when contaminants and/or work activities present a skin absorption safety and health issue and if one or more of the following situations occur: (1) the misuse of PPE has occurred; (2) inappropriate PPE was used; (3) PPE breakthrough was observed; or (4) workers exhibit symptoms of chemical exposure. Wipe sample locations include the inner portion of gloves and protective coveralls, portions of worker's skin (e.g., hands to forearms, etc.) and other locations as deemed appropriate by the SSHO. When wipe sampling is required, at least one wipe sample per day shall be collected and analyzed. Additional wipe samples shall be collected at the discretion of the SSHO. Samples shall be collected during the decontamination process in the Contamination Reduction Zone.

AOC #4 – Southeast Degreaser Area

Wipe samples from workers in AOC #4 are not anticipated to be required.

AOC #6 – South-Central Degreaser

Wipe samples collected from workers in AOC #6 shall be analyzed for PCBs and various metals.

AOC #15 – Wood Floor

Wipe samples from workers in AOC #15 are not anticipated to be required.

7.0 PERSONAL PROTECTIVE EQUIPMENT

This section describes the selection and use of personal protective equipment (PPE) which may be required to protect workers from exposure to hazardous substances and hazardous conditions on the site.

All PPE shall comply with the minimum requirements included in this section.

7.1 Levels of PPE and Selection Criteria

Site safety and health hazards are eliminated or reduced to the greatest extent possible through the use of engineering controls and work practices. Where hazards are still present, a

combination of engineering controls, work practices, and PPE are used to protect employees. An initial level of PPE (i.e., Levels A through D) is assigned to each task, based on the anticipated concentrations and exposure routes of chemical hazards associated with the task. Modifications to the initial PPE (upgrades, downgrades) are made, as necessary, based on chemical data, air monitoring results and other information gathered during the project.

This section describes the PPE that will be used during activities at the site, when engineering controls and work practices are not feasible to reduce employee exposure.

Level D

- Safety glasses (goggles or face shield if splash hazard is present)
- Chemical resistant boots/shoes (steel-toed and steel shank if heavy objects & equipment are present)
- Hard hat (if work involves heavy equipment, overhead lifting, potentially falling objects or head-bump hazards, and/or at discretion of SSHO)
- Latex or nitrile surgical gloves (if work involves activities where skin may contact contaminated materials and/or at discretion of SSHO)
- Rubber overboots or disposal "booties" (at discretion of SSHO)
- Cotton shirt and pants (long-sleeve shirts and/or coveralls)

Criteria for Use

- No indication of airborne health hazards present
- Sampling indicates exposure level below established levels and/or total vapor levels less than 1 ppm above background with photoionization detector
- No indication of dermal contact hazards present

Modified Level D

- Safety glasses (goggles or face shield if splash hazard is present)
- Chemical resistant boots/shoes (steel-toed and steel shank if heavy objects & equipment are present)
- Hard hat (if work involves heavy equipment, overhead lifting, potentially falling objects or head-bump hazards, and/or at discretion of SSHO)
- Gloves – outer, chemical resistant
- Gloves – inner, chemical resistant
- Rubber overboots or disposal "booties"
- Chemical-resistant clothing (coverall); hooded if appropriate for activity

Criteria for Use

- No indication of airborne health hazards present
- A higher level of skin protection than standard work clothes is required

- *Minimum level required for any excavation entry*

Level C

- Work boots (steel-toed and steel shank if heavy objects & equipment are present)
- Hard hat (for work involving heavy equipment, overhead lifting, potentially falling objects or head-bump hazards, and/or at discretion of SSHO)
- Gloves – outer, chemical resistant
- Gloves – inner, chemical resistant
- Rubber overboots or disposal "booties"
- Hooded, chemical-resistant clothing (coverall)
- Full-face air purifying respirator* [APR] with appropriate cartridges (NIOSH approved)

***NOTE – APRs SHALL NOT BE USED IN OXGYGEN-DEFICIENT, POTENTIALLY OXYGEN-DEFICIENT, OR ATMOSPHERES IMMEDIATELY DANGEROUS TO LIFE AND HEALTH (IDLH)!!!**

Criteria for Use

- Site known to contain potentially hazardous materials resulting in air concentrations which require a protective factor afforded by a full-face, air-purifying respirator (OSHA/NIOSH approved).
- Total vapor levels within the limits of appropriate cartridges.
- Particulate cartridges shall have an efficiency rating of 99.97%. The proper cartridge series (N, R or P) shall be selected based on exposure conditions: N series are not resistant to oil, R series are oil-resistant or and P series are oil-proof. If oil particles are present or may be present in the ambient air, the R or P series cartridges shall be used.
- Frequent air monitoring for contaminants shall be conducted while wearing Level C protection.
- A higher level of skin protection than standard work clothes is required.

Level B

- Work boots (steel-toed and steel shank if heavy objects & equipment are present)
- Hard hat (for work involving heavy equipment, overhead lifting, potentially falling objects or head-bump hazards, and/or at discretion of SSHO)
- Gloves – outer, chemical resistant
- Gloves – inner, chemical resistant
- Rubber overboots or disposal "booties"

- Hooded chemical-resistant clothing (coverall)
- Self Contained Breathing Apparatus [SCBA], full-face type, operating in the pressure-demand or positive pressure mode (NIOSH approved), ***or***
- Supplied Air Respirator [SAR], full-face type, operating in the pressure-demand or positive pressure mode (NIOSH approved)

Criteria for Use

- Air concentrations of hazardous substances in excess of regulatory limits, requiring a protective factor afforded by a SCBA/SAR (OSHA/NIOSH approved).
- A higher level of skin protection than standard work clothes is required.

Level A

This level of protection is not anticipated to be required for planned on-site activities.

7.2 Training

Employees receive general training regarding proper selection, use and inspection of PPE during initial HAZWOPER training (or equivalent) and subsequent refresher training. Site-specific PPE requirements, including task specific PPE, ensemble components, cartridge/canister service times, and inspection procedures are covered by additional employee training and/or communicated by the SSHO as necessary.

7.3 Respiratory Protection

Respiratory protective equipment shall be National Institute for Occupational Safety and Health (NIOSH) approved and use shall conform to 29 CFR Part 1910.134 requirements. Each employer shall maintain a written respirator program detailing selection, use, cleaning, maintenance, and storage of respiratory protective equipment.

7.4 Hearing Conservation

Hearing protection shall be available when noise exposures equal or exceed an 8-hour time-weighted average sound level of 85 dBA. Hearing protection is required when the 8-hour time weighted average sound level is greater than or equal to 90 dBA. Where noise exposure meets or exceeds this level, noise is listed as a physical hazard in the job hazard analysis for the tasks/operation, and hearing protection is included as one of the control measures (PPE).

7.5 Insects and Parasites

Methods of controlling worker exposure to insects and parasites shall be used as required. Repellant sprays and lotions may be used as appropriate to deter mosquitoes and ticks. Long sleeve shirts and hats (if hardhats are not required) should be worn when working in the wooded

portions of the site. In addition, each worker should conduct a self-check for the presence of ticks after each work shift stationed in wooded areas or areas with tall grasses or weeds. Workers who confirm or suspect exposure to a tick bite should seek medical attention immediately and inform the SSHO.

8.0 DECONTAMINATION PLAN

This section describes how personnel and equipment are to be decontaminated when they leave the Exclusion Zone or prior to leaving the site. This section also describes how residues from the decontamination processes are to be managed. Decontamination procedures are designed to achieve an orderly, controlled removal or neutralization of contaminants that may accumulate on personnel or equipment. These procedures minimize worker contact with contaminants and protect against the transfer of contaminants outside designated work zones and offsite. They also extend the useful life of PPE by reducing the amount of time that contaminants contact and permeate PPE surfaces.

8.1 Decontamination Facilities

Decontamination for personnel, equipment and tools (e.g., shovels, excavators, backhoe, etc.) working or used in the Exclusion Zone and that **intend to remain onsite** shall be conducted in the Contamination Reduction Zone (CRZ). The CRZ acts as a buffer between the Exclusion Zone and the Support Zone.

Decontamination for equipment (i.e., vehicles, dump trucks, etc.) **that intend to leave the site** shall be conducted to ensure all equipment is free of contamination and associated residues prior to site exit. Contaminants and residues shall not be permitted to be transported offsite in an uncontrolled manner, such as on tires, wheel wells, undercarriage, etc. The decontamination station for equipment leaving the site shall be located such that decontaminated equipment can leave the site without passing by or through subsequent contaminated media.

Decontamination facilities shall include:

- Separate facilities shall be used for personnel and equipment.
- The station shall be constructed of sufficient size and shape to contain all water and residues generated during decontamination activities, including overspray and splashing.
- Berms shall be constructed of proper height and shape to contain all accumulated decontamination water and residues.
- The station shall be constructed of impervious material suitable to prevent seepage or transport of water and residues into adjacent soil and ground water.
- A system shall be designed and installed to collect and manage decontamination water and residues generated during these activities. Water and residues shall be removed from the decontamination station as necessary and stored in appropriate containers. Waste

characterization of all water and residues shall be performed and documented. Disposal options shall be based on sample results (See Section 8.3).

The SSHO reserves the right to inspect decontamination facilities and procedures for adequacy and completeness to the standards listed above.

8.2 Decontamination Procedures

Employees who are assigned to assist in the decontamination process shall use Modified Level D personal protective equipment to prevent cross-contamination from potentially contaminated workers.

Personnel

The decontamination procedure outline below applies to personnel at this site wearing Level C or modified Level D personal protection. These are minimum acceptable requirements:

1. Equipment Drop - Deposit equipment used on-site (tools, sampling devices and monitoring instruments, etc.) on polyethylene sheeting. These items must be decontaminated or disposed as waste prior to removal from the Exclusion Zone.

2. Outer Boot and Glove Removal - Remove outer boots and gloves. If outer boots are disposable, deposit them in a plastic-lined container. If non-disposable, store them in a clean dry place.

3. Outer Garment Removal - Remove chemical resistant outer garments and dispose of them in a plastic-lined container.

4. Respiratory Protection Removal - Remove hard hat, facepiece, and APR (Level C only) on a clean surface. APR cartridges will be discarded as appropriate. Wash and rinse hard hat, face piece, and respirator at least daily. Wipe off and store respiratory gear in a clean, dry location.

5. Inner Glove Removal - Remove inner gloves and dispose of them in a plastic-lined container.

6. Field Wash - Thoroughly wash hands and face with soap and water. If significant dermal exposure is indicated or suspected, the affected area will be thoroughly washed with soap and water at the nearby office trailer/wash area. If lingering effects of exposure are indicated or suspected, the affected personnel will seek prompt medical attention.

Equipment Remaining Onsite

Dedicated or disposable equipment will be used when practicable. Smaller pieces of re-usable equipment will be decontaminated with a scrub brush and non-phosphate soap solution, followed by clean water rinse prior to re-use. Larger pieces of equipment (e.g., backhoe/excavator, drilling rig) will be decontaminated when warranted based on visual observations, prior leaving the Exclusion Zone and prior to leaving the site.

Equipment moving between the Exclusion Zone and other portions of the site (e.g., dump trucks moving soil from the excavation to the stockpile area), shall be cleaned as needed to prevent the migration of contaminants.

1. Gross amounts of contamination will be removed using a power washer or non-phosphatic soap and clean water rinse.

2. Reusable equipment (e.g., respirators) will be examined to assess whether equipment can be properly decontaminated or should be disposed. If decontamination appears feasible, then this will be completed using a non-phosphatic soap and a water rinse. If not, then equipment will be disposed of properly.

Equipment Leaving the Site

The decontamination procedure outlined below applies to any equipment exposed or potentially exposed to site contamination and intends to leave the site. These steps are the minimum requirements and may be revised as needed.

1. Equipment shall be placed within the limits of the bermed area prior to decontamination.

2. Use a power washer, scrub brush and non-phosphatic soap and water rinse, or other means to completely remove contamination from tire sidewalls and treads, wheel wells, mud flaps, vehicle frame, etc.

8.3 Management of Decontamination Residues

Decontamination liquids and solids will be disposed of as follows:

- Residues shall be collected and stored as described in Section 8.1,
- Solids shall be removed and segregated from the liquids to the extent practicable,
- Representative sampling shall be conducted for liquids and solids for waste characterization purposes,
- Appropriate disposal methods shall be employed based on the results of sampling.

8.4 Medical Emergency Decontamination Procedures

In the event of a medical emergency involving site personnel working in the exclusion zone, decontamination procedures shall be executed to the extent practical for each situation. If the emergency warrants immediate life-saving medical care, such care should be administered without considering decontamination. Treatment for heat-stress related emergencies should be completed without decontamination. Minor emergencies or situations which are non-life threatening, complete decontamination should be completed as detailed above.

9.0 EMERGENCY RESPONSE PLAN

Site personnel must be prepared for emergencies such as: illnesses or injuries, chemical exposure, fires, explosions, spills, leaks, releases of harmful contaminants, or sudden changes in the weather. The following sections outline the general procedures for emergencies. Emergency information, such as telephone number of emergency contacts, should be posted as appropriate.

9.1 Emergency Information

In the event of an emergency, the field team will immediately contact the appropriate emergency services.

Carolinas Medical Center (CMC) is located at 1000 Blythe Boulevard in Charlotte, North Carolina. A map with directions to the hospital is provided as Figure 4.

9.2 General Procedures

A first aid kit, 15-minute emergency eye wash, and fire extinguisher rated for class A, B and C fires will be present adjacent to the Exclusion Zone during all intrusive work.

In case of the need for evacuation from the work site, an alarm in the form of verbal instructions will be given by the SSHO. The evacuation route will be along the most direct open path to the site entrance gate. The emergency evacuation assembly area shall be the parking lot on the eastern portion of the property (see Figure 2, Site Plan, for the evacuation assembly area). If personal safety permits, prior to site evacuation, equipment and other site conditions will be left in a condition so as to limit the potential for accidental injury to others. Subsequent to evacuation from the area of danger, as soon as it is possible, the SSHO will make an accounting of all on-site project personnel, and the incident will be reported to the appropriate governmental authorities (e.g., Fire Department, Police, etc.).

9.3 Emergency Procedures - Specific Incidents

Chemical Exposures

A. If site personnel experience symptoms suggesting overexposure to toxic chemicals (lightheadedness, dizziness, headache, nausea, shortness of breath, burning sensation in the mouth, throat or lungs), the person should be escorted from the contaminated environment to fresh air immediately. The SSHO will be responsible for monitoring personnel.

B. If unconscious, the victim should be removed from the contaminated area immediately and brought to the nearest hospital. Rescuers shall wear personal protective equipment equivalent to one level of protection above that of the victim.

C. If the victim is no longer breathing, he/she shall be moved away from the contaminated area. Mouth-to-mouth resuscitation or some alternate form of effective artificial respiration shall begin immediately. Should any of the above scenarios be encountered, emergency medical attention/advice must be obtained immediately by contacting the Fire Department and/or transporting the victim to the hospital.

Skin Exposure

If there is skin contact with toxic or potentially toxic chemicals, the skin should be washed with copious amounts of soap and water. If clothing is contaminated, it should be removed immediately and the skin washed thoroughly with running water. All contaminated parts of the body, including the hair, should be thoroughly washed. It may be necessary to wash repeatedly.

Ingestion

If site personnel should ingest toxic or possibly toxic chemicals, obtain medical attention immediately.

Eyes

If a toxicant should get into the eyes, they should be washed with generous amounts of water. The eye should be flooded with water so that all surfaces are washed thoroughly. Washing should be continued for at least fifteen minutes. Medical attention should be obtained immediately.

Personnel Injury

The SSHO will maintain a current certification in Standard First Aid. A first aid kit will be available on-site at all times. In the event of personnel injury, the SSHO, or the designated

alternate, will administer appropriate first aid and arrange transportation for injured personnel to the designated medical facility (if necessary). If the personnel injury is a work related injury/illness (e.g., hit by falling piece of drilling equipment or backhoe/excavator), rather than a non-work related injury/illness (e.g., heart attack), the SSHO will evaluate the site conditions to determine if the hazard still exists. Site personnel shall not re-enter the work zone until the cause of the injury/illness is determined, and the work zone is designated safe to re-enter by the SSHO.

Heat/Cold Stress

In the event that a worker exhibits signs of heat exhaustion, the worker shall immediately exit the work zone, remove PPE and external clothing, and move into shaded areas or into an air conditioned facility (if present). If the victim is conscience and coherent, provide fluids to begin hydration. Apply ice packs or cold compresses to the armpits, neck and groin areas. Call for medical assistance if needed.

If an employee exhibit signs of heat stroke, call for medical assistance IMMEDIATELY and complete the tasks listed in the previous paragraph.

Fire/Explosion

In the event of a fire or explosion, the Fire Department shall be alerted and all personnel shall move to a safe distance from the involved area. The SSHO shall make a determination regarding the severity of the fire, and whether site personnel shall attempt to extinguish it.

Fires shall not be fought by site personnel if an explosion hazard is present. Personnel should not attempt to fight large fires on this site.

10.0 EXCAVATION SAFETY

10.1 General Requirements

Any pit, excavation or trench that is created during the work shall be in compliance with 29 CFR 1926 Subpart P – Excavations, at all times. The SSHO reserves the right to stop all work if deviation from the excavation standard is observed. Work shall not continue until the situation is resolved.

10.2 Excavation Entry

Whenever feasibly possible, persons shall conduct all work activities from outside an excavation. If excavation entry is required, the entrant(s) shall wear, at a minimum, Modified Level D personal protective equipment.

Air monitoring shall be conducted prior to entry to determine if atmospheric conditions are safe for entry. Excavation entry shall not be permitted if sampling results indicate any of the following: (1) chemical concentrations exceed established exposure limits, (2) an oxygen deficient or enriched atmosphere is present, or (3) an explosive atmosphere is present. If one or more of the preceding situations occur, contact the SSHO.

If air monitoring results indicate that an inhalation exposure concern is present and entry is absolutely required, and subsequent controls or mitigation measures implemented have not removed the exposure hazard, the entrant shall wear, at a minimum, Level C protective equipment using appropriate respirator cartridges. See Section 7.1, Levels of PPE and Selection Criteria, for a description of the required PPE. **Excavation entry shall not be permitted at any time if an oxygen deficient/enriched or explosive atmosphere is present.**

Air monitoring shall be performed continuously while an employee is within an excavation to monitor for changes in atmospheric conditions. Monitoring results shall be recorded periodically for documentation purposes.

Entrants shall conform to the decontamination procedures set forth in Section 8.0, Decontamination Plan immediately upon egress.

10.3 Excavation Security

Adequate safety and security measures shall be installed for any excavation that is to remain open while the facility is not in operation (e.g., overnight, weekends, etc.). Whenever practicable, an excavation that is to remain open shall be covered with steel plates or similar items. Other safety and security measures shall include, but are not limited to, caution tape, fencing, and barricades.

10.4 Water Accumulation

Water that accumulates in an excavation which must be removed to continue work shall be collected and stored in appropriate containers until representative samples can be collected and analyzed to determine the proper disposal method.

10.5 Excavated Media Management

Material removed from any excavation may be required to be stored onsite temporarily prior to disposal (see Volume II Plans & Specifications). Temporary storage facilities may include roll-off containers and stockpiles, and may be used at the discretion of the SSHO. The storage of contaminated or potentially contaminated media must be managed properly to prevent incidental exposure to workers, the environment and surrounding community. The following requirements shall be followed during excavation activities and may be modified at any time.

When contaminated media is transported between the Exclusion Zone and the designated stockpile areas, control measures shall be used to prevent the migration of contaminants to other portions of the site. Control measures include but are not limited to the following: truck loading techniques to prevent spills of media, covering the truck or equipment sides with plastic or plywood to block falling media, and decontamination procedures, if necessary.

A roll-off container is required when the media is assumed to be a hazardous waste or is pending laboratory analysis to determine hazardous waste characteristics. The following items are required for use of a roll-off:

- A visual inspection of each roll-off and tarp cover shall be conducted to ensure it is in good condition prior to use. (A container or tarp observed to be damaged shall not be used for storage.)
- A synthetic liner shall be installed prior to use to prevent direct contact of the roll-off with potentially contaminated media.
- The tarp shall cover the roll-off at all times, except when adding media, to prevent accumulation of precipitation and dust generation.

The other method suitable for temporary storage of potentially contaminated media is a stockpile (only for non-RCRA hazardous media). The following stockpile management requirements shall be followed at all times:

- All media shall be placed onto a synthetic liner with a minimum thickness of 10 mils. Direct placement on grass, soil, asphalt, concrete or other media is strictly prohibited.
- The stockpile shall be protected with a synthetic cover by the end of the work day on which it was created or as needed to prevent the migration of contaminants (e.g., before a precipitation event, prevent dusting, etc.). The cover shall be secured such that media is not exposed to the elements at any time and precipitation will not cause runoff or accumulate on/within the media.
- Each stockpile is limited to 300 cubic yards or as otherwise specified in the Remedial Action Plan.

All roll-off containers and stockpiles shall be properly labeled with the following information: the date material was initially placed in the container or pile, location where the material originated, and any other information deemed appropriate. Any codes or abbreviations used for labeling purposes shall be conveyed to the SSHO.

All roll-off containers and stockpiles shall be inspected on a weekly basis to verify integrity. Problems or concerns observed during the inspections shall be corrected immediately and brought to the attention of the SSHO. Inspections shall be properly documented copies of all inspection documents shall be provided to the SSHO on a weekly basis.

11.0 CONFINED SPACE ENTRY PROCEDURES

All work performed in confined spaces shall conform to the regulations found in 29 CFR 1910.146, Permit-Required Confined Spaces and associated appendices.

Excavations four feet or more in depth shall be considered a permit-required confined space for entry purposes unless procedures found in 29 CFR 1910.146 indicate otherwise.

Appropriate atmospheric monitoring shall be conducted **continuously** during all confined space entries.

No worker(s) shall attempt a confined-space rescue in the event of an emergency. Immediately contact appropriate emergency personnel and secure the site as detailed in the Emergency Response Plan.

12.0 ELECTRICAL SAFETY

The use of all electrical equipment shall conform to OSHA standards 29 CFR 1910.137 (electrical protective devices), 29 CFR 1910 Subpart S (Electrical) and other requirements, as applicable.

Ground-fault circuit interrupters (GFCI) shall be used in any location that is or may be exposed to water or wet conditions.

13.0 PROTECTION OF THE SURROUNDING COMMUNITY

During all phases of work related to the site, measures have been and will be taken to protect the health and safety of the surrounding community. These measures are being implemented in accordance with the NCDENR REC Program Implementation Guidance document dated August 2006, which requires the protection of the surrounding community from exposure to site contaminants. The following items list general procedures that will be used to protect the surrounding community during all work associated with the site.

Soil boring and monitoring wells may be required to be installed at off-site locations. Should this work be required, several measures will be employed to protect the surrounding community. These include: establish a safety perimeter around drilling operations using barriers, signs and/or barricades. Adequate procedures will be utilized to properly contain and accumulate any debris (e.g., soil cuttings, slurry, etc.) created from the drilling process, and the location will be secured once drilling is complete (remove debris, etc.).

The excavation of soil may be required onsite, but outside of the property's fence-line. Should this be required, measures such as barricades, warning tape and signage will be employed to restrict access to the area. In addition, if the excavation is not able to be backfilled the same day, additional controls may be used to cover the excavation, as described in Section 10.2.

Activities which could produce dust and/or other airborne contaminants include soil excavation and building demolition. If required, methods of dust suppression, such as water misting or spray, shall be employed in order to help control dust generation and prevent migration into the surrounding areas.

A variety of actions beyond those discussed herein may be required to protect the health, safety, and welfare of the surrounding community. Depending on the specific concerns of each activity or situation, additional safety measures shall be instituted wherever deemed necessary by the SSHO.

If, at any time, the SSHO observes situations that are detrimental to surrounding community, work activities shall cease until the situation is resolved.

14.0 PROTECTION OF THE ENVIRONMENT

Adequate protective measures shall be implemented to prevent the migration of contamination to other portions of the site and to offsite locations. Migration may occur during precipitation events, dust generation from excavation activities or from stockpiles, from truck and equipment traffic moving onsite, or any other activities that permits contamination movement on and offsite. The following protective measures shall be utilized to control site contaminant migration: silt fencing, straw bales or other storm water control measures; water spray or misting; cover temporary stock piles with plastic sheeting; cover roll off containers with tarps; and decontaminate trucks and equipment. Additional information for the implementation of these requirements can be found in other sections of this Health and Safety Plan and/or within other project documents. Additional measures shall be used as necessary. All protective measures shall be designed and implemented to provide adequate protection at all times.

If, at any time, the SSHO observes situations that are detrimental to environment, work activities shall cease until the situation is resolved.

Table 6. Primary Hazardous Substance Information[1]

Hazardous Substance Name	Characteristics *(volatile, carcinogen, etc.)* Route(s) of Entry *(inhalation, skin contact, ingestion)*	Target Organ(s) Effects	Maximum Concentration Detected (Media/Location)	Exposure Limits *(as applicable, list 8-hour, short-term, & ceiling limits. Indicate whether OSHA (PEL), NIOSH (REL)*	Exposure Signs & Symptoms
Volatile Organic Compounds					
cis-1,2-Dichloroethene	Flammable Inhalation, Ingestion, skin and/or eye contact	Respiratory system, CNS, eyes	11,000 ug/kg (soil)	PEL = 200 ppm (790 mg/m^3)	Eye irritation, CNS depression
Naphthalene	Combustible Inhalation, Ingestion, absorption, eye contact	Eyes, respiratory system, CNS	93,000 ug/kg (soil)	PEL = 10 ppm (50 mg/m^3) REL = 10 ppm (50 mg/m^3) NIOSH STEL = 15 ppm (75 mg/m^3)	Eye and nose irritation, chest oppression, dyspnea, CNS depression
Tetrachloroethene	Noncombustible liquid Inhalation, Ingestion, skin and/or eye contact	Eyes, kidney, liver, upper respiratory system, CNS	2,500,000 ug/kg (soil)	PEL = 100 ppm Ceiling Conc. = 200 ppm 5 minute max peak in any 3 hours = 300 ppm	Eye, nose and throat irritant, nausea, flush face and neck, vertigo, dizziness, incoherent
Trichloroethene	Combustible Inhalation, Ingestion, skin and/or eye contact, absorption	Eyes, skin, kidney, liver, upper respiratory system, CNS, heart	61 ug/kg (soil)	PEL = 100 ppm Ceiling Conc. = 200 ppm 5 minute max peak in any 2 hours = 300 ppm	Eye and skin irritant, headache, visual disturbance, weakness, dizziness, tremor, nausea
Vinyl Chloride	Carcinogen, Flammable gas; Inhalation, Ingestion, skin and/or eye contact, absorption	liver, CNS, blood, respiratory system, lymphatic system (liver cancer)	430 ug/kg (soil)	PEL = 1 ppm Ceiling Conc. = 5 ppm	Weakness/exhaustion, abdominal pain, GI bleeding, enlarged liver, pallor (paleness) or cyanosis of extremities

Table 6. Primary Hazardous Substance Information[1]

Hazardous Substance Name	Characteristics *(volatile, carcinogen, etc.)* Route(s) of Entry *(inhalation, skin contact, ingestion)*	Target Organ(s) Effects	Maximum Concentration Detected (Media/Location)	Exposure Limits *(as applicable, list 8-hour, short-term, & ceiling limits. Indicate whether OSHA (PEL), NIOSH (REL)*	Exposure Signs & Symptoms
Semivolatile Organic Compounds					
Polynuclear Aromatic Hydrocarbons (PAHs)[(2)]	Carcinogen, Combustible Inhalation, Ingestion, skin/eye contact, absorption	Respiratory system, bladder, kidneys (lung, kidney, skin cancer)	7,945,000 ug/kg (aggregate base – wood flooring)	PEL = 0.2 mg/m^3 (as coal tar pitch volatiles) REL = 0.1 mg/m^3 (as coal tar pitch volatiles)	Dermatitis and bronchitis
Acenaphthylene	Combustible Inhalation, Ingestion, skin contact, absorption	Skin, kidneys, liver, fat	14,000 ug/kg (aggregate base – wood flooring)	-	Skin irritation, damage to body fluids and immune system
Benzo(g,h,i)perylene	Combustible Inhalation, Ingestion, skin contact, absorption	Skin, eyes, liver	12,000 ug/kg (aggregate base – wood flooring)	-	Eye and skin irritant, weakness
Dibenzofuran	Inhalation, Ingestion, skin contact, absorption	Eyes, skin, upper respiratory system	340,000 ug/kg (aggregate base – wood flooring)	-	Irritation of eyes, nose, throat and skin
Phenanthrene	Inhalation, Ingestion, skin contact, absorption	Eyes, skin, upper respiratory system	2,000,000 ug/kg (aggregate base – wood floor)	-	Irritation of eyes, nose, throat and skin

Table 6. Primary Hazardous Substance Information[1]

Hazardous Substance Name	Characteristics *(volatile, carcinogen, etc.)* Route(s) of Entry *(inhalation, skin contact, ingestion)*	Target Organ(s) Effects	Maximum Concentration Detected (Media/Location)	Exposure Limits *(as applicable, list 8-hour, short-term, & ceiling limits. Indicate whether OSHA (PEL), NIOSH (REL)*	Exposure Signs & Symptoms
Polychlorinated Biphenyls					
PCB-1254 (Aroclor 1254)	Nonflammable liquid Inhalation, Ingestion, skin/eye contact, skin absorption	Eyes, liver, skin, reproductive system,	780,000 ug/kg (soil)	PEL = 0.5 mg/m^3 (skin) REL = 0.001 mg/m^3	Eye irritation, chloracne, liver damage, reproductive effects
Metals					
Antimony	Noncombustible solid, moderate explosion hazard in dust form Inhalation, ingestion, skin/eye contact	Eyes, skins respiratory system, CVS	12 mg/kg (sewer residues) 20 mg/kg (sediment)	PEL = 0.5 mg/m^3 REL = 0.5 mg/m^3	Irritation to eyes, skins, nose, throat, and mouth; coughing, dizziness, headache, nausea, vomiting, diarrhea, stomach cramps, insomnia, anorexia, unable to smell properly
Arsenic	Carcinogen Inhalation, Ingestion, eye/skin contact, absorption	Liver, kidneys, skin, lungs, lymphatic system	9 mg/kg (soil) 28 mg/kg (sewer residues)	PEL = 0.01 mg/m^3 REL = 0.002 mg/m^3 (Ceiling concentration)	Ulceration of nasal septum, dermatitis, gastrointestinal disturbances, peripheral neuropathy, respiratory irritation
Barium	Combustible Inhalation, Ingestion, eye and skin contact	Heart, CNS, skin, respiratory system, eyes	2,600 mg/kg (soil)	PEL = 0.5 mg/m^3 (soluble compounds) REL= 0.5 mg/m^3	Irritation to eyes, skin and upper respiratory system, skin burns, gastroenteritis, muscle spasms, slow pulse, extrasystoles, hypokalemia

Table 6. Primary Hazardous Substance Information[1]

Hazardous Substance Name	Characteristics *(volatile, carcinogen, etc.)* Route(s) of Entry *(inhalation, skin contact, ingestion)*	Target Organ(s) Effects	Maximum Concentration Detected (Media/Location)	Exposure Limits *(as applicable, list 8-hour, short-term, & ceiling limits. Indicate whether OSHA (PEL), NIOSH (REL)*	Exposure Signs & Symptoms
Cadmium	Carcinogen Inhalation, Ingestion	Respiratory system, kidneys, prostrate, blood	19 mg/kg (soil) 17 mg/kg (AOC #6 West Pit Residues)	PEL = 0.005 mg/m^3	Pulmonary edema, difficulty breathing, cough, chest tightness, pain beneath sternum, headache, chills, muscle aches, nausea, vomiting, diarrhea, loss of sense of smell, emphysema, proteinuria, mild anemia
Chromium - Trivalent	Noncombustible Inhalation, Ingestion, eye and skin contact	Eyes, skin, respiratory system	120,000 mg/kg (soil)	PEL = 1.0 mg/m^3 (metal/insoluble salts; 0.5 mg/m^3 as Cr III) REL = 0.5 mg/m^3	Eye irritation and sensitization dermatitis
Chromium – Hexavalent	Carcinogen Inhalation, Ingestion, eye and skin contact	Blood, respiratory system, liver, kidneys, eyes and skin	223 mg/kg (soil)	PEL = 0.005 mg/m^3 REL = 0.001 mg/m^3	Respiratory system irritation, nasal septum perforation, liver and kidney damage, increased/reduced blood leukocytes, eye injury and conjunctivitis, skin ulcers, and dermatitis
Copper	Noncombustible Inhalation, Ingestion, eye and skin contact	Eyes, skin, respiratory system, liver, kidneys	1,800 mg/kg (soil) 980 mg/kg (sewer residues)	PEL = 1 mg/m^3 (dust/mist) REL = 1 mg/m^3	Irritated eyes, nose and pharynx; nasal septum perforation; metallic taste, dermatitis, lung/liver/kidney damage, anemia
Lead	Noncombustible Inhalation, Ingestion, eye and skin contact	Eyes, GI tract, CNS, kidneys, blood, gingival tissue	2,500 mg/kg (soil) 710 mg/kg (sewer residues)	PEL = 0.05 mg/m^3 REL = 0.05 mg/m^3	Lassitude, insomnia, facial pallor, anorexia, weight loss, malnutrition, constipation, abdominal pain, colic, anemia, gingival lead line, paralysis of wrist/ankles, encephalopathy, kidney disease, eye irritation, hypotension

Table 6. Primary Hazardous Substance Information[1]

Hazardous Substance Name	Characteristics *(volatile, carcinogen, etc.)* **Route(s) of Entry** *(inhalation, skin contact, ingestion)*	Target Organ(s) Effects	Maximum Concentration Detected (Media/Location)	Exposure Limits *(as applicable, list 8-hour, short-term, & ceiling limits. Indicate whether OSHA (PEL), NIOSH (REL)*	Exposure Signs & Symptoms
Manganese	Combustible Solid Inhalation, Ingestion	Skin, respiratory system, CNS, Blood, Kidneys	3,400 mg/kg (soil)	PEL = 5 mg/m^3 (ceiling) REL = 1 mg/m^3 STEL = 3 mg/m^3	Parkinson's Disease, asthenia, insomnia, mental confusion, metal fume fever, dry throat, cough, tight chest, dyspnea, rales, flu-like fever, low back pain, vomiting, Malaise, fatigue/weakness/exhaustion
Mercury	Noncombustible Inhalation, Ingestion, eye and skin contact, adsorption	Eyes, skin, respiratory system, CNS, kidneys	27 mg/kg (soil)	PEL = 0.1 mg/m^3 (Ceiling) REL = 0.05 mg/m^3 Ceiling = 0.1 mg/m^3 (Skin)	Eye and skin irritation, cough, chest pain, dyspnea, bronchitis, pneumonitis, tremors, insomnia, irritability, indecision, headache, weakness/exhaustion, stomatitis, salivation, GI distress, anorexia, weight loss, proteinuria
Nickel	Noncombustible, NIOSH Occupational Carcinogen Inhalation, Ingestion, eye and skin contact	Lungs, nasal cavities, skin	7,600 mg/kg (soil)	PEL = 1 mg/m^3 (soluble compounds), PEL = 1 mg/m^3 (metal/insoluble compounds) REL = 0.015 mg/m^3	Sensitization, dermatitis, allergic asthma, pneumonia
Thallium	Inhalation, skin absorption, ingestion, skin/eye contact	Eyes, respiratory system, CNS, liver, kidneys, GI, body hair	15 mg/kg (soil)	PEL = 0.1 mg/m^3 (skin) REL = 0.1 mg/m^3 (skin)	Nausea, diarrhea, abdominal pain, vomiting, ptosis, strabismus, peripheral neuritis, tremor, tightness behind sternum, chest pain, pulmonary edema, convulsions, chorea, psychosis, liver and kidney damage, alopecia, paresthesia legs

Abbreviations:
CNS = Central Nervous System
CVS = Cardiovascular System

GI = Gastrointestinal
RBC = Red Blood Cell
STEL = short term exposure limit, a 15 minute exposure that should not be exceeded at any time during the workday.
Skin = Indicates chemical easily absorbed through cutaneous layers

Notes:
(1) This table only includes substances detected in one or more site samples above NCDENR health-based (direct contact) Preliminary Remediation Goals
(2) Includes all PAHs detected under EPA Method 8270.

TABLE 7. TASK-SPECIFIC HAZARDS, CONTROL MEASURES AND PROTECTIVE EQUIPMENT

FIELD ACTIVITY	POTENTIAL HAZARD	HAZARD CONTROL MEASURES	PROTECTIVE EQUIPMENT
Non-Intrusive Work (site reconnaissance; surveying; site preparation for intrusive activities)	Slips, trips, falls	Watch where stepping. Avoid areas of debris, thick vegetation. Use caution when walking near steep slopes.	Work in Level D PPE (standard work clothes). Increase level of PPE as required based on site conditions, such as the potential for contact with visibly contaminated surface soils.
	High or low ambient temperature	Wear proper work clothes. Monitor for heat (if wearing impermeable PPE) or cold stress.	
Sampling and Related Tasks (well development; ground water sampling; surface water and sediment sampling; surface hand augering and grab sampling)	Slips, trips, falls	Watch where stepping. Avoid areas of debris, thick vegetation. Use caution when walking near steep slopes.	Initiate work in Level D PPE (standard work clothes with mandatory use of hard hat). Monitor for volatile organic compounds using photoionization detector (PID). If visually contaminated soils are observed and dermal contact hazard is present, upgrade to Modified Level D PPE. If sustained PID readings in breathing zone are measured above 5 parts per million (ppm) but below 25 ppm, call the SSHO and upgrade to Level C PPE. If sustained PID readings are greater than 25 ppm, discontinue work. If other monitoring indicates concentrations above regulatory limits, call the SSHO and upgrade to Level C PPE.
	Dermal contact and inhalation of hazardous substances	Work in well ventilated area. If free product observed during development or sampling, monitor breathing zone of work area for volatile organic compounds using a photoionization detector (PID). Utilize Modified Level D PPE if dermal contact hazard. If inhalation (based on PID) and dermal hazards are present, utilize Level C PPE including full-face APR, chemical resistant gloves, boots, and coveralls.	
	Handling heavy objects	Observe proper lifting techniques. Obey sensible lifting limits. Use mechanical lifting equipment to move large, awkward loads.	

TABLE 7. TASK-SPECIFIC HAZARDS, CONTROL MEASURES AND PROTECTIVE EQUIPMENT

FIELD ACTIVITY	POTENTIAL HAZARD	HAZARD CONTROL MEASURES	PROTECTIVE EQUIPMENT
	High or low ambient temperature	Wear proper work clothes. Monitor for heat (if wearing impermeable PPE) or cold stress.	
Intrusive Work (drilling with direct-push, hollow-stem auger or other drilling methods; excavation, other intrusive work)	Slips, trips, falls	Watch where stepping. Avoid areas of debris, thick vegetation. Use caution when walking near steep slopes. Stand at least two feet from the edge of the test pit excavation. Backfill each test pit exploration before proceeding to the next location or use appropriate barricades.	Initiate work in Level D PPE (standard work clothes with mandatory use of hard hat). Monitor for volatile organic compounds using photoionization detector (PID). If visually contaminated soils are observed and dermal contact hazard is present, upgrade to Modified Level D PPE. If sustained PID readings in breathing zone are measured above 5 parts per million (ppm) but below 25 ppm, call the SSHO and upgrade to Level C PPE. If sustained PID readings are greater than 25 ppm, discontinue work. If other monitoring indicates concentrations above regulatory limits, call the SSHO and upgrade to Level C PPE.
	Heavy machinery and rotating equipment	Avoid standing within the turning radius of backhoe/excavator and bucket. Avoid turning back on operating backhoe/excavator. Stand far enough away from operating machinery to prevent accidental contact which could result from mechanical or human error. Stay outside of fall radius when drill pipe or other heavy objects are lifted overhead.	
	Overhead and underground utilities	Keep operating equipment clear of overhead utility lines or other overhead hazards. Contact site and utility representatives to locate/mark underground utilities prior to excavating.	

TABLE 7. TASK-SPECIFIC HAZARDS, CONTROL MEASURES AND PROTECTIVE EQUIPMENT

FIELD ACTIVITY	POTENTIAL HAZARD	HAZARD CONTROL MEASURES	PROTECTIVE EQUIPMENT
	Dermal contact and inhalation of hazardous substances	Work in well ventilated area, or provide mechanical ventilation if necessary. Monitor breathing zone of work area for volatile organic compounds using photoionization detector (PID). Utilize Modified Level D PPE if dermal contact hazard. If inhalation (based on PID or high levels of dust) and dermal hazard present, utilize Level C PPE including full-face APR, chemical resistant gloves, boots, and coveralls.	
	Handling heavy objects	Observe proper lifting techniques. Obey sensible lifting limits. Use mechanical lifting equipment to move large, awkward loads.	
	Sharp objects	Wear cut resistant work gloves when the possibility of lacerations or other injury from sharp objects exists. Maintain all hand and power tools in a safe condition.	
	High noise levels	Use hearing protection when exposed to high noise levels (i.e., > 85 dBA, or when necessary to raise one's voice to communicate with others three to five feet away).	
	High or low ambient temperature	Wear proper work clothes. Monitor for heat (if wearing impermeable PPE) or cold stress.	

TABLE 7. TASK-SPECIFIC HAZARDS, CONTROL MEASURES AND PROTECTIVE EQUIPMENT

FIELD ACTIVITY	POTENTIAL HAZARD	HAZARD CONTROL MEASURES	PROTECTIVE EQUIPMENT
Excavation entry to sample excavation sidewalls and bottom, visual contamination screening, surveying, etc.	Cave-in	If excavation is greater than four feet deep, use appropriate shoring, sloping, or benching techniques. Store temporary spoil pile a minimum of two feet from edge of excavation. Maintain point of egress (ladder, etc.) within 25 feet of entrant work area.	In every instance possible, an attempt shall be made to collect test pit side wall and bottom samples without excavation entry using techniques described in the Sampling and Analytical Plan.
	Hazardous atmosphere	Adequately monitor entire excavation for hazardous atmosphere prior to entry and for duration of entry. If hazardous conditions are present prior to entry, do not enter and call SSHO. If hazardous conditions occur after entry, immediately cease work, exit excavation and call SSHO.	
	Dermal contact and inhalation of hazardous substances	Work in well ventilated area, or provide mechanical ventilation if necessary. Monitor breathing zone of work area for volatile organic compounds using photoionization detector (PID). Utilize Modified Level D PPE if dermal contact hazard. If inhalation (based on PID or high levels of dust) and dermal hazard present, utilize Level C PPE including full-face APR, chemical resistant gloves, boots, and coveralls.	

APPROXIMATE SCALE 1 INCH = 2,000 FEET

Map Source: U.S. GEOLOGICAL SURVEY

APPROXIMATE NORTH

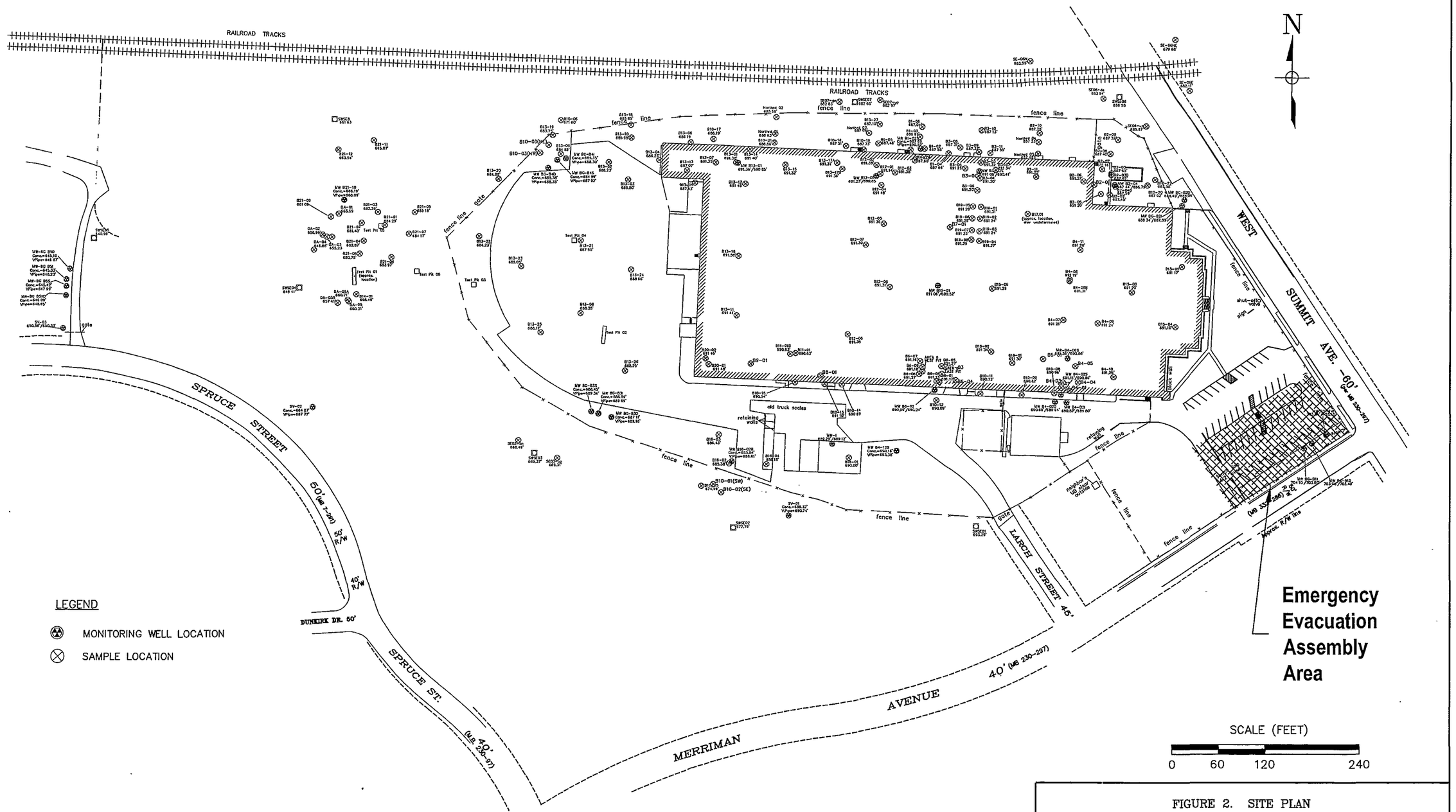
FIGURE 1. SITE LOCATION MAP

SUBJECT PROPERTY
CHARLOTTE, NORTH CAROLINA

Project No. 2001.01.07.10

The Kelly-Buck Company
2130 Superior Avenue #3-A
Cleveland, Ohio 44114
(216) 861-1716

KELLY-BUCK

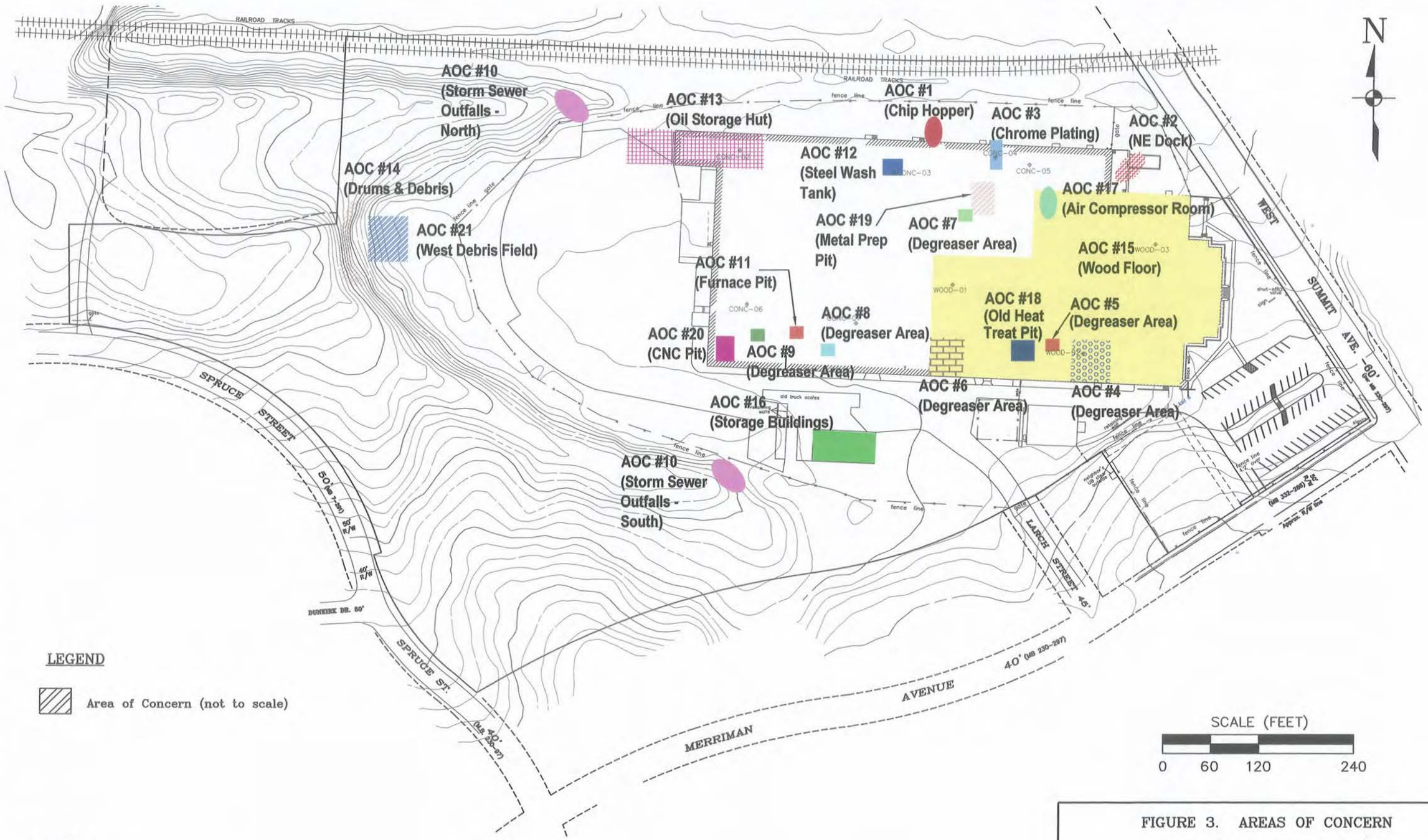


KELLY-BUCK
COMPANY
Civil & Environmental Engineers
2130 Superior Ave., Suite 3-A
Cleveland, OH 44114
(216) 861-1716

FIGURE 2. SITE PLAN
HEALTH AND SAFETY PLAN

FORMER COPES-VULCAN FACILITY
601 WEST SUMMIT AVENUE
CHARLOTTE, NC

COPYRIGHT - DATE 11/17/96 KELLY-BUCK COMPANY O:\MY DOCUMENTS\PROJECTS\INVALUETIE REMEDIAL ACTION\FIGURE 1 MAP 112596



LEGEND

Area of Concern (not to scale)

KELLY-BUCK
COMPANY
Civil & Environmental Engineers
2130 Superior Ave., Suite 3-A
Cleveland, OH 44114
(216) 861-1716

FIGURE 3. AREAS OF CONCERN

HEALTH AND SAFETY PLAN
REMEDIAL ACTION ACTIVITIES
FORMER COPES-VULCAN FACILITY
601 WEST SUMMIT AVENUE
CHARLOTTE, NC

1. Start at **601 W SUMMIT AVE, CHARLOTTE** going toward **MERRIMAN AVE** - go 0.2 miles

2. Turn **LEFT** on South Mint Street - go 0.5 miles

3. Turn **RIGHT** on West Morehead Street - go 0.2 miles

4. Continue on East Morehead Street - go 1.4 miles

5. Bear **RIGHT** on South Kings Drive - go 0.1 miles

6. Turn **RIGHT** on Medical Center Drive - go 0.1 miles

7. Turn **RIGHT** on Blythe Blvd - go <0.1 miles

8. Arrive at 1000 Blythe Blvd

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Cleveland, OH 44114
(216) 861-1716

FIGURE 4. DRIVING DIRECTIONS TO HOSPITAL
HEALTH AND SAFETY PLAN
REMEDIAL ACTION ACTIVITIES
FORMER COPES-VULCAN FACILITY
601 WEST SUMMIT AVENUE
CHARLOTTE, NC

Attachment 3 to Volume II Plans and Specifications:
Sample Analytical Data
Summary – Step One Remedial Action

Index

Table 3-1. Soil Sample Analytical Results: Volatile Organic Compounds

Table 3-2. Soil Sample Analytical Results: Semivolatile Organic Compounds

Table 3-3. Soil Sample Analytical Results: Polychlorinated Biphenyls

Table 3-4. Soil Sample Analytical Results: Metals and Cyanide

Table 3-5. Soil Sample Analytical Results: TCLP

Table 3-6. Sample Analytical Results: Characterization of Building Materials and Residues

Table 3-1. Soil Sample Analytical Results: Volatile Organic Compounds

		B4-01 (1.5-2.0')	B4-01 (4.5-5.0')	B4-01 (7.5-8.0')	B4-01 (11.0-11.5')	B4-01 (14.5-15.0')	B4-02 (4.5-5.0')	B4-02 (7.5-8.0')	B4-03 (1.5-2.0')	B4-03 (4.5-5.0')	B4-03 (7.5-8.0')	B4-03 (11.0-11.5')	B4-03 (14.5-15.0')	B4-04 (1.5-2.0')	B4-04 (4.5-5.0')	B4-04 (7.5-8.0')	B4-04 (11.0-11.5')	B4-04 (14.5-15.0')	B4-05 (1.5-2.0')	B4-05 (4.5-5.0')
Volatile Organic Compounds																				
Acetone	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromobenzene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromochloromethane	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Butanone	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	ug/kg	<6.6	<6.7	<7.0	<7.5	<5.8	<5.7	<6.2	<330	<330	<6.4	<6.9	<5.7	<5.9	<340	<5.7	<6.1	<5.5	<360	<6.3
sec-Butylbenzene	ug/kg	<6.6	<6.7	<7.0	<7.5	<5.8	<5.7	<6.2	<330	<330	<6.4	<6.9	<5.7	<5.9	<340	<5.7	<6.1	<5.5	<360	<6.3
tert-Butylbenzene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	ug/kg	<13	<13	<14	<15	<12	<11	<12	<660	<650	<13	<14	<11	<12	<680	<11	<12	<11	<720	<13
Chloroform	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Chlorotoluene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Chlorotoluene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromo-3-chloropropane	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dichlorodifluoromethane	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ug/kg	<6.6	<6.7	<7.0	<7.5	<5.8	<5.7	<6.2	<330	<330	<6.4	<6.9	<5.7	<5.9	<340	<5.7	<6.1	<5.5	<360	<6.3
1,2-Dichloroethane	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	ug/kg	<6.6	<6.7	<7.0	<7.5	<5.8	<5.7	<6.2	<330	<330	<6.4	<6.9	<5.7	<5.9	<340	<5.7	<6.1	<5.5	<360	<6.3
trans-1,2-Dichloroethene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichloropropane	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,2-Dichloropropane	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloropropene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	ug/kg	ND	ND	ND	ND	ND	ND	ND.	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropyl Ether	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	ug/kg	<6.6	<6.7	<7.0	<7.5	<5.8	<5.7	<6.2	<330	<330	<6.4	<6.9	<5.7	<5.9	<340	<5.7	<6.1	<5.5	<360	<6.3
Hexachlorobutadiene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Hexanone	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene (Cumene)	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p-Isopropyltoluene	ug/kg	<6.6	<6.7	<7.0	<7.5	<5.8	<5.7	<6.2	<330	<330	<6.4	<6.9	<5.7	<5.9	<340	<5.7	<6.1	<5.5	<360	<6.3
Methylene chloride	ug/kg	<6.6	**13**	**8.9**	**27**	<5.8	**15**	<6.2	<330	<330	<6.4	<6.9	<5.7	<5.9	<340	<5.7	<6.1	<5.5	<360	<6.3

Table 3-1. Soil Sample Analytical Results: Volatile Organic Compounds

		B4-01 (1.5-2.0')	B4-01 (4.5-5.0')	B4-01 (7.5-8.0')	B4-01 (11.0-11.5')	B4-01 (14.5-15.0')	B4-02 (4.5-5.0')	B4-02 (7.5-8.0')	B4-03 (1.5-2.0')	B4-03 (4.5-5.0')	B4-03 (7.5-8.0')	B4-03 (11.0-11.5')	B4-03 (14.5-15.0')	B4-04 (1.5-2.0')	B4-04 (4.5-5.0')	B4-04 (7.5-8.0')	B4-04 (11.0-11.5')	B4-04 (14.5-15.0')	B4-05 (1.5-2.0')	B4-05 (4.5-5.0')
4-Methyl-2-pentanone	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl-tert-butyl ether	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	ug/kg	**860**	**11000**	**44**	**13000**	<5.8	<5.7	<6.2	**930**	**4500**	**770**	**170**	**6.1**	**3000**	**1500**	**72**	**570**	**15**	**63000**	**130**
n-Propylbenzene	ug/kg	<6.6	<6.7	<7.0	<7.5	<5.8	<5.7	<6.2	<330	<330	<6.4	<6.9	<5.7	<5.9	<340	<5.7	<6.1	<5.5	<360	<6.3
Styrene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	ug/kg	<6.6	<6.7	<7.0	**6900**	<5.8	<5.7	<6.2	<330	<330	<6.4	**260**	<5.7	**8200**	<340	<5.7	<6.1	<5.5	**48000**	<6.3
Toluene	ug/kg	<6.6	<6.7	<7.0	**21**	<5.8	<5.7	<6.2	<330	<330	<6.4	<6.9	<5.7	<5.9	<340	<5.7	<6.1	<5.5	<360	<6.3
1,2,3-Trichlorobenzene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	ug/kg	<6.6	<6.7	<7.0	<7.5	<5.8	<5.7	<6.2	<330	<330	<6.4	<6.9	<5.7	<5.9	<340	<5.7	<6.1	<5.5	<360	<6.3
Trichlorofluoromethane	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	ug/kg	<6.6	<6.7	<7.0	**16**	<5.8	<5.7	<6.2	<330	<330	<6.4	<6.9	<5.7	<5.9	<340	<5.7	<6.1	<5.5	**980**	<6.3
1,3,5-Trimethylbenzene	ug/kg	<6.6	<6.7	<7.0	<7.5	<5.8	<5.7	<6.2	<330	<330	<6.4	<6.9	<5.7	<5.9	<340	<5.7	<6.1	<5.5	**430**	<6.3
Vinyl acetate	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl chloride	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes (Total)	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m,p-Xylene	ug/kg	<13	<13	<14	<15	<12	<11	<12	<660	<650	<13	<14	<11	<12	<680	<11	<12	<11	<720	<13
o-Xylene	ug/kg	<6.6	<6.7	<7.0	<7.5	<5.8	<5.7	<6.2	<330	<330	<6.4	<6.9	<5.7	<5.9	<340	<5.7	<6.1	<5.5	<360	<6.3

Table 3-1. Soil Sample Analytical Results: Volatile Organic Compounds

		B4-05 (7.5-8.0')	B4-05 (14.5-15.0')	B4-06 (0'-2')	B4-06 (2'-4')	B4-06 (4'-6')	B4-06 (6'-8')	B4-07 (2.5-3.5')	B4-07 (5-7')	B4-07 (7-9')	B4-08 (2.5-3.5')	B4-08 (5-7')	B4-08 (7-9')	B4-09 (2.5-3.5')	B4-09 (5-7')	B4-09 (7'-9')	B4-10 (2.5-3.5')	B4-10 (5'-7')	B4-10 (7-9')	B4-11 (2.5'-3.5')
Volatile Organic Compounds																				
Acetone	ug/kg	ND	ND	**290**	<160	**440**	<120	**250**	**460**	**280**	**600**	**470**	**680**	**220**	<130	**850**	**120**	**120**	**180**	**220**
Benzene	ug/kg	ND	ND	<7.0	<8.0	<6.3	<6.2	<5.9	<6.5	<7.2	<5.8	<6.3	<6.9	<6.6	<6.4	<6.4	<5.6	<5.5	<5.7	<9.6
Bromobenzene	ug/kg	ND	ND	<7.0	<8.0	<6.3	<6.2	<5.9	<6.5	<7.2	<5.8	<6.3	<6.9	<6.6	<6.4	<6.4	<5.6	<5.5	<5.7	<9.6
Bromochloromethane	ug/kg	ND	ND	<7.0	<8.0	<6.3	<6.2	<5.9	<6.5	<7.2	<5.8	<6.3	<6.9	<6.6	<6.4	<6.4	<5.6	<5.5	<5.7	<9.6
Bromodichloromethane	ug/kg	ND	ND	<7.0	<8.0	<6.3	<6.2	<5.9	<6.5	<7.2	<5.8	<6.3	<6.9	<6.6	<6.4	<6.4	<5.6	<5.5	<5.7	<9.6
Bromoform	ug/kg	ND	ND	<7.0	<8.0	<6.3	<6.2	<5.9	<6.5	<7.2	<5.8	<6.3	<6.9	<6.6	<6.4	<6.4	<5.6	<5.5	<5.7	<9.6
Bromomethane	ug/kg	ND	ND	<14	<16	<13	<12	<12	<13	<14	<12	<13	<14	<13	<13	<13	<11	<11	<11	<19
2-Butanone	ug/kg	ND	ND	<140	<160	<130	<120	<120	<130	<140	<120	<130	<140	<130	<130	<130	<110	<110	<110	<190
n-Butylbenzene	ug/kg	<6.2	<5.6	<7.0	<8.0	<6.3	<6.2	<5.9	<6.5	<7.2	<5.8	<6.3	<6.9	<6.6	<6.4	<6.4	<5.6	<5.5	<5.7	<9.6
sec-Butylbenzene	ug/kg	<6.2	<5.6	<7.0	<8.0	<6.3	<6.2	<5.9	<6.5	<7.2	<5.8	<6.3	<6.9	<6.6	<6.4	<6.4	<5.6	<5.5	<5.7	<9.6
tert-Butylbenzene	ug/kg	ND	ND	<7.0	<8.0	<6.3	<6.2	<5.9	<6.5	<7.2	<5.8	<6.3	<6.9	<6.6	<6.4	<6.4	<5.6	<5.5	<5.7	<9.6
Carbon Tetrachloride	ug/kg	ND	ND	<7.0	<8.0	<6.3	<6.2	<5.9	<6.5	<7.2	<5.8	<6.3	<6.9	<6.6	<6.4	<6.4	<5.6	<5.5	<5.7	<9.6
Chlorobenzene	ug/kg	ND	ND	<7.0	<8.0	<6.3	<6.2	<5.9	<6.5	<7.2	<5.8	<6.3	<6.9	<6.6	<6.4	<6.4	<5.6	<5.5	<5.7	<9.6
Chloroethane	ug/kg	<12	<11	<14	<16	<13	<12	<12	<13	<14	<12	<13	<14	<13	<13	<13	<11	<11	<11	<19
Chloroform	ug/kg	ND	ND	<7.0	<8.0	<6.3	<6.2	<5.9	<6.5	<7.2	<5.8	<6.3	<6.9	<6.6	<6.4	<6.4	<5.6	<5.5	<5.7	<9.6
Chloromethane	ug/kg	ND	ND	<14	<16	<13	<12	<12	<13	<14	<12	<13	<14	<13	<13	<13	<11	<11	<11	<19
2-Chlorotoluene	ug/kg	ND	ND	<7.0	<8.0	<6.3	<6.2	<5.9	<6.5	<7.2	<5.8	<6.3	<6.9	<6.6	<6.4	<6.4	<5.6	<5.5	<5.7	<9.6
4-Chlorotoluene	ug/kg	ND	ND	<7.0	<8.0	<6.3	<6.2	<5.9	<6.5	<7.2	<5.8	<6.3	<6.9	<6.6	<6.4	<6.4	<5.6	<5.5	<5.7	<9.6
1,2-Dibromo-3-chloropropane	ug/kg	ND	ND	<7.0	<8.0	<6.3	<6.2	<5.9	<6.5	<7.2	<5.8	**9.2**	<6.9	<6.6	<6.4	<6.4	<5.6	<5.5	<5.7	<9.6
Dibromochloromethane	ug/kg	ND	ND	<7.0	<8.0	<6.3	<6.2	<5.9	<6.5	<7.2	<5.8	<6.3	<6.9	<6.6	<6.4	<6.4	<5.6	<5.5	<5.7	<9.6
1,2-Dibromoethane	ug/kg	ND	ND	<7.0	<8.0	<6.3	<6.2	<5.9	<6.5	<7.2	<5.8	<6.3	<6.9	<6.6	<6.4	<6.4	<5.6	<5.5	<5.7	<9.6
Dibromomethane	ug/kg	ND	ND	<7.0	<8.0	<6.3	<6.2	<5.9	<6.5	<7.2	<5.8	<6.3	<6.9	<6.6	<6.4	<6.4	<5.6	<5.5	<5.7	<9.6
1,2-Dichlorobenzene	ug/kg	ND	ND	<7.0	<8.0	<6.3	<6.2	<5.9	<6.5	<7.2	<5.8	<6.3	<6.9	<6.6	<6.4	<6.4	<5.6	<5.5	<5.7	<9.6
1,3-Dichlorobenzene	ug/kg	ND	ND	<7.0	<8.0	<6.3	<6.2	<5.9	<6.5	<7.2	<5.8	<6.3	<6.9	<6.6	<6.4	<6.4	<5.6	<5.5	<5.7	<9.6
1,4-Dichlorobenzene	ug/kg	ND	ND	<7.0	<8.0	<6.3	<6.2	<5.9	<6.5	<7.2	<5.8	<6.3	<6.9	<6.6	<6.4	<6.4	<5.6	<5.5	<5.7	<9.6
Dichlorodifluoromethane	ug/kg	ND	ND	<14	<16	<13	<12	<12	<13	<14	<12	<13	<14	<13	<13	<13	<11	<11	<11	<19
1,1-Dichloroethane	ug/kg	<6.2	<5.6	<7.0	<8.0	<6.3	<6.2	<5.9	<6.5	<7.2	<5.8	<6.3	<6.9	<6.6	<6.4	<6.4	<5.6	<5.5	<5.7	<9.6
1,2-Dichloroethane	ug/kg	ND	ND	<7.0	<8.0	<6.3	<6.2	<5.9	<6.5	<7.2	<5.8	<6.3	<6.9	<6.6	<6.4	<6.4	<5.6	<5.5	<5.7	<9.6
1,1-Dichloroethene	ug/kg	ND	ND	<7.0	<8.0	<6.3	<6.2	<5.9	<6.5	<7.2	<5.8	<6.3	<6.9	<6.6	<6.4	<6.4	<5.6	<5.5	<5.7	<9.6
cis-1,2-Dichloroethene	ug/kg	<6.2	<5.6	<7.0	<8.0	<6.3	<6.2	<5.9	<6.5	<7.2	<5.8	<6.3	<6.9	<6.6	<6.4	<6.4	<5.6	<5.5	<5.7	<9.6
trans-1,2-Dichloroethene	ug/kg	ND	ND	<7.0	<8.0	<6.3	<6.2	<5.9	<6.5	<7.2	<5.8	<6.3	<6.9	<6.6	<6.4	<6.4	<5.6	<5.5	<5.7	<9.6
1,2-Dichloropropane	ug/kg	ND	ND	<7.0	<8.0	<6.3	<6.2	<5.9	<6.5	<7.2	<5.8	<6.3	<6.9	<6.6	<6.4	<6.4	<5.6	<5.5	<5.7	<9.6
1,3-Dichloropropane	ug/kg	ND	ND	<7.0	<8.0	<6.3	<6.2	<5.9	<6.5	<7.2	<5.8	<6.3	<6.9	<6.6	<6.4	<6.4	<5.6	<5.5	<5.7	<9.6
2,2-Dichloropropane	ug/kg	ND	ND	<7.0	<8.0	<6.3	<6.2	<5.9	<6.5	<7.2	<5.8	<6.3	<6.9	<6.6	<6.4	<6.4	<5.6	<5.5	<5.7	<9.6
1,1-Dichloropropene	ug/kg	ND	ND	<7.0	<8.0	<6.3	<6.2	<5.9	<6.5	<7.2	<5.8	<6.3	<6.9	<6.6	<6.4	<6.4	<5.6	<5.5	<5.7	<9.6
cis-1,3-Dichloropropene	ug/kg	ND	ND	<7.0	<8.0	<6.3	<6.2	<5.9	<6.5	<7.2	<5.8	<6.3	<6.9	<6.6	<6.4	<6.4	<5.6	<5.5	<5.7	<9.6
trans-1,3-Dichloropropene	ug/kg	ND	ND	<7.0	<8.0	<6.3	<6.2	<5.9	<6.5	<7.2	<5.8	<6.3	<6.9	<6.6	<6.4	<6.4	<5.6	<5.5	<5.7	<9.6
Isopropyl Ether	ug/kg	ND	ND	<7.0	<8.0	<6.3	<6.2	<5.9	<6.5	<7.2	<5.8	<6.3	<6.9	<6.6	<6.4	<6.4	<5.6	<5.5	<5.7	<9.6
Ethylbenzene	ug/kg	<6.2	<5.6	<7.0	<8.0	<6.3	<6.2	<5.9	<6.5	<7.2	<5.8	<6.3	<6.9	<6.6	<6.4	<6.4	<5.6	<5.5	<5.7	<9.6
Hexachlorobutadiene	ug/kg	ND	ND	<7.0	<8.0	<6.3	<6.2	<5.9	<6.5	<7.2	<5.8	<6.3	<6.9	<6.6	<6.4	<6.4	<5.6	<5.5	<5.7	<9.6
2-Hexanone	ug/kg	ND	ND	<70	<80	<63	<62	<59	<65	<72	<58	<63	<69	<66	<64	<64	<56	<55	<57	<96
Isopropylbenzene (Cumene)	ug/kg	ND	ND	<7.0	<8.0	<6.3	<6.2	<5.9	<6.5	<7.2	<5.8	<6.3	<6.9	<6.6	<6.4	<6.4	<5.6	<5.5	<5.7	<9.6
p-Isopropyltoluene	ug/kg	**9.3**	<5.6	<7.0	<8.0	<6.3	<6.2	<5.9	<6.5	<7.2	<5.8	<6.3	<6.9	<6.6	<6.4	<6.4	<5.6	<5.5	<5.7	<9.6
Methylene chloride	ug/kg	**7.6**	<5.6	**11**	**12**	**46**	**6.4**	**24**	**55**	**63**	**23**	**29**	**50**	**13**	<6.4	**22**	**11**	**9.5**	<5.7	**78**

Table 3-1. Soil Sample Analytical Results: Volatile Organic Compounds

		B4-05 (7.5-8.0')	B4-05 (14.5-15.0')	B4-06 (0'-2')	B4-06 (2'-4')	B4-06 (4'-6')	B4-06 (6'-8')	B4-07 (2.5-3.5')	B4-07 (5-7')	B4-07 (7-9')	B4-08 (2.5-3.5')	B4-08 (5-7')	B4-08 (7-9')	B4-09 (2.5-3.5')	B4-09 (5-7')	B4-09 (7'-9')	B4-10 (2.5-3.5')	B4-10 (5'-7')	B4-10 (7-9')	B4-11 (2.5'-3.5')
4-Methyl-2-pentanone	ug/kg	ND	ND	<70	<80	<63	<62	<59	<65	<72	<58	<63	<69	<66	<64	<64	<56	<55	<57	<96
Methyl-tert-butyl ether	ug/kg	ND	ND	<7.0	<8.0	<6.3	<6.2	<5.9	<6.5	<7.2	<5.8	<6.3	<6.9	<6.6	<6.4	<6.4	<5.6	<5.5	<5.7	<9.6
Naphthalene	ug/kg	**4800**	**11**	**340**	**220**	<6.3	<6.2	**45**	<6.5	**14000**	**12**	**1900**	**3200**	**84**	**840**	**1500**	<5.6	<5.5	<5.7	**220**
n-Propylbenzene	ug/kg	<6.2	<5.6	<7.0	<8.0	<6.3	<6.2	<5.9	<6.5	<7.2	<5.8	<6.3	<6.9	<6.6	<6.4	<6.4	<5.6	<5.5	<5.7	<9.6
Styrene	ug/kg	ND	ND	<7.0	<8.0	<6.3	<6.2	<5.9	<6.5	<7.2	<5.8	<6.3	<6.9	<6.6	<6.4	<6.4	<5.6	<5.5	<5.7	<9.6
1,1,1,2-Tetrachloroethane	ug/kg	ND	ND	<7.0	<8.0	<6.3	<6.2	<5.9	<6.5	<7.2	<5.8	<6.3	<6.9	<6.6	<6.4	<6.4	<5.6	<5.5	<5.7	<9.6
1,1,2,2-Tetrachloroethane	ug/kg	ND	ND	<7.0	<8.0	<6.3	<6.2	<5.9	<6.5	<7.2	<5.8	<6.3	<6.9	<6.6	<6.4	<6.4	<5.6	<5.5	<5.7	<9.6
Tetrachloroethene	ug/kg	**230**	<5.6	**7.0**	**130**	<6.3	<6.2	<5.9	**27**	<7.2	<5.8	<6.3	<6.9	<6.6	<6.4	<6.4	<5.6	<5.5	<5.7	<9.6
Toluene	ug/kg	<6.2	<5.6	<7.0	<8.0	<6.3	<6.2	<5.9	<6.5	<7.2	<5.8	<6.3	<6.9	<6.6	<6.4	<6.4	<5.6	<5.5	<5.7	<9.6
1,2,3-Trichlorobenzene	ug/kg	ND	ND	<7.0	<8.0	<6.3	<6.2	<5.9	<6.5	<7.2	<5.8	<6.3	<6.9	<6.6	<6.4	<6.4	<5.6	<5.5	<5.7	<9.6
1,2,4-Trichlorobenzene	ug/kg	ND	ND	<7.0	<8.0	<6.3	<6.2	<5.9	<6.5	<7.2	<5.8	<6.3	<6.9	<6.6	<6.4	<6.4	<5.6	<5.5	<5.7	<9.6
1,1,1-Trichloroethane	ug/kg	ND	ND	<7.0	<8.0	<6.3	<6.2	<5.9	<6.5	<7.2	<5.8	<6.3	<6.9	<6.6	<6.4	<6.4	<5.6	<5.5	<5.7	<9.6
1,1,2-Trichloroethane	ug/kg	ND	ND	<7.0	<8.0	<6.3	<6.2	<5.9	<6.5	<7.2	<5.8	<6.3	<6.9	<6.6	<6.4	<6.4	<5.6	<5.5	<5.7	<9.6
Trichloroethene	ug/kg	<6.2	<5.6	<7.0	<8.0	<6.3	<6.2	<5.9	<6.5	<7.2	<5.8	<6.3	<6.9	<6.6	<6.4	<6.4	<5.6	<5.5	<5.7	<9.6
Trichlorofluoromethane	ug/kg	ND	ND	<7.0	<8.0	<6.3	<6.2	<5.9	<6.5	<7.2	<5.8	<6.3	<6.9	<6.6	<6.4	<6.4	<5.6	<5.5	<5.7	<9.6
1,2,3-Trichloropropane	ug/kg	ND	ND	<7.0	<8.0	<6.3	<6.2	<5.9	<6.5	<7.2	<5.8	<6.3	<6.9	<6.6	<6.4	<6.4	<5.6	<5.5	<5.7	<9.6
1,2,4-Trimethylbenzene	ug/kg	**42**	<5.6	<7.0	<8.0	<6.3	<6.2	<5.9	<6.5	<7.2	<5.8	<6.3	<6.9	<6.6	<6.4	<6.4	<5.6	<5.5	<5.7	<9.6
1,3,5-Trimethylbenzene	ug/kg	**11**	<5.6	<7.0	<8.0	<6.3	<6.2	<5.9	<6.5	<7.2	<5.8	<6.3	<6.9	<6.6	<6.4	<6.4	<5.6	<5.5	<5.7	<9.6
Vinyl acetate	ug/kg	ND	ND	<70	<80	<63	<62	<59	<65	<72	<58	<63	<69	<66	<64	<64	<56	<55	<57	<96
Vinyl chloride	ug/kg	ND	ND	<14	<16	<13	<12	<12	<13	<14	<12	<13	<14	<13	<13	<13	<11	<11	<11	<19
Xylenes (Total)	ug/kg	ND	ND	<7.0	<8.0	<6.3	<6.2	<5.9	<6.5	<7.2	<5.8	<6.3	<6.9	<6.6	<6.4	<6.4	<5.6	<5.5	<5.7	<9.6
m,p-Xylene	ug/kg	<12	<11	<14	<16	<13	<12	<12	<13	<14	<12	<13	<14	<13	<13	<13	<11	<11	<11	<19
o-Xylene	ug/kg	<6.2	<5.6	<7.0	<8.0	<6.3	<6.2	<5.9	<6.5	<7.2	<5.8	<6.3	<6.9	<6.6	<6.4	<6.4	<5.6	<5.5	<5.7	<9.6

Table 3-1. Soil Sample Analytical Results: Volatile Organic Compounds

		B4-11 (5-7')	B4-11 (7'-9')	B5-01 (0.5-1.0')	B5-01 (3.5-4.0')	B5-01 (9.5-10.0')	B5-01 (14.5-15')	B6-01 (8.5-9.0')	B6-01 (11.5-12.0')	B6-01 (14.0-14.5')	B6-01 (17.0-17.5')	B6-01 (18.5-19.0')	B6-01 (19.5-20.0')	B6-02 (8.5-9.0')	B6-02 (11.5-12.0')	B6-03 (8.5-9.0')	B6-03 (11.5-12.0')	B6-03 (14.0-14.5')	B6-04 (8.5-9.0')	B6-04 (11.5-12.0')
Volatile Organic Compounds																				
Acetone	ug/kg	**280**	**300**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	ug/kg	<8.0	<6.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromobenzene	ug/kg	<8.0	<6.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromochloromethane	ug/kg	<8.0	<6.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	ug/kg	<8.0	<6.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	ug/kg	<8.0	<6.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	ug/kg	<16	<12	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Butanone	ug/kg	<160	<120	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	ug/kg	<8.0	<6.0	<5.8	<6.1	<5.7	<5.9	<5.8	<5.8	<5.9	<6.0	<6.3	<6.2	<6.2	<6.1	<5.7	<6.8	<7.3	<5.6	<6.2
sec-Butylbenzene	ug/kg	<8.0	<6.0	<5.8	<6.1	<5.7	<5.9	<5.8	<5.8	<5.9	<6.0	<6.3	<6.2	<6.2	<6.1	<5.7	<6.8	<7.3	<5.6	<6.2
tert-Butylbenzene	ug/kg	<8.0	<6.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Tetrachloride	ug/kg	<8.0	<6.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	ug/kg	<8.0	<6.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	ug/kg	<16	<12	<12	<12	<11	<12	<12	<12	<12	<12	<13	<12	<12	<12	<11	<14	<15	<11	<12
Chloroform	ug/kg	<8.0	<6.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	ug/kg	<16	<12	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Chlorotoluene	ug/kg	<8.0	<6.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Chlorotoluene	ug/kg	<8.0	<6.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromo-3-chloropropane	ug/kg	<8.0	<6.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	ug/kg	<8.0	<6.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane	ug/kg	<8.0	<6.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	ug/kg	<8.0	<6.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	ug/kg	<8.0	<6.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	ug/kg	<8.0	<6.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	ug/kg	<8.0	<6.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dichlorodifluoromethane	ug/kg	<16	<12	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ug/kg	<8.0	<6.0	<5.8	<6.1	<5.7	<5.9	<5.8	<5.8	<5.9	<6.0	<6.3	<6.2	<6.2	<6.1	<5.7	<6.8	<7.3	<5.6	<6.2
1,2-Dichloroethane	ug/kg	<8.0	<6.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	ug/kg	<8.0	<6.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	ug/kg	<8.0	<6.0	<5.8	<6.1	<5.7	<5.9	**9.3**	<5.8	<5.9	**12**	<6.3	<6.2	<6.2	<6.1	<5.7	<6.8	<7.3	<5.6	<6.2
trans-1,2-Dichloroethene	ug/kg	<8.0	<6.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	ug/kg	<8.0	<6.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichloropropane	ug/kg	<8.0	<6.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,2-Dichloropropane	ug/kg	<8.0	<6.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloropropene	ug/kg	<8.0	<6.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	ug/kg	<8.0	<6.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	ug/kg	<8.0	<6.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropyl Ether	ug/kg	<8.0	<6.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	ug/kg	<8.0	<6.0	<5.8	<6.1	<5.7	<5.9	<5.8	<5.8	<5.9	<6.0	<6.3	<6.2	<6.2	<6.1	<5.7	<6.8	<7.3	<5.6	<6.2
Hexachlorobutadiene	ug/kg	<8.0	<6.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Hexanone	ug/kg	<80	<60	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene (Cumene)	ug/kg	<8.0	<6.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p-Isopropyltoluene	ug/kg	<8.0	<6.0	<5.8	<6.1	<5.7	<5.9	<5.8	<5.8	<5.9	<6.0	<6.3	<6.2	<6.2	<6.1	<5.7	<6.8	<7.3	<5.6	<6.2
Methylene chloride	ug/kg	<8.0	**32**	<5.8	<6.1	<5.7	<5.9	<5.8	**7.0**	**9.7**	<6.0	<6.3	<6.2	<6.2	<6.1	<5.7	<6.8	<7.3	<5.6	<6.2

Table 3-1. Soil Sample Analytical Results: Volatile Organic Compounds

		B4-11 (5-7')	B4-11 (7'-9')	B5-01 (0.5-1.0')	B5-01 (3.5-4.0')	B5-01 (9.5-10.0')	B5-01 (14.5-15')	B6-01 (8.5-9.0')	B6-01 (11.5-12.0')	B6-01 (14.0-14.5')	B6-01 (17.0-17.5')	B6-01 (18.5-19.0')	B6-01 (19.5-20.0')	B6-02 (8.5-9.0')	B6-02 (11.5-12.0')	B6-03 (8.5-9.0')	B6-03 (11.5-12.0')	B6-03 (14.0-14.5')	B6-04 (8.5-9.0')	B6-04 (11.5-12.0')
4-Methyl-2-pentanone	ug/kg	<80	<60	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methyl-tert-butyl ether	ug/kg	<8.0	<6.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	ug/kg	<8.0	**970**	**330**	**190**	**9.8**	<5.9	<5.8	<5.8	<5.9	<6.0	<6.3	**9.9**	<6.2	<6.1	<5.7	<6.8	<7.3	<5.6	<6.2
n-Propylbenzene	ug/kg	<8.0	<6.0	<5.8	<6.1	<5.7	<5.9	<5.8	<5.8	<5.9	<6.0	<6.3	<6.2	<6.2	<6.1	<5.7	<6.8	<7.3	<5.6	<6.2
Styrene	ug/kg	<8.0	<6.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	ug/kg	<8.0	<6.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	ug/kg	<8.0	<6.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	ug/kg	<8.0	<6.0	<5.8	<6.1	<5.7	<5.9	**85**	<5.8	<5.9	**450**	<6.3	<6.2	<6.2	<6.1	<5.7	<6.8	<7.3	**55**	<6.2
Toluene	ug/kg	<8.0	<6.0	<5.8	<6.1	<5.7	<5.9	<5.8	<5.8	<5.9	<6.0	<6.3	<6.2	<6.2	<6.1	<5.7	<6.8	<7.3	<5.6	<6.2
1,2,3-Trichlorobenzene	ug/kg	<8.0	<6.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	ug/kg	<8.0	<6.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	ug/kg	<8.0	<6.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	ug/kg	<8.0	<6.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	ug/kg	<8.0	<6.0	<5.8	<6.1	<5.7	<5.9	**12**	<5.8	<5.9	**6.3**	<6.3	<6.2	<6.2	<6.1	<5.7	<6.8	<7.3	<5.6	<6.2
Trichlorofluoromethane	ug/kg	<8.0	<6.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	ug/kg	<8.0	<6.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	ug/kg	<8.0	<6.0	<5.8	<6.1	<5.7	<5.9	<5.8	<5.8	<5.9	<6.0	<6.3	<6.2	<6.2	<6.1	<5.7	<6.8	<7.3	<5.6	<6.2
1,3,5-Trimethylbenzene	ug/kg	<8.0	<6.0	<5.8	<6.1	<5.7	<5.9	<5.8	<5.8	<5.9	<6.0	<6.3	<6.2	<6.2	<6.1	<5.7	<6.8	<7.3	<5.6	<6.2
Vinyl acetate	ug/kg	<80	<60	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl chloride	ug/kg	<16	<12	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes (Total)	ug/kg	<8.0	<6.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
m,p-Xylene	ug/kg	<16	<12	<12	<12	<11	<12	<12	<12	<12	<12	<13	<12	<12	<12	<11	<14	<15	<11	<12
o-Xylene	ug/kg	<8.0	<6.0	<5.8	<6.1	<5.7	<5.9	<5.8	<5.8	<5.9	<6.0	<6.3	<6.2	<6.2	<6.1	<5.7	<6.8	<7.3	<5.6	<6.2

Table 3-1. Soil Sample Analytical Results: Volatile Organic Compounds

		B6-04 (14.0-14.5')	B6-05 (4.5')	B6-08 (6.0')	B6-09 (6.0')	AREA 6 WEST PIT	B10-08 (0-2)	B10-09 (0-2)	B10-09 (4-7)	B10-11 (0-4)	B10-12 (1-4)	B10-20 (4-7)	B10-20 SEWER RESIDUE	B10-22 (6-8)	B15-01 CINDERS	B15-01 GRAVEL	B15-01 (0'-0.5')	B15-01 (1.0'-1.5')	B15-01 (3'-4')	B15-01 (5'-6')
Volatile Organic Compounds																				
Acetone	ug/kg	ND	**5900**	<120	**160**	<150	**50.**	**42.**	**57.**	**160**	**140**	**93.**	**120**	**52.**	<100	<100	<170	<140	**200**	<160
Benzene	ug/kg	ND	<8.3	<6.2	<6.2	<7.3	<6.5	<5.8	<7.2	<6.0	<6.0	<7.5	<5.2	<6.0	<5.0	<5.0	<8.7	<7.0	<7.4	<7.9
Bromobenzene	ug/kg	ND	<8.3	<6.2	<6.2	<7.3	<6.5	<5.8	<7.2	<6.0	<6.0	<7.5	<5.2	<6.0	<5.0	<5.0	<8.7	<7.0	<7.4	<7.9
Bromochloromethane	ug/kg	ND	<8.3	<6.2	<6.2	<7.3	<6.5	<5.8	<7.2	<6.0	<6.0	<7.5	<5.2	<6.0	<5.0	<5.0	<8.7	<7.0	<7.4	<7.9
Bromodichloromethane	ug/kg	ND	<8.3	<6.2	<6.2	<7.3	<6.5	<5.8	<7.2	<6.0	<6.0	<7.5	<5.2	<6.0	<5.0	<5.0	<8.7	<7.0	<7.4	<7.9
Bromoform	ug/kg	ND	<8.3	<6.2	<6.2	<7.3	<6.5	<5.8	<7.2	<6.0	<6.0	<7.5	<5.2	<6.0	<5.0	<5.0	<8.7	<7.0	<7.4	<7.9
Bromomethane	ug/kg	ND	<17	<12	<12	<15	<13.	<12.	<14.	<12.	<12.	<15.	<10.	<12.	<10	<10	<17	<14	<15	<16
2-Butanone	ug/kg	ND	**210**	<120	<120	<150	<130	<120	<140	<120	<120	<150	<100	<120	<100	<100	<170	<140	<150	<160
n-Butylbenzene	ug/kg	<6.7	<8.3	<6.2	<6.2	<7.3	<6.5	<5.8	<7.2	<6.0	<6.0	<7.5	<5.2	<6.0	<5.0	<5.0	<8.7	<7.0	<7.4	<7.9
sec-Butylbenzene	ug/kg	<6.7	**25**	<6.2	<6.2	<7.3	<6.5	<5.8	<7.2	<6.0	<6.0	<7.5	<5.2	<6.0	<5.0	<5.0	<8.7	<7.0	<7.4	<7.9
tert-Butylbenzene	ug/kg	ND	<8.3	<6.2	<6.2	<7.3	<6.5	<5.8	<7.2	<6.0	<6.0	<7.5	<5.2	<6.0	<5.0	<5.0	<8.7	<7.0	<7.4	<7.9
Carbon Tetrachloride	ug/kg	ND	<8.3	<6.2	<6.2	<7.3	<6.5	<5.8	<7.2	<6.0	<6.0	<7.5	<5.2	<6.0	<5.0	<5.0	<8.7	<7.0	<7.4	<7.9
Chlorobenzene	ug/kg	ND	<8.3	<6.2	<6.2	<7.3	<6.5	<5.8	<7.2	<6.0	<6.0	<7.5	<5.2	<6.0	<5.0	<5.0	<8.7	<7.0	<7.4	<7.9
Chloroethane	ug/kg	<13	<17	<12	<12	<15	<13.	<12.	<14.	<12.	<12.	<15.	<10.	<12.	<10	<10	<17	<14	<15	<16
Chloroform	ug/kg	ND	<8.3	<6.2	<6.2	<7.3	<6.5	<5.8	<7.2	<6.0	<6.0	<7.5	<5.2	<6.0	<5.0	<5.0	<8.7	<7.0	<7.4	<7.9
Chloromethane	ug/kg	ND	<17	<12	<12	<15	<13.	<12.	<14.	<12.	<12.	<15.	<10.	<12.	<10	<10	<17	<14	<15	<16
2-Chlorotoluene	ug/kg	ND	<8.3	<6.2	<6.2	<7.3	<6.5	<5.8	<7.2	<6.0	<6.0	<7.5	<5.2	<6.0	<5.0	<5.0	<8.7	<7.0	<7.4	<7.9
4-Chlorotoluene	ug/kg	ND	<8.3	<6.2	<6.2	<7.3	<6.5	<5.8	<7.2	<6.0	<6.0	<7.5	<5.2	<6.0	<5.0	<5.0	<8.7	<7.0	<7.4	<7.9
1,2-Dibromo-3-chloropropane	ug/kg	ND	<8.3	<6.2	<6.2	<7.3	<6.5	<5.8	<7.2	<6.0	<6.0	<7.5	<5.2	<6.0	<5.0	<5.0	<8.7	<7.0	<7.4	<7.9
Dibromochloromethane	ug/kg	ND	<8.3	<6.2	<6.2	<7.3	<6.5	<5.8	<7.2	<6.0	<6.0	<7.5	<5.2	<6.0	<5.0	<5.0	<8.7	<7.0	<7.4	<7.9
1,2-Dibromoethane	ug/kg	ND	<8.3	<6.2	<6.2	<7.3	<6.5	<5.8	<7.2	<6.0	<6.0	<7.5	<5.2	<6.0	<5.0	<5.0	<8.7	<7.0	<7.4	<7.9
Dibromomethane	ug/kg	ND	<8.3	<6.2	<6.2	<7.3	<6.5	<5.8	<7.2	<6.0	<6.0	<7.5	<5.2	<6.0	<5.0	<5.0	<8.7	<7.0	<7.4	<7.9
1,2-Dichlorobenzene	ug/kg	ND	<8.3	<6.2	<6.2	<7.3	<6.5	<5.8	<7.2	<6.0	<6.0	<7.5	<5.2	<6.0	<5.0	<5.0	<8.7	<7.0	<7.4	<7.9
1,3-Dichlorobenzene	ug/kg	ND	<8.3	<6.2	<6.2	<7.3	<6.5	<5.8	<7.2	<6.0	<6.0	<7.5	<5.2	<6.0	<5.0	<5.0	<8.7	<7.0	<7.4	<7.9
1,4-Dichlorobenzene	ug/kg	ND	<8.3	<6.2	<6.2	<7.3	<6.5	<5.8	<7.2	<6.0	<6.0	<7.5	<5.2	<6.0	<5.0	<5.0	<8.7	<7.0	<7.4	<7.9
Dichlorodifluoromethane	ug/kg	ND	<17	<12	<12	<15	<13.	<12.	<14.	<12.	<12.	<15.	<10.	<12.	<10	<10	<17	<14	<15	<16
1,1-Dichloroethane	ug/kg	<6.7	<8.3	<6.2	<6.2	<7.3	<6.5	<5.8	<7.2	<6.0	<6.0	<7.5	<5.2	<6.0	<5.0	<5.0	<8.7	<7.0	<7.4	<7.9
1,2-Dichloroethane	ug/kg	ND	<8.3	<6.2	<6.2	<7.3	<6.5	<5.8	<7.2	<6.0	<6.0	<7.5	<5.2	<6.0	<5.0	<5.0	<8.7	<7.0	<7.4	<7.9
1,1-Dichloroethene	ug/kg	ND	<8.3	<6.2	<6.2	<7.3	<6.5	<5.8	<7.2	<6.0	<6.0	<7.5	<5.2	<6.0	<5.0	<5.0	<8.7	<7.0	<7.4	<7.9
cis-1,2-Dichloroethene	ug/kg	<6.7	<8.3	<6.2	<6.2	<7.3	<6.5	<5.8	<7.2	<6.0	<6.0	<7.5	<5.2	<6.0	<5.0	<5.0	<8.7	<7.0	<7.4	<7.9
trans-1,2-Dichloroethene	ug/kg	ND	<8.3	<6.2	<6.2	<7.3	<6.5	<5.8	<7.2	<6.0	<6.0	<7.5	<5.2	<6.0	<5.0	<5.0	<8.7	<7.0	<7.4	<7.9
1,2-Dichloropropane	ug/kg	ND	<8.3	<6.2	<6.2	<7.3	<6.5	<5.8	<7.2	<6.0	<6.0	<7.5	<5.2	<6.0	<5.0	<5.0	<8.7	<7.0	<7.4	<7.9
1,3-Dichloropropane	ug/kg	ND	<8.3	<6.2	<6.2	<7.3	<6.5	<5.8	<7.2	<6.0	<6.0	<7.5	<5.2	<6.0	<5.0	<5.0	<8.7	<7.0	<7.4	<7.9
2,2-Dichloropropane	ug/kg	ND	<8.3	<6.2	<6.2	<7.3	<6.5	<5.8	<7.2	<6.0	<6.0	<7.5	<5.2	<6.0	<5.0	<5.0	<8.7	<7.0	<7.4	<7.9
1,1-Dichloropropene	ug/kg	ND	<8.3	<6.2	<6.2	<7.3	<6.5	<5.8	<7.2	<6.0	<6.0	<7.5	<5.2	<6.0	<5.0	<5.0	<8.7	<7.0	<7.4	<7.9
cis-1,3-Dichloropropene	ug/kg	ND	<8.3	<6.2	<6.2	<7.3	<6.5	<5.8	<7.2	<6.0	<6.0	<7.5	<5.2	<6.0	<5.0	<5.0	<8.7	<7.0	<7.4	<7.9
trans-1,3-Dichloropropene	ug/kg	ND	<8.3	<6.2	<6.2	<7.3	<6.5	<5.8	<7.2	<6.0	<6.0	<7.5	<5.2	<6.0	<5.0	<5.0	<8.7	<7.0	<7.4	<7.9
Isopropyl Ether	ug/kg	ND	<8.3	<6.2	<6.2	<7.3	<6.5	<5.8	<7.2	<6.0	<6.0	<7.5	<5.2	<6.0	<5.0	<5.0	<8.7	<7.0	<7.4	<7.9
Ethylbenzene	ug/kg	<6.7	<8.3	<6.2	<6.2	<7.3	<6.5	<5.8	<7.2	<6.0	<6.0	<7.5	<5.2	<6.0	<5.0	<5.0	<8.7	<7.0	<7.4	<7.9
Hexachlorobutadiene	ug/kg	ND	<8.3	<6.2	<6.2	<7.3	<6.5	<5.8	<7.2	<6.0	<6.0	<7.5	<5.2	<6.0	<5.0	<5.0	<8.7	<7.0	<7.4	<7.9
2-Hexanone	ug/kg	ND	<83	<62	<62	<73	<65.	<58.	<72.	<60.	<60.	<75.	<52.	<60.	<50	<50	<87	<70	<74	<79
Isopropylbenzene (Cumene)	ug/kg	ND	<8.3	<6.2	<6.2	<7.3	<6.5	<5.8	<7.2	<6.0	<6.0	<7.5	<5.2	<6.0	<5.0	<5.0	<8.7	<7.0	<7.4	<7.9
p-Isopropyltoluene	ug/kg	<6.7	**130**	<6.2	<6.2	<7.3	<6.5	<5.8	<7.2	<6.0	<6.0	<7.5	<5.2	<6.0	<5.0	<5.0	<8.7	<7.0	<7.4	<7.9
Methylene chloride	ug/kg	<6.7	**270**	**15**	**14**	<7.3	<6.5	<5.8	**11.**	<6.0	**14.**	**6.0**	**8.2**	<6.0	**21**	<5.0	**20**	**21**	**29**	**9.7**

Table 3-1. Soil Sample Analytical Results: Volatile Organic Compounds

		B6-04 (14.0-14.5')	B6-05 (4.5')	B6-08 (6.0')	B6-09 (6.0')	AREA 6 WEST PIT	B10-08 (0-2)	B10-09 (0-2)	B10-09 (4-7)	B10-11 (0-4)	B10-12 (1-4)	B10-20 (4-7)	B10-20 SEWER RESIDUE	B10-22 (6-8)	B15-01 CINDERS	B15-01 GRAVEL	B15-01 (0'-0.5')	B15-01 (1.0'-1.5')	B15-01 (3'-4')	B15-01 (5'-6')
4-Methyl-2-pentanone	ug/kg	ND	<83	<62	<62	<73	<65.	<58.	<72.	<60.	<60.	<75.	<52.	<60.	<50	<50	<87	<70	<74	<79
Methyl-tert-butyl ether	ug/kg	ND	<8.3	<6.2	<6.2	<7.3	<6.5	<5.8	<7.2	<6.0	<6.0	<7.5	<5.2	<6.0	<5.0	<5.0	<8.7	<7.0	<7.4	<7.9
Naphthalene	ug/kg	<6.7	**36**	<6.2	<6.2	<7.3	<6.5	**1.5**	<7.2	<6.0	<6.0	<7.5	<5.2	<6.0	**480**	**81**	**22**	**15**	<7.4	<7.9
n-Propylbenzene	ug/kg	<6.7	<8.3	<6.2	<6.2	<7.3	<6.5	<5.8	<7.2	<6.0	<6.0	<7.5	<5.2	<6.0	<5.0	<5.0	<8.7	<7.0	<7.4	<7.9
Styrene	ug/kg	ND	<8.3	<6.2	<6.2	<7.3	<6.5	<5.8	<7.2	<6.0	<6.0	<7.5	<5.2	<6.0	<5.0	<5.0	<8.7	<7.0	<7.4	<7.9
1,1,1,2-Tetrachloroethane	ug/kg	ND	<8.3	<6.2	<6.2	<7.3	<6.5	<5.8	<7.2	<6.0	<6.0	<7.5	<5.2	<6.0	<5.0	<5.0	<8.7	<7.0	<7.4	<7.9
1,1,2,2-Tetrachloroethane	ug/kg	ND	<8.3	<6.2	<6.2	<7.3	<6.5	<5.8	<7.2	<6.0	<6.0	<7.5	<5.2	<6.0	<5.0	<5.0	<8.7	<7.0	<7.4	<7.9
Tetrachloroethene	ug/kg	<6.7	**44000**	<6.2	**17**	**44**	<6.5	<5.8	<7.2	<6.0	**30.**	<7.5	<5.2	<6.0	**28**	<5.0	<8.7	<7.0	<7.4	<7.9
Toluene	ug/kg	<6.7	**9.4**	<6.2	<6.2	<7.3	<6.5	<5.8	<7.2	<6.0	<6.0	<7.5	<5.2	<6.0	<5.0	<5.0	<8.7	<7.0	<7.4	<7.9
1,2,3-Trichlorobenzene	ug/kg	ND	<8.3	<6.2	<6.2	<7.3	<6.5	<5.8	<7.2	<6.0	<6.0	<7.5	<5.2	<6.0	<5.0	<5.0	<8.7	<7.0	<7.4	<7.9
1,2,4-Trichlorobenzene	ug/kg	ND	<8.3	<6.2	<6.2	<7.3	<6.5	<5.8	<7.2	<6.0	<6.0	<7.5	<5.2	<6.0	<5.0	<5.0	<8.7	<7.0	<7.4	<7.9
1,1,1-Trichloroethane	ug/kg	ND	<8.3	<6.2	<6.2	<7.3	<6.5	<5.8	<7.2	<6.0	<6.0	<7.5	<5.2	<6.0	<5.0	<5.0	<8.7	<7.0	<7.4	<7.9
1,1,2-Trichloroethane	ug/kg	ND	<8.3	<6.2	<6.2	<7.3	<6.5	<5.8	<7.2	<6.0	<6.0	<7.5	<5.2	<6.0	<5.0	<5.0	<8.7	<7.0	<7.4	<7.9
Trichloroethene	ug/kg	<6.7	**120**	<6.2	<6.2	<7.3	<6.5	<5.8	<7.2	<6.0	<6.0	<7.5	<5.2	<6.0	<5.0	<5.0	<8.7	<7.0	<7.4	<7.9
Trichlorofluoromethane	ug/kg	ND	<8.3	<6.2	<6.2	<7.3	<6.5	<5.8	<7.2	<6.0	<6.0	<7.5	<5.2	<6.0	<5.0	<5.0	<8.7	<7.0	<7.4	<7.9
1,2,3-Trichloropropane	ug/kg	ND	<8.3	<6.2	<6.2	<7.3	<6.5	<5.8	<7.2	<6.0	<6.0	<7.5	<5.2	<6.0	<5.0	<5.0	<8.7	<7.0	<7.4	<7.9
1,2,4-Trimethylbenzene	ug/kg	<6.7	**93**	<6.2	<6.2	<7.3	<6.5	<5.8	<7.2	<6.0	<6.0	<7.5	<5.2	<6.0	<5.0	<5.0	<8.7	<7.0	<7.4	<7.9
1,3,5-Trimethylbenzene	ug/kg	<6.7	**140**	<6.2	<6.2	<7.3	<6.5	<5.8	<7.2	<6.0	<6.0	<7.5	<5.2	<6.0	<5.0	<5.0	<8.7	<7.0	<7.4	<7.9
Vinyl acetate	ug/kg	ND	<83	<62	<62	<73	<65.	<58.	<72.	<60.	<60.	<75.	<52.	<60.	<50	<50	<87	<70	<74	<79
Vinyl chloride	ug/kg	ND	<17	<12	<12	<15	<13.	<12.	<14.	<12.	<12.	<15.	<10.	<12.	<10	<10	<17	<14	<15	<16
Xylenes (Total)	ug/kg	ND	**39**	<6.2	<6.2	<7.3	<6.5	<5.8	<7.2	<6.0	<6.0	<7.5	<5.2	<6.0	-	-	-	-	-	-
m,p-Xylene	ug/kg	<13	**20**	<12	<12	<15	<13.	<12.	<14.	<12.	<12.	<15.	<10.	<12.	<10	<10	<17	<14	<15	<16
o-Xylene	ug/kg	<6.7	**19**	<6.2	<6.2	<7.3	<6.5	<5.8	<7.2	<6.0	<6.0	<7.5	<5.2	<6.0	<5.0	<5.0	<8.7	<7.0	<7.4	<7.9

Table 3-1. Soil Sample Analytical Results: Volatile Organic Compounds

		B15-01 (7'-8')	B15-01 (11'-12')	B15-03 (2.5-3.5)	B15-03 (5-7)	B18-01 (4-6)	B18-01 (8-10)	B18-01 (12-14)
Volatile Organic Compounds								
Acetone	ug/kg	<130	**160**	**260**	**160**	**64.**	**140**	**44.**
Benzene	ug/kg	<6.5	<5.8	<6.4	<5.4	<5.9	<6.5	<5.7
Bromobenzene	ug/kg	<6.5	<5.8	<6.4	<5.4	<5.9	<6.5	<5.7
Bromochloromethane	ug/kg	<6.5	<5.8	<6.4	<5.4	<5.9	<6.5	<5.7
Bromodichloromethane	ug/kg	<6.5	<5.8	<6.4	<5.4	<5.9	<6.5	<5.7
Bromoform	ug/kg	<6.5	<5.8	<6.4	<5.4	<5.9	<6.5	<5.7
Bromomethane	ug/kg	<13	<12	<13	<11	<12.	<13.	<11.
2-Butanone	ug/kg	<130	<120	<130	<110	<120	<130	<110
n-Butylbenzene	ug/kg	<6.5	<5.8	<6.4	<5.4	<5.9	<6.5	<5.7
sec-Butylbenzene	ug/kg	<6.5	<5.8	<6.4	<5.4	<5.9	<6.5	<5.7
tert-Butylbenzene	ug/kg	<6.5	<5.8	<6.4	<5.4	<5.9	<6.5	<5.7
Carbon Tetrachloride	ug/kg	<6.5	<5.8	<6.4	<5.4	<5.9	<6.5	<5.7
Chlorobenzene	ug/kg	<6.5	<5.8	<6.4	<5.4	<5.9	<6.5	<5.7
Chloroethane	ug/kg	<13	<12	<13	<11	<12.	<13.	<11.
Chloroform	ug/kg	<6.5	<5.8	<6.4	<5.4	<5.9	<6.5	<5.7
Chloromethane	ug/kg	<13	<12	<13	<11	<12.	<13.	<11.
2-Chlorotoluene	ug/kg	<6.5	<5.8	<6.4	<5.4	<5.9	<6.5	<5.7
4-Chlorotoluene	ug/kg	<6.5	<5.8	<6.4	<5.4	<5.9	<6.5	<5.7
1,2-Dibromo-3-chloropropane	ug/kg	<6.5	<5.8	<6.4	<5.4	<5.9	<6.5	<5.7
Dibromochloromethane	ug/kg	<6.5	<5.8	<6.4	<5.4	<5.9	<6.5	<5.7
1,2-Dibromoethane	ug/kg	<6.5	<5.8	<6.4	<5.4	<5.9	<6.5	<5.7
Dibromomethane	ug/kg	<6.5	<5.8	<6.4	<5.4	<5.9	<6.5	<5.7
1,2-Dichlorobenzene	ug/kg	<6.5	<5.8	<6.4	<5.4	<5.9	<6.5	<5.7
1,3-Dichlorobenzene	ug/kg	<6.5	<5.8	<6.4	<5.4	<5.9	<6.5	<5.7
1,4-Dichlorobenzene	ug/kg	<6.5	<5.8	<6.4	<5.4	<5.9	<6.5	<5.7
Dichlorodifluoromethane	ug/kg	<13	<12	<13	<11	<12.	<13.	<11.
1,1-Dichloroethane	ug/kg	<6.5	<5.8	<6.4	<5.4	<5.9	<6.5	<5.7
1,2-Dichloroethane	ug/kg	<6.5	<5.8	<6.4	<5.4	<5.9	<6.5	<5.7
1,1-Dichloroethene	ug/kg	<6.5	<5.8	<6.4	<5.4	<5.9	<6.5	<5.7
cis-1,2-Dichloroethene	ug/kg	<6.5	<5.8	<6.4	<5.4	<5.9	<6.5	<5.7
trans-1,2-Dichloroethene	ug/kg	<6.5	<5.8	<6.4	<5.4	<5.9	<6.5	<5.7
1,2-Dichloropropane	ug/kg	<6.5	<5.8	<6.4	<5.4	<5.9	<6.5	<5.7
1,3-Dichloropropane	ug/kg	<6.5	<5.8	<6.4	<5.4	<5.9	<6.5	<5.7
2,2-Dichloropropane	ug/kg	<6.5	<5.8	<6.4	<5.4	<5.9	<6.5	<5.7
1,1-Dichloropropene	ug/kg	<6.5	<5.8	<6.4	<5.4	<5.9	<6.5	<5.7
cis-1,3-Dichloropropene	ug/kg	<6.5	<5.8	<6.4	<5.4	<5.9	<6.5	<5.7
trans-1,3-Dichloropropene	ug/kg	<6.5	<5.8	<6.4	<5.4	<5.9	<6.5	<5.7
Isopropyl Ether	ug/kg	<6.5	<5.8	<6.4	<5.4	<5.9	<6.5	<5.7
Ethylbenzene	ug/kg	<6.5	<5.8	<6.4	<5.4	<5.9	<6.5	<5.7
Hexachlorobutadiene	ug/kg	<6.5	<5.8	<6.4	<5.4	<5.9	<6.5	<5.7
2-Hexanone	ug/kg	<65	<58	<64	<54	<59.	<65.	<57.
Isopropylbenzene (Cumene)	ug/kg	<6.5	<5.8	<6.4	<5.4	<5.9	<6.5	<5.7
p-Isopropyltoluene	ug/kg	<6.5	<5.8	<6.4	<5.4	<5.9	<6.5	<5.7
Methylene chloride	ug/kg	**33**	**22**	**42**	**23**	**21.**	**34.**	**21.**

Table 3-1. Soil Sample Analytical Results: Volatile Organic Compounds

		B15-01 (7'-8')	B15-01 (11'-12')	B15-03 (2.5-3.5)	B15-03 (5-7)	B18-01 (4-6)	B18-01 (8-10)	B18-01 (12-14)
4-Methyl-2-pentanone	ug/kg	<65	<58	<64	<54	<59.	<65.	<57.
Methyl-tert-butyl ether	ug/kg	<6.5	<5.8	<6.4	<5.4	<5.9	<6.5	<5.7
Naphthalene	ug/kg	<6.5	<5.8	**190**	**15000**	**5.0**	**12.**	**15.**
n-Propylbenzene	ug/kg	<6.5	<5.8	<6.4	<5.4	<5.9	<6.5	<5.7
Styrene	ug/kg	<6.5	<5.8	<6.4	<5.4	<5.9	<6.5	<5.7
1,1,1,2-Tetrachloroethane	ug/kg	<6.5	<5.8	<6.4	<5.4	<5.9	<6.5	<5.7
1,1,2,2-Tetrachloroethane	ug/kg	<6.5	<5.8	<6.4	<5.4	<5.9	<6.5	<5.7
Tetrachloroethene	ug/kg	<6.5	<5.8	<6.4	<5.4	<5.9	<6.5	<5.7
Toluene	ug/kg	<6.5	<5.8	<6.4	<5.4	<5.9	<6.5	<5.7
1,2,3-Trichlorobenzene	ug/kg	<6.5	<5.8	<6.4	<5.4	<5.9	<6.5	<5.7
1,2,4-Trichlorobenzene	ug/kg	<6.5	<5.8	<6.4	<5.4	<5.9	<6.5	<5.7
1,1,1-Trichloroethane	ug/kg	<6.5	<5.8	<6.4	<5.4	<5.9	<6.5	<5.7
1,1,2-Trichloroethane	ug/kg	<6.5	<5.8	<6.4	<5.4	<5.9	<6.5	<5.7
Trichloroethene	ug/kg	<6.5	<5.8	<6.4	<5.4	<5.9	<6.5	<5.7
Trichlorofluoromethane	ug/kg	<6.5	<5.8	<6.4	<5.4	<5.9	<6.5	<5.7
1,2,3-Trichloropropane	ug/kg	<6.5	<5.8	<6.4	<5.4	<5.9	<6.5	<5.7
1,2,4-Trimethylbenzene	ug/kg	<6.5	<5.8	<6.4	<5.4	<5.9	<6.5	<5.7
1,3,5-Trimethylbenzene	ug/kg	<6.5	<5.8	<6.4	<5.4	<5.9	<6.5	<5.7
Vinyl acetate	ug/kg	<65	<58	<64	<54	<59.	<65.	<57.
Vinyl chloride	ug/kg	<13	<12	<13	<11	<12.	<13.	<11.
Xylenes (Total)	ug/kg	-	-	<6.4	<5.4	<5.9	<6.5	<5.7
m,p-Xylene	ug/kg	<13	<12	<13	<11	<12.	<13.	<11.
o-Xylene	ug/kg	<6.5	<5.8	<6.4	<5.4	<5.9	<6.5	<5.7

Table 3-2. Soil Sample Analytical Results: Semivolatile Organic Compounds

		B4-01 (1.5-2.0')	B4-01 (4.5-5.0')	B4-01 (7.5-8.0')	B4-01 (11.0-11.5')	B4-01 (14.5-15.0')	B4-02 (4.5-5.0')	B4-02 (7.5-8.0')	B4-03 (1.5-2.0')	B4-03 (4.5-5.0')	B4-03 (7.5-8.0')	B4-03 (11.0-11.5')	B4-03 (14.5-15.0')	B4-04 (1.5-2.0')	B4-04 (4.5-5.0')	B4-04 (7.5-8.0')	B4-04 (11.0-11.5')	B4-04 (14.5-15.0')	B4-05 (1.5-2.0')
Semivolatile Organic Compounds																			
Acenaphthene	ug/kg	**1500**	**13000**	<460	**20000**	<380	<370	<410	<2200	**2400**	**960**	<460	<380	**2200**	**2300**	<370	**1100**	<360	**1000**
Acenaphthylene	ug/kg	**990**	**5800**	<460	**7500**	<380	<370	<410	<2200	**2300**	**770**	<460	<380	**1800**	**1700**	<370	**910**	<360	**1300**
Anthracene	ug/kg	**1700**	**13000**	<460	**21000**	<380	<370	<410	<2200	**3000**	**1100**	<460	<380	**2700**	**2400**	<370	**1200**	<360	**2700**
Benzo(k)fluoranthene	ug/kg	**1800**	**5100**	<460	**5500**	<380	<370	<410	<2200	**3300**	**750**	<460	<380	**1600**	**1400**	<370	**710**	<360	**2100**
Benzo(b)fluoranthene	ug/kg	**1300**	**5000**	<460	**6800**	<380	<370	<410	<2200	**2500**	**680**	<460	<380	**2500**	**1600**	<370	**720**	<360	**2600**
Benzo(a)anthracene	ug/kg	**1500**	**8400**	<460	**12000**	<380	<370	<410	<2200	**2800**	**1100**	<460	<380	**2700**	**2200**	<370	**1100**	<360	**4200**
Benzoic acid	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(g,h,i)perylene	ug/kg	<430	**2600**	<460	**2600**	<380	<370	<410	<2200	<430	<420	<460	<380	**800**	**610**	<370	<400	<360	**790**
Benzyl alcohol	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a)pyrene	ug/kg	**1300**	**5600**	<460	**6400**	<380	<370	<410	<2200	**2300**	**830**	<460	<380	**2300**	**1700**	<370	**840**	<360	**1700**
4-Bromophenylphenyl ether	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Butylbenzylphthalate	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Chloro-3-methylphenol	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Chloroaniline	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
bis(2-Chloroethoxy)methane	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
bis(2-Chloroethyl) ether	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
bis(2-Chloroisopropyl) ether	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Chloronaphthalene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Chlorophenol	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Chlorophenylphenyl ether	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chrysene	ug/kg	**1300**	**7400**	<460	**9500**	<380	<370	<410	<2200	**2300**	**910**	<460	<380	**2300**	**1800**	<370	**900**	<360	**3100**
Dibenz(a,h)anthracene	ug/kg	<430	<2200	<460	<2500	<380	<370	<410	<2200	<430	<420	<460	<380	<390	<450	<370	<400	<360	<470
Dibenzofuran	ug/kg	**2300**	**17000**	<460	**43000**	<380	<370	<410	<2200	**3900**	**1500**	<460	<380	**3600**	**3400**	<370	**1800**	<360	**4700**
1,2-Dichlorobenzene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3,3'-Dichlorobenzidine	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dichlorophenol	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Diethylphthalate	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dimethylphenol	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dimethylphthalate	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Di-n-butylphthalate	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4,6-Dinitro-2-methylphenol	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dinitrophenol	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4-Dinitrotoluene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,6-Dinitrotoluene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Di-n-octylphthalate	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Diphenylhydrazine	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
bis(2-Ethylhexyl)phthalate	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	ug/kg	**3700**	**30000**	<460	**60000**	<380	<370	<410	**3200**	**8300**	**2800**	<460	<380	**11000**	**10000**	**740**	**2600**	<360	**21000**
Fluorene	ug/kg	**1700**	**14000**	<460	**23000**	<380	<370	<410	<2200	**2700**	**1100**	<460	<380	**2700**	**2700**	<370	**1300**	<360	**3300**
Hexachloro-1,3-butadiene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobenzene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorocyclopentadiene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Table 3-2. Soil Sample Analytical Results: Semivolatile Organic Compounds

		B4-01 (1.5-2.0')	B4-01 (4.5-5.0')	B4-01 (7.5-8.0')	B4-01 (11.0-11.5')	B4-01 (14.5-15.0')	B4-02 (4.5-5.0')	B4-02 (7.5-8.0')	B4-03 (1.5-2.0')	B4-03 (4.5-5.0')	B4-03 (7.5-8.0')	B4-03 (11.0-11.5')	B4-03 (14.5-15.0')	B4-04 (1.5-2.0')	B4-04 (4.5-5.0')	B4-04 (7.5-8.0')	B4-04 (11.0-11.5')	B4-04 (14.5-15.0')	B4-05 (1.5-2.0')
Hexachloroethane	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	ug/kg	<430	**2600**	<460	**2700**	<380	<370	<410	<2200	<430	<420	<460	<380	**870**	**630**	<370	<400	<360	**940**
Isophorone	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1-Methylnaphthalene	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	ug/kg	**1700**	**17000**	<460	**46000**	<380	<370	<410	<2200	**4900**	**1700**	<460	<380	**3200**	**3600**	<370	**1800**	<360	**16000**
2-Methylphenol (o-Cresol)	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3&4-Methylphenol	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	ug/kg	**1700**	**17000**	<460	**70000**	<380	<370	<410	<2200	**7800**	**2300**	<460	<380	**2400**	**2800**	<370	**1500**	<360	**27000**
2-Nitroaniline	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3-Nitroaniline	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Nitroaniline	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nitrobenzene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Nitrophenol	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Nitrophenol	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-Nitroso-di-n-propylamine	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-Nitrosodiphenylamine	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pentachlorophenol	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	ug/kg	**8300**	**52000**	**740**	**120000**	<380	<370	<410	**5300**	**13000**	**4100**	<460	<380	**16000**	**17000**	**1200**	**4200**	<360	**31000**
Phenol	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pyrene	ug/kg	**4000**	**18000**	<460	**45000**	<380	<370	<410	**2700**	**6600**	**2200**	<460	<380	**8500**	**4300**	**550**	**2200**	<360	**17000**
1,2,4-Trichlorobenzene	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4,5-Trichlorophenol	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,4,6-Trichlorophenol	ug/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Table 3-2. Soil Sample Analytical Results: Semivolatile Organic Compounds

		B4-05 (4.5-5.0')	B4-05 (7.5-8.0')	B4-05 (14.5-15.0')	B4-06 (0'-2')	B4-06 (2'-4')	B4-06 (4'-6')	B4-06 (6'-8')	B4-07 (2.5-3.5')	B4-07 (5-7')	B4-07 (7-9')	B4-08 (2.5-3.5')	B4-08 (5-7')	B4-08 (7-9')	B4-08B (2.5-3.5)	B4-08B (5-7)	B4-09 (2.5-3.5')	B4-09 (5-7')	B4-09 (7-9')
Semivolatile Organic Compounds																			
Acenaphthene	ug/kg	<420	**2800**	<370	**670**	<790	<410	<410	<390	<430	**3300**	<380	**3600**	**1300**	<410	<420	<430	**2200**	**2800**
Acenaphthylene	ug/kg	<420	**3500**	<370	**670**	<790	<410	<410	<390	<430	**2600**	<380	**3400**	**1100**	<410	<420	<430	**1800**	**2200**
Anthracene	ug/kg	<420	**12000**	<370	**790**	<790	<410	<410	<390	<430	**3500**	**510**	**6000**	**1500**	<410	<420	<430	**2100**	**2900**
Benzo(k)fluoranthene	ug/kg	<420	**3200**	<370	**1300**	<790	<410	<410	<390	<430	**3800**	**520**	**3900**	**1600**	<410	<420	<430	**2500**	**3100**
Benzo(b)fluoranthene	ug/kg	<420	**11000**	<370	**1100**	<790	<410	<410	<390	<430	**4600**	**540**	**4700**	**1700**	<410	<420	<430	**2600**	**3400**
Benzo(a)anthracene	ug/kg	<420	**15000**	<370	**1100**	<790	<410	<410	<390	<430	**4400**	**720**	**7400**	**2300**	<410	<420	<430	**3000**	**4100**
Benzoic acid	ug/kg	ND	ND	ND	<2300	<3900	<2100	<2000	<1900	<2100	<2400	<1900	<2100	<2300	<2000	<2100	<2200	<2100	<2100
Benzo(g,h,i)perylene	ug/kg	<420	**1700**	<370	<460	<790	<410	<410	<390	<430	<470	**380**	**1500**	<460	<410	<420	<430	<420	<420
Benzyl alcohol	ug/kg	ND	ND	ND	<920	<1600	<830	<810	<780	<860	<950	<760	<830	<910	<810	<840	<870	<850	<850
Benzo(a)pyrene	ug/kg	<420	**14000**	<370	**1100**	<790	<410	<410	<390	<430	**3700**	**580**	**5700**	**1700**	<410	<420	<430	**2200**	**2900**
4-Bromophenylphenyl ether	ug/kg	ND	ND	ND	<460	<790	<410	<410	<390	<430	<470	<380	<420	<460	<410	<420	<430	<420	<420
Butylbenzylphthalate	ug/kg	ND	ND	ND	<460	<790	<410	<410	<390	<430	<470	<380	<420	<460	<410	<420	<430	<420	<420
4-Chloro-3-methylphenol	ug/kg	ND	ND	ND	<920	<1600	<830	<810	<780	<860	<950	<760	<830	<910	<810	<840	<870	<850	<850
4-Chloroaniline	ug/kg	ND	ND	ND	<920	<1600	<830	<810	<780	<860	<950	<760	<830	<910	<810	<840	<870	<850	<850
bis(2-Chloroethoxy)methane	ug/kg	ND	ND	ND	<460	<790	<410	<410	<390	<430	<470	<380	<420	<460	<410	<420	<430	<420	<420
bis(2-Chloroethyl) ether	ug/kg	ND	ND	ND	<460	<790	<410	<410	<390	<430	<470	<380	<420	<460	<410	<420	<430	<420	<420
bis(2-Chloroisopropyl) ether	ug/kg	ND	ND	ND	<460	<790	<410	<410	<390	<430	<470	<380	<420	<460	<410	<420	<430	<420	<420
2-Chloronaphthalene	ug/kg	ND	ND	ND	<460	<790	<410	<410	<390	<430	<470	<380	<420	<460	<410	<420	<430	<420	<420
2-Chlorophenol	ug/kg	ND	ND	ND	<460	<790	<410	<410	<390	<430	<470	<380	<420	<460	<410	<420	<430	<420	<420
4-Chlorophenylphenyl ether	ug/kg	ND	ND	ND	<460	<790	<410	<410	<390	<430	<470	<380	<420	<460	<410	<420	<430	<420	<420
Chrysene	ug/kg	<420	**14000**	<370	**980**	<790	<410	<410	<390	<430	**3500**	**640**	**6800**	**2000**	<410	<420	<430	**2300**	**2800**
Dibenz(a,h)anthracene	ug/kg	<420	**870**	<370	<460	<790	<410	<410	<390	<430	<470	<380	**820**	<460	<410	<420	<430	<420	<420
Dibenzofuran	ug/kg	<420	**8900**	<370	**1100**	<790	<410	<410	<390	<430	**8100**	**640**	**8400**	**2500**	<410	<420	<430	**3700**	**7000**
1,2-Dichlorobenzene	ug/kg	ND	ND	ND	<460	<790	<410	<410	<390	<430	<470	<380	<420	<460	<410	<420	<430	<420	<420
1,3-Dichlorobenzene	ug/kg	ND	ND	ND	<460	<790	<410	<410	<390	<430	<470	<380	<420	<460	<410	<420	<430	<420	<420
1,4-Dichlorobenzene	ug/kg	ND	ND	ND	<460	<790	<410	<410	<390	<430	<470	<380	<420	<460	<410	<420	<430	<420	<420
3,3'-Dichlorobenzidine	ug/kg	ND	ND	ND	<920	<1600	<830	<810	<780	<860	<950	<760	<830	<910	<810	<840	<870	<850	<850
2,4-Dichlorophenol	ug/kg	ND	ND	ND	<460	<790	<410	<410	<390	<430	<470	<380	<420	<460	<410	<420	<430	<420	<420
Diethylphthalate	ug/kg	ND	ND	ND	<460	<790	<410	<410	<390	<430	<470	<380	<420	<460	<410	<420	<430	<420	<420
2,4-Dimethylphenol	ug/kg	ND	ND	ND	<460	<790	<410	<410	<390	<430	<470	<380	<420	<460	<410	<420	<430	<420	<420
Dimethylphthalate	ug/kg	ND	ND	ND	<460	<790	<410	<410	<390	<430	<470	<380	<420	<460	<410	<420	<430	<420	<420
Di-n-butylphthalate	ug/kg	ND	ND	ND	<460	<790	<410	<410	<390	<430	<470	<380	<420	<460	<410	<420	<430	<420	<420
4,6-Dinitro-2-methylphenol	ug/kg	ND	ND	ND	<460	<790	<410	<410	<390	<430	<470	<380	<420	<460	<410	<420	<430	<420	<420
2,4-Dinitrophenol	ug/kg	ND	ND	ND	<2300	<3900	<2100	<2000	<1900	<2100	<2400	<1900	<2100	<2300	<2000	<2100	<2200	<2100	<2100
2,4-Dinitrotoluene	ug/kg	ND	ND	ND	<460	<790	<410	<410	<390	<430	<470	<380	<420	<460	<410	<420	<430	<420	<420
2,6-Dinitrotoluene	ug/kg	ND	ND	ND	<460	<790	<410	<410	<390	<430	<470	<380	<420	<460	<410	<420	<430	<420	<420
Di-n-octylphthalate	ug/kg	ND	ND	ND	<460	<790	<410	<410	<390	<430	<470	<380	<420	<460	<410	<420	<430	<420	<420
1,2-Diphenylhydrazine	ug/kg	ND	ND	ND	<460	<790	<410	<410	<390	<430	<470	<380	<420	<460	<410	<420	<430	<420	<420
bis(2-Ethylhexyl)phthalate	ug/kg	ND	ND	ND	<460	<790	<410	<410	<390	<430	<470	<380	<420	<460	<410	<420	<430	<420	<420
Fluoranthene	ug/kg	**780**	**33000**	<370	**2700**	<790	<410	<410	<390	<430	**13000**	**2100**	**20000**	**4600**	<410	<420	<430	**8900**	**11000**
Fluorene	ug/kg	<420	**3900**	<370	**830**	<790	<410	<410	<390	<430	**3200**	**410**	**4100**	**1300**	<410	<420	<430	**2000**	**2400**
Hexachloro-1,3-butadiene	ug/kg	ND	ND	ND	<460	<790	<410	<410	<390	<430	<470	<380	<420	<460	<410	<420	<430	<420	<420
Hexachlorobenzene	ug/kg	ND	ND	ND	<460	<790	<410	<410	<390	<430	<470	<380	<420	<460	<410	<420	<430	<420	<420
Hexachlorocyclopentadiene	ug/kg	ND	ND	ND	<460	<790	<410	<410	<390	<430	<470	<380	<420	<460	<410	<420	<430	<420	<420

Table 3-2. Soil Sample Analytical Results: Semivolatile Organic Compounds

		B4-05 (4.5-5.0')	B4-05 (7.5-8.0')	B4-05 (14.5-15.0')	B4-06 (0'-2')	B4-06 (2'-4')	B4-06 (4'-6')	B4-06 (6'-8')	B4-07 (2.5-3.5')	B4-07 (5-7')	B4-07 (7-9')	B4-08 (2.5-3.5')	B4-08 (5-7')	B4-08 (7-9')	B4-08B (2.5-3.5)	B4-08B (5-7)	B4-09 (2.5-3.5')	B4-09 (5-7')	B4-09 (7-9')
Hexachloroethane	ug/kg	ND	ND	ND	<460	<790	<410	<410	<390	<430	<470	<380	<420	<460	<410	<420	<430	<420	<420
Indeno(1,2,3-cd)pyrene	ug/kg	<420	**1900**	<370	<460	<790	<410	<410	<390	<430	<470	<380	**1700**	**480**	<410	<420	<430	<420	<420
Isophorone	ug/kg	ND	ND	ND	<460	<790	<410	<410	<390	<430	<470	<380	<420	<460	<410	<420	<430	<420	<420
1-Methylnaphthalene	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	ug/kg	<420	**3500**	<370	**890**	<790	<410	<410	<390	<430	**8000**	**620**	**9700**	**3100**	<410	<420	<430	**6700**	**8700**
2-Methylphenol (o-Cresol)	ug/kg	ND	ND	ND	<460	<790	<410	<410	<390	<430	<470	<380	<420	<460	<410	<420	<430	<420	<420
3&4-Methylphenol	ug/kg	ND	ND	ND	<460	<790	<410	<410	<390	<430	<470	<380	<420	<460	<410	<420	<430	<420	<420
Naphthalene	ug/kg	<420	**3500**	<370	**980**	<790	<410	<410	<390	<430	**11000**	**450**	**8200**	**2800**	<410	<420	<430	**7000**	**10000**
2-Nitroaniline	ug/kg	ND	ND	ND	<2300	<3900	<2100	<2000	<1900	<2100	<2400	<1900	<2100	<2300	<2000	<2100	<2200	<2100	<2100
3-Nitroaniline	ug/kg	ND	ND	ND	<2300	<3900	<2100	<2000	<1900	<2100	<2400	<1900	<2100	<2300	<2000	<2100	<2200	<2100	<2100
4-Nitroaniline	ug/kg	ND	ND	ND	<2300	<3900	<2100	<2000	<1900	<2100	<2400	<1900	<2100	<2300	<2000	<2100	<2200	<2100	<2100
Nitrobenzene	ug/kg	ND	ND	ND	<460	<790	<410	<410	<390	<430	<470	<380	<420	<460	<410	<420	<430	<420	<420
2-Nitrophenol	ug/kg	ND	ND	ND	<460	<790	<410	<410	<390	<430	<470	<380	<420	<460	<410	<420	<430	<420	<420
4-Nitrophenol	ug/kg	ND	ND	ND	<2300	<3900	<2100	<2000	<1900	<2100	<2400	<1900	<2100	<2300	<2000	<2100	<2200	<2100	<2100
N-Nitroso-di-n-propylamine	ug/kg	ND	ND	ND	<460	<790	<410	<410	<390	<430	<470	<380	<420	<460	<410	<420	<430	<420	<420
N-Nitrosodiphenylamine	ug/kg	ND	ND	ND	<460	<790	<410	<410	<390	<430	<470	<380	<420	<460	<410	<420	<430	<420	<420
Pentachlorophenol	ug/kg	ND	ND	ND	<2300	<3900	<2100	<2000	<1900	<2100	<2400	<1900	<2100	<2300	<2000	<2100	<2200	<2100	<2100
Phenanthrene	ug/kg	**920**	**37000**	<370	**3100**	<790	<410	<410	<390	<430	**19000**	**2700**	**31000**	**6200**	<410	<420	<430	**13000**	**17000**
Phenol	ug/kg	ND	ND	ND	<460	<790	<410	<410	<390	<430	<470	<380	<420	<460	<410	<420	<430	<420	<420
Pyrene	ug/kg	**610**	**28000**	<370	**2500**	<790	<410	<410	<390	<430	**10000**	**1800**	**16000**	**4500**	<410	<420	<430	**6900**	**9200**
1,2,4-Trichlorobenzene	ug/kg	ND	ND	ND	<460	<790	<410	<410	<390	<430	<470	<380	<420	<460	<410	<420	<430	<420	<420
2,4,5-Trichlorophenol	ug/kg	ND	ND	ND	<460	<790	<410	<410	<390	<430	<470	<380	<420	<460	<410	<420	<430	<420	<420
2,4,6-Trichlorophenol	ug/kg	ND	ND	ND	<460	<790	<410	<410	<390	<430	<470	<380	<420	<460	<410	<420	<430	<420	<420

Table 3-2. Soil Sample Analytical Results: Semivolatile Organic Compounds

		B4-10 (2.5-3.5')	B4-10 (5-7')	B4-10 (7-9')	B4-11 (2.5-3.5')	B4-11 (5-7')	B4-11 (7-9')	B5-01 (0.5-1.0')	B5-01 (3.5-4.0')	B5-01 (9.5-10.0')	B5-01 (14.5-15')	B6-04 (8.5-9.0')	B6-04 (11.5-12.0')	B6-04 (14.0-14.5')	B6-05 (4.5')	B6-08 (6.0')	B6-09 (6.0')	AREA 6 WEST PIT	B10-09 (0-2)
Semivolatile Organic Compounds																			
Acenaphthene	ug/kg	<370	<360	<370	<1300	<1100	**870**	<1900	<400	<380	<390	<370	<410	<440	<1100	<410	<410	<480	**1300**
Acenaphthylene	ug/kg	<370	<360	<370	<1300	<1100	**400**	<1900	<400	<380	<390	<370	<410	<440	<1100	<410	<410	<480	<380
Anthracene	ug/kg	<370	<360	<370	<1300	<1100	**1100**	**4800**	<400	<380	<390	<370	**540**	<440	<1100	<410	<410	<480	**2500**
Benzo(k)fluoranthene	ug/kg	<370	<360	<370	<1300	<1100	**1000**	**3200**	<400	<380	<390	**650**	**610**	<440	<1100	<410	<410	<480	**4900**
Benzo(b)fluoranthene	ug/kg	<370	<360	<370	<1300	<1100	**840**	**2900**	<400	<380	<390	**530**	**840**	<440	<1100	<410	<410	<480	**4800**
Benzo(a)anthracene	ug/kg	<370	<360	<370	<1300	<1100	**1200**	**4600**	<400	<380	<390	**610**	**1100**	<440	<1100	<410	<410	<480	**6300**
Benzoic acid	ug/kg	<1900	<1800	<1900	<6300	<5300	<2000	ND	ND	ND	ND	ND	ND	ND	<5500	<2000	<2000	<2400	<1900
Benzo(g,h,i)perylene	ug/kg	<370	<360	<370	<1300	<1100	<400	<1900	<400	<380	<390	<370	**410**	<440	<1100	<410	<410	<480	**500**
Benzyl alcohol	ug/kg	<750	<720	<750	<2500	<2100	<790	ND	ND	ND	ND	ND	ND	ND	<2200	<820	<810	<970	<770
Benzo(a)pyrene	ug/kg	<370	<360	<370	<1300	<1100	**960**	**3800**	<400	<380	<390	**470**	**760**	<440	<1100	<410	<410	<480	**5100**
4-Bromophenylphenyl ether	ug/kg	<370	<360	<370	<1300	<1100	<400	ND	ND	ND	ND	ND	ND	ND	<1100	<410	<410	<480	<380
Butylbenzylphthalate	ug/kg	<370	<360	<370	<1300	<1100	<400	ND	ND	ND	ND	ND	ND	ND	<1100	<410	<410	<480	<380
4-Chloro-3-methylphenol	ug/kg	<750	<720	<750	<2500	<2100	<790	ND	ND	ND	ND	ND	ND	ND	<2200	<820	<810	<970	<770
4-Chloroaniline	ug/kg	<750	<720	<750	<2500	<2100	<790	ND	ND	ND	ND	ND	ND	ND	<2200	<820	<810	<970	<770
bis(2-Chloroethoxy)methane	ug/kg	<370	<360	<370	<1300	<1100	<400	ND	ND	ND	ND	ND	ND	ND	<1100	<410	<410	<480	<380
bis(2-Chloroethyl) ether	ug/kg	<370	<360	<370	<1300	<1100	<400	ND	ND	ND	ND	ND	ND	ND	<1100	<410	<410	<480	<380
bis(2-Chloroisopropyl) ether	ug/kg	<370	<360	<370	<1300	<1100	<400	ND	ND	ND	ND	ND	ND	ND	<1100	<410	<410	<480	<380
2-Chloronaphthalene	ug/kg	<370	<360	<370	<1300	<1100	<400	ND	ND	ND	ND	ND	ND	ND	<1100	<410	<410	<480	<380
2-Chlorophenol	ug/kg	<370	<360	<370	<1300	<1100	<400	ND	ND	ND	ND	ND	ND	ND	<1100	<410	<410	<480	<380
4-Chlorophenylphenyl ether	ug/kg	<370	<360	<370	<1300	<1100	<400	ND	ND	ND	ND	ND	ND	ND	<1100	<410	<410	<480	<380
Chrysene	ug/kg	<370	<360	<370	<1300	<1100	**1100**	**3800**	<400	<380	<390	**560**	**950**	<440	<1100	<410	<410	<480	**6400**
Dibenz(a,h)anthracene	ug/kg	<370	<360	<370	<1300	<1100	<400	<1900	<400	<380	<390	<370	<410	<440	<1100	<410	<410	<480	**500**
Dibenzofuran	ug/kg	<370	<360	<370	<1300	<1100	**1300**	**3200**	<400	<380	<390	<370	<410	<440	<1100	<410	<410	<480	**590**
1,2-Dichlorobenzene	ug/kg	<370	<360	<370	<1300	<1100	<400	ND	ND	ND	ND	ND	ND	ND	<1100	<410	<410	<480	<380
1,3-Dichlorobenzene	ug/kg	<370	<360	<370	<1300	<1100	<400	ND	ND	ND	ND	ND	ND	ND	<1100	<410	<410	<480	<380
1,4-Dichlorobenzene	ug/kg	<370	<360	<370	<1300	<1100	<400	ND	ND	ND	ND	ND	ND	ND	<1100	<410	<410	<480	<380
3,3'-Dichlorobenzidine	ug/kg	<750	<720	<750	<2500	<2100	<790	ND	ND	ND	ND	ND	ND	ND	<2200	<820	<810	<970	<770
2,4-Dichlorophenol	ug/kg	<370	<360	<370	<1300	<1100	<400	ND	ND	ND	ND	ND	ND	ND	<1100	<410	<410	<480	<380
Diethylphthalate	ug/kg	<370	<360	<370	<1300	<1100	<400	ND	ND	ND	ND	ND	ND	ND	<1100	<410	<410	<480	<380
2,4-Dimethylphenol	ug/kg	<370	<360	<370	<1300	<1100	<400	ND	ND	ND	ND	ND	ND	ND	<1100	<410	<410	<480	<380
Dimethylphthalate	ug/kg	<370	<360	<370	<1300	<1100	<400	ND	ND	ND	ND	ND	ND	ND	<1100	<410	<410	<480	<380
Di-n-butylphthalate	ug/kg	<370	<360	<370	<1300	<1100	<400	ND	ND	ND	ND	ND	ND	ND	<1100	<410	<410	<480	<380
4,6-Dinitro-2-methylphenol	ug/kg	<370	<360	<370	<1300	<1100	<400	ND	ND	ND	ND	ND	ND	ND	<1100	<410	<410	<480	<380
2,4-Dinitrophenol	ug/kg	<1900	<1800	<1900	<6300	<5300	<2000	ND	ND	ND	ND	ND	ND	ND	<5500	<2000	<2000	<2400	<1900
2,4-Dinitrotoluene	ug/kg	<370	<360	<370	<1300	<1100	<400	ND	ND	ND	ND	ND	ND	ND	<1100	<410	<410	<480	<380
2,6-Dinitrotoluene	ug/kg	<370	<360	<370	<1300	<1100	<400	ND	ND	ND	ND	ND	ND	ND	<1100	<410	<410	<480	<380
Di-n-octylphthalate	ug/kg	<370	<360	<370	<1300	<1100	<400	ND	ND	ND	ND	ND	ND	ND	<1100	<410	<410	<480	<380
1,2-Diphenylhydrazine	ug/kg	<370	<360	<370	<1300	<1100	<400	ND	ND	ND	ND	ND	ND	ND	<1100	<410	<410	<480	<380
bis(2-Ethylhexyl)phthalate	ug/kg	<370	<360	<370	<1300	<1100	<400	ND	ND	ND	ND	ND	ND	ND	<1100	<410	**650**	<480	<380
Fluoranthene	ug/kg	**510**	<360	<370	**2800**	<1100	**2800**	**10000**	**930**	<380	<390	**1400**	**2300**	**500**	<1100	<410	<410	<480	**14000**
Fluorene	ug/kg	<370	<360	<370	<1300	<1100	**890**	**2900**	<400	<380	<390	<370	<410	<440	<1100	<410	<410	<480	**1100**
Hexachloro-1,3-butadiene	ug/kg	<370	<360	<370	<1300	<1100	<400	ND	ND	ND	ND	ND	ND	ND	<1100	<410	<410	<480	<380
Hexachlorobenzene	ug/kg	<370	<360	<370	<1300	<1100	<400	ND	ND	ND	ND	ND	ND	ND	<1100	<410	<410	<480	<380
Hexachlorocyclopentadiene	ug/kg	<370	<360	<370	<1300	<1100	<400	ND	ND	ND	ND	ND	ND	ND	<1100	<410	<410	<480	<380

Table 3-2. Soil Sample Analytical Results: Semivolatile Organic Compounds

		B4-10 (2.5-3.5')	B4-10 (5-7')	B4-10 (7-9')	B4-11 (2.5-3.5')	B4-11 (5-7')	B4-11 (7-9')	B5-01 (0.5-1.0')	B5-01 (3.5-4.0')	B5-01 (9.5-10.0')	B5-01 (14.5-15')	B6-04 (8.5-9.0')	B6-04 (11.5-12.0')	B6-04 (14.0-14.5')	B6-05 (4.5')	B6-08 (6.0')	B6-09 (6.0')	AREA 6 WEST PIT	B10-09 (0-2)
Hexachloroethane	ug/kg	<370	<360	<370	<1300	<1100	<400	ND	ND	ND	ND	ND	ND	ND	<1100	<410	<410	<480	<380
Indeno(1,2,3-cd)pyrene	ug/kg	<370	<360	<370	<1300	<1100	<400	<1900	<400	<380	<390	<370	**440**	<440	<1100	<410	<410	<480	**740**
Isophorone	ug/kg	<370	<360	<370	<1300	<1100	<400	ND	ND	ND	ND	ND	ND	ND	<1100	<410	<410	<480	<380
1-Methylnaphthalene	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	ug/kg	<370	<360	<370	<1300	<1100	**780**	<1900	<400	<380	<390	<370	<410	<440	<1100	<410	<410	<480	**210**
2-Methylphenol (o-Cresol)	ug/kg	<370	<360	<370	<1300	<1100	<400	ND	ND	ND	ND	ND	ND	ND	<1100	<410	<410	<480	<380
3&4-Methylphenol	ug/kg	<370	<360	<370	<1300	<1100	<400	ND	ND	ND	ND	ND	ND	ND	<1100	<410	<410	<480	<380
Naphthalene	ug/kg	<370	<360	<370	<1300	<1100	**650**	<1900	<400	<380	<390	<370	<410	<440	<1100	<410	<410	<480	**480**
2-Nitroaniline	ug/kg	<1900	<1800	<1900	<6300	<5300	<2000	ND	ND	ND	ND	ND	ND	ND	<5500	<2000	<2000	<2400	<1900
3-Nitroaniline	ug/kg	<1900	<1800	<1900	<6300	<5300	<2000	ND	ND	ND	ND	ND	ND	ND	<5500	<2000	<2000	<2400	<1900
4-Nitroaniline	ug/kg	<1900	<1800	<1900	<6300	<5300	<2000	ND	ND	ND	ND	ND	ND	ND	<5500	<2000	<2000	<2400	<1900
Nitrobenzene	ug/kg	<370	<360	<370	<1300	<1100	<400	ND	ND	ND	ND	ND	ND	ND	<1100	<410	<410	<480	<380
2-Nitrophenol	ug/kg	<370	<360	<370	<1300	<1100	<400	ND	ND	ND	ND	ND	ND	ND	<1100	<410	<410	<480	<380
4-Nitrophenol	ug/kg	<1900	<1800	<1900	<6300	<5300	<2000	ND	ND	ND	ND	ND	ND	ND	<5500	<2000	<2000	<2400	<1900
N-Nitroso-di-n-propylamine	ug/kg	<370	<360	<370	<1300	<1100	<400	ND	ND	ND	ND	ND	ND	ND	<1100	<410	<410	<480	<380
N-Nitrosodiphenylamine	ug/kg	<370	<360	<370	<1300	<1100	<400	ND	ND	ND	ND	ND	ND	ND	<1100	<410	<410	<480	<380
Pentachlorophenol	ug/kg	<1900	<1800	<1900	<6300	<5300	<2000	ND	ND	ND	ND	ND	ND	ND	<5500	<2000	<2000	<2400	<1900
Phenanthrene	ug/kg	**770**	<360	<370	**4100**	<1100	**3700**	**14000**	**1300**	<380	<390	**1300**	**2000**	**450**	<1100	<410	<410	<480	**11000**
Phenol	ug/kg	<370	<360	<370	<1300	<1100	<400	ND	ND	ND	ND	ND	ND	ND	<1100	<410	<410	<480	<380
Pyrene	ug/kg	<370	<360	<370	**2000**	<1100	**2600**	**8800**	**980**	<380	<390	**1400**	**2000**	**490**	<1100	<410	<410	<480	**11000**
1,2,4-Trichlorobenzene	ug/kg	<370	<360	<370	<1300	<1100	<400	ND	ND	ND	ND	ND	ND	ND	<1100	<410	<410	<480	<380
2,4,5-Trichlorophenol	ug/kg	<370	<360	<370	<1300	<1100	<400	ND	ND	ND	ND	ND	ND	ND	<1100	<410	<410	<480	<380
2,4,6-Trichlorophenol	ug/kg	<370	<360	<370	<1300	<1100	<400	ND	ND	ND	ND	ND	ND	ND	<1100	<410	<410	<480	<380

Table 3-2. Soil Sample Analytical Results: Semivolatile Organic Compounds

		B10-09 (4-7)	B10-11 (0-4)	B10-12 (1-4)	B10-20 (4-7)	B10-20 SEWER RESID.	B10-22 (6-8)	B15-01 CINDERS	B15-01 GRAVEL	B15-01 (0'-0.5')	B15-01 (1.0'-1.5')	B15-01 (3'-4')	B15-01 (5'-6')	B15-01 (7'-8')	B15-01 (11'-12')	B15-03 (2.5-3.5)	B15-03 (5-7)	B15-04 (2-3')	B15-04 (3-5')
Semivolatile Organic Compounds																			
Acenaphthene	ug/kg	<480	<390	<400	<490	<1700	<390	**240000**	**55000**	<6900	<460	<490	<520	<430	<380	**910**	**1100**	<470	<440
Acenaphthylene	ug/kg	<480	<390	<400	<490	<1700	<390	<34000	**14000**	<6900	<460	<490	<520	<430	<380	**560**	**750**	<470	<440
Anthracene	ug/kg	<480	<390	<400	<490	<1700	<390	**320000**	**180000**	**9300**	<460	<490	<520	<430	<380	**950**	**1100**	<470	<440
Benzo(k)fluoranthene	ug/kg	<480	<390	<400	<490	**640**	<390	**510000**	**250000**	**18000**	<460	<490	<520	<430	<380	**830**	**1000**	<470	<440
Benzo(b)fluoranthene	ug/kg	<480	<390	<400	<490	**510**	<390	**460000**	**210000**	**16000**	<460	<490	<520	<430	<380	**660**	**1000**	<470	<440
Benzo(a)anthracene	ug/kg	<480	<390	<400	<490	**440**	<390	**410000**	**190000**	**18000**	<460	<490	<520	<430	<380	**960**	**1200**	<470	<440
Benzoic acid	ug/kg	<2400	<2000	<2000	<2500	<8600	<2000	<170000	<53000	<35000	<2300	<2400	<2600	<2200	<1900	<2100	<1800	<2300	<2200
Benzo(g,h,i)perylene	ug/kg	<480	<390	**240**	<490	<1700	<390	<34000	**12000**	<6900	<460	<490	<520	<430	<380	<420	<360	<470	<440
Benzyl alcohol	ug/kg	<950	<790	<790	<990	<3400	<790	<68000	<21000	<14000	<920	<970	<1000	<860	<770	<840	<710	<930	<870
Benzo(a)pyrene	ug/kg	<480	<390	<400	<490	**580**	<390	**320000**	**150000**	**15000**	<460	<490	<520	<430	<380	**760**	**920**	<470	<440
4-Bromophenylphenyl ether	ug/kg	<480	<390	<400	<490	<1700	<390	<34000	<11000	<6900	<460	<490	<520	<430	<380	<420	<360	<470	<440
Butylbenzylphthalate	ug/kg	<480	<390	<400	<490	<1700	<390	<34000	<11000	<6900	<460	<490	<520	<430	<380	<420	<360	<470	<440
4-Chloro-3-methylphenol	ug/kg	<950	<790	<790	<990	<3400	<790	<68000	<21000	<14000	<920	<970	<1000	<860	<770	<840	<710	<930	<870
4-Chloroaniline	ug/kg	<950	<790	<790	<990	<3400	<790	<68000	<21000	<14000	<920	<970	<1000	<860	<770	<840	<710	<930	<870
bis(2-Chloroethoxy)methane	ug/kg	<480	<390	<400	<490	<1700	<390	<34000	<11000	<6900	<460	<490	<520	<430	<380	<420	<360	<470	<440
bis(2-Chloroethyl) ether	ug/kg	<480	<390	<400	<490	<1700	<390	<34000	<11000	<6900	<460	<490	<520	<430	<380	<420	<360	<470	<440
bis(2-Chloroisopropyl) ether	ug/kg	<480	<390	<400	<490	<1700	<390	<34000	<11000	<6900	<460	<490	<520	<430	<380	<420	<360	<470	<440
2-Chloronaphthalene	ug/kg	<480	<390	<400	<490	<1700	<390	<34000	<11000	<6900	<460	<490	<520	<430	<380	<420	<360	<470	<440
2-Chlorophenol	ug/kg	<480	<390	<400	<490	<1700	<390	<34000	<11000	<6900	<460	<490	<520	<430	<380	<420	<360	<470	<440
4-Chlorophenylphenyl ether	ug/kg	<480	<390	<400	<490	<1700	<390	<34000	<11000	<6900	<460	<490	<520	<430	<380	<420	<360	<470	<440
Chrysene	ug/kg	<480	<390	<400	<490	**490**	<390	**340000**	**210000**	**19000**	<460	<490	<520	<430	<380	**940**	**1100**	<470	<440
Dibenz(a,h)anthracene	ug/kg	<480	<390	<400	<490	<1700	<390	<34000	<11000	<6900	<460	<490	<520	<430	<380	<420	<360	<470	<440
Dibenzofuran	ug/kg	<480	<390	<400	<490	<1700	<390	**340000**	**78000**	<6900	<460	<490	<520	<430	<380	**1600**	**1900**	<470	<440
1,2-Dichlorobenzene	ug/kg	<480	<390	<400	<490	<1700	<390	<34000	<11000	<6900	<460	<490	<520	<430	<380	<420	<360	<470	<440
1,3-Dichlorobenzene	ug/kg	<480	<390	<400	<490	<1700	<390	<34000	<11000	<6900	<460	<490	<520	<430	<380	<420	<360	<470	<440
1,4-Dichlorobenzene	ug/kg	<480	<390	<400	<490	<1700	<390	<34000	<11000	<6900	<460	<490	<520	<430	<380	<420	<360	<470	<440
3,3'-Dichlorobenzidine	ug/kg	<950	<790	<790	<990	<3400	<790	<68000	<21000	<14000	<920	<970	<1000	<860	<770	<840	<710	<930	<870
2,4-Dichlorophenol	ug/kg	<480	<390	<400	<490	<1700	<390	<34000	<11000	<6900	<460	<490	<520	<430	<380	<420	<360	<470	<440
Diethylphthalate	ug/kg	<480	<390	<400	<490	<1700	<390	<34000	<11000	<6900	<460	<490	<520	<430	<380	<420	<360	<470	<440
2,4-Dimethylphenol	ug/kg	<480	<390	<400	<490	<1700	<390	<34000	<11000	<6900	<460	<490	<520	<430	<380	<420	<360	<470	<440
Dimethylphthalate	ug/kg	<480	<390	<400	<490	<1700	<390	<34000	<11000	<6900	<460	<490	<520	<430	<380	<420	<360	<470	<440
Di-n-butylphthalate	ug/kg	<480	<390	<400	<490	<1700	<390	<34000	<11000	<6900	<460	<490	<520	<430	<380	<420	<360	<470	<440
4,6-Dinitro-2-methylphenol	ug/kg	<480	<390	<400	<490	<1700	<390	<34000	<11000	<6900	<460	<490	<520	<430	<380	<420	<360	<470	<440
2,4-Dinitrophenol	ug/kg	<2400	<2000	<2000	<2500	<8600	<2000	<170000	<53000	<35000	<2300	<2400	<2600	<2200	<1900	<2100	<1800	<2300	<2200
2,4-Dinitrotoluene	ug/kg	<480	<390	<400	<490	<1700	<390	<34000	<11000	<6900	<460	<490	<520	<430	<380	<420	<360	<470	<440
2,6-Dinitrotoluene	ug/kg	<480	<390	<400	<490	<1700	<390	<34000	<11000	<6900	<460	<490	<520	<430	<380	<420	<360	<470	<440
Di-n-octylphthalate	ug/kg	<480	<390	<400	<490	<1700	<390	<34000	<11000	<6900	<460	<490	<520	<430	<380	<420	<360	<470	<440
1,2-Diphenylhydrazine	ug/kg	<480	<390	<400	<490	<1700	<390	<34000	<11000	<6900	<460	<490	<520	<430	<380	<420	<360	<470	<440
bis(2-Ethylhexyl)phthalate	ug/kg	<480	<390	<400	<490	<1700	<390	<34000	<11000	<6900	<460	<490	<520	<430	<380	<420	<360	<470	<440
Fluoranthene	ug/kg	<480	<390	**130**	<490	**810**	<390	**1400000**	**590000**	**41000**	**460**	<490	<520	<430	<380	**2600**	**2800**	<470	<440
Fluorene	ug/kg	<480	<390	<400	<490	<1700	<390	**250000**	**64000**	<6900	<460	<490	<520	<430	<380	**960**	**1100**	<470	<440
Hexachloro-1,3-butadiene	ug/kg	<480	<390	<400	<490	<1700	<390	<34000	<11000	<6900	<460	<490	<520	<430	<380	<420	<360	<470	<440
Hexachlorobenzene	ug/kg	<480	<390	<400	<490	<1700	<390	<34000	<11000	<6900	<460	<490	<520	<430	<380	<420	<360	<470	<440
Hexachlorocyclopentadiene	ug/kg	<480	<390	<400	<490	<1700	<390	<34000	<11000	<6900	<460	<490	<520	<430	<380	<420	<360	<470	<440

Table 3-2. Soil Sample Analytical Results: Semivolatile Organic Compounds

		B10-09 (4-7)	B10-11 (0-4)	B10-12 (1-4)	B10-20 (4-7)	B10-20 SEWER RESID.	B10-22 (6-8)	B15-01 CINDERS	B15-01 GRAVEL	B15-01 (0'-0.5')	B15-01 (1.0'-1.5')	B15-01 (3'-4')	B15-01 (5'-6')	B15-01 (7'-8')	B15-01 (11'-12')	B15-03 (2.5-3.5)	B15-03 (5-7)	B15-04 (2-3')	B15-04 (3-5')
Hexachloroethane	ug/kg	<480	<390	<400	<490	<1700	<390	<34000	<11000	<6900	<460	<490	<520	<430	<380	<420	<360	<470	<440
Indeno(1,2,3-cd)pyrene	ug/kg	<480	<390	**110**	<490	**490**	<390	**40000**	**16000**	<6900	<460	<490	<520	<430	<380	<420	<360	<470	<440
Isophorone	ug/kg	<480	<390	<400	<490	<1700	<390	<34000	<11000	<6900	<460	<490	<520	<430	<380	<420	<360	<470	<440
1-Methylnaphthalene	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	ug/kg	<480	<390	<400	<490	<1700	<390	**95000**	**19000**	<6900	<460	<490	<520	<430	<380	**1100**	**1800**	<470	<440
2-Methylphenol (o-Cresol)	ug/kg	<480	<390	<400	<490	<1700	<390	<34000	<11000	<6900	<460	<490	<520	<430	<380	<420	<360	<470	<440
3&4-Methylphenol	ug/kg	<480	<390	<400	<490	<1700	<390	<34000	<11000	<6900	<460	<490	<520	<430	<380	<420	<360	<470	<440
Naphthalene	ug/kg	<480	<390	<400	<490	<1700	<390	**20000**	**4800**	<6900	<460	<490	<520	<430	<380	**700**	**1400**	<470	<440
2-Nitroaniline	ug/kg	<2400	<2000	<2000	<2500	<8600	<2000	<170000	<53000	<35000	<2300	<2400	<2600	<2200	<1900	<2100	<1800	<2300	<2200
3-Nitroaniline	ug/kg	<2400	<2000	<2000	<2500	<8600	<2000	<170000	<53000	<35000	<2300	<2400	<2600	<2200	<1900	<2100	<1800	<2300	<2200
4-Nitroaniline	ug/kg	<2400	<2000	<2000	<2500	<8600	<2000	<170000	<53000	<35000	<2300	<2400	<2600	<2200	<1900	<2100	<1800	<2300	<2200
Nitrobenzene	ug/kg	<480	<390	<400	<490	<1700	<390	<34000	<11000	<6900	<460	<490	<520	<430	<380	<420	<360	<470	<440
2-Nitrophenol	ug/kg	<480	<390	<400	<490	<1700	<390	<34000	<11000	<6900	<460	<490	<520	<430	<380	<420	<360	<470	<440
4-Nitrophenol	ug/kg	<2400	<2000	<2000	<2500	<8600	<2000	<170000	<53000	<35000	<2300	<2400	<2600	<2200	<1900	<2100	<1800	<2300	<2200
N-Nitroso-di-n-propylamine	ug/kg	<480	<390	<400	<490	<1700	<390	<34000	<11000	<6900	<460	<490	<520	<430	<380	<420	<360	<470	<440
N-Nitrosodiphenylamine	ug/kg	<480	<390	<400	<490	<1700	<390	<34000	<11000	<6900	<460	<490	<520	<430	<380	<420	<360	<470	<440
Pentachlorophenol	ug/kg	<2400	<2000	<2000	<2500	<8600	<2000	<170000	<53000	<35000	<2300	<2400	<2600	<2200	<1900	<2100	<1800	<2300	<2200
Phenanthrene	ug/kg	<480	<390	<400	<490	**460**	<390	**2000000**	**720000**	**33000**	**610**	<490	<520	<430	<380	**4100**	**4400**	<470	<440
Phenol	ug/kg	<480	<390	<400	<490	<1700	<390	<34000	<11000	<6900	<460	<490	<520	<430	<380	<420	<360	<470	<440
Pyrene	ug/kg	<480	<390	**110**	<490	**810**	<390	**1200000**	**520000**	**33000**	<460	<490	<520	<430	<380	**2400**	**2700**	<470	<440
1,2,4-Trichlorobenzene	ug/kg	<480	<390	<400	<490	<1700	<390	<34000	<11000	<6900	<460	<490	<520	<430	<380	<420	<360	<470	<440
2,4,5-Trichlorophenol	ug/kg	<480	<390	<400	<490	<1700	<390	<34000	<11000	<6900	<460	<490	<520	<430	<380	<420	<360	<470	<440
2,4,6-Trichlorophenol	ug/kg	<480	<390	<400	<490	<1700	<390	<34000	<11000	<6900	<460	<490	<520	<430	<380	<420	<360	<470	<440

Table 3-2. Soil Sample Analytical Results: Semivolatile Organic Compounds

		B15-05 (2-3')	B15-05 (4-6')	B15-06 (0-2)	B15-06 (4-6)	B15-06 (8-10)	B15-06 (14-16)	B18-01 (4-6)	B18-01 (8-10)	B18-01 (12-14)	B18-02 (12-14)
Semivolatile Organic Compounds											
Acenaphthene	ug/kg	<410	<390	<450	<430	<420	<440	<390	<430	**340**	<380
Acenaphthylene	ug/kg	<410	<390	<450	<430	<420	<440	<390	<430	<380	<380
Anthracene	ug/kg	<410	<390	<450	<430	<420	<440	<390	<430	**570**	<380
Benzo(k)fluoranthene	ug/kg	<410	<390	<450	<430	<420	<440	<390	<430	**730**	<380
Benzo(b)fluoranthene	ug/kg	<410	<390	<450	<430	<420	<440	<390	<430	**720**	<380
Benzo(a)anthracene	ug/kg	**470**	<390	<450	<430	<420	<440	<390	<430	**980**	<380
Benzoic acid	ug/kg	<2100	<2000	<2200	<2100	<2100	<2200	<1900	<2200	<1900	<1900
Benzo(g,h,i)perylene	ug/kg	<410	<390	<450	<430	<420	<440	<390	<430	**650**	<380
Benzyl alcohol	ug/kg	<820	<790	<890	<850	<840	<890	<770	<860	<750	<770
Benzo(a)pyrene	ug/kg	**410**	<390	<450	<430	<420	<440	<390	<430	**900**	<380
4-Bromophenylphenyl ether	ug/kg	<410	<390	<450	<430	<420	<440	<390	<430	<380	<380
Butylbenzylphthalate	ug/kg	<410	<390	<450	<430	<420	<440	<390	<430	<380	<380
4-Chloro-3-methylphenol	ug/kg	<820	<790	<890	<850	<840	<890	<770	<860	<750	<770
4-Chloroaniline	ug/kg	<820	<790	<890	<850	<840	<890	<770	<860	<750	<770
bis(2-Chloroethoxy)methane	ug/kg	<410	<390	<450	<430	<420	<440	<390	<430	<380	<380
bis(2-Chloroethyl) ether	ug/kg	<410	<390	<450	<430	<420	<440	<390	<430	<380	<380
bis(2-Chloroisopropyl) ether	ug/kg	<410	<390	<450	<430	<420	<440	<390	<430	<380	<380
2-Chloronaphthalene	ug/kg	<410	<390	<450	<430	<420	<440	<390	<430	<380	<380
2-Chlorophenol	ug/kg	<410	<390	<450	<430	<420	<440	<390	<430	<380	<380
4-Chlorophenylphenyl ether	ug/kg	<410	<390	<450	<430	<420	<440	<390	<430	<380	<380
Chrysene	ug/kg	**420**	<390	<450	<430	<420	<440	<390	<430	**940**	<380
Dibenz(a,h)anthracene	ug/kg	<410	<390	<450	<430	<420	<440	<390	<430	**330**	<380
Dibenzofuran	ug/kg	**480**	<390	<450	<430	<420	<440	<390	<430	**310**	<380
1,2-Dichlorobenzene	ug/kg	<410	<390	<450	<430	<420	<440	<390	<430	<380	<380
1,3-Dichlorobenzene	ug/kg	<410	<390	<450	<430	<420	<440	<390	<430	<380	<380
1,4-Dichlorobenzene	ug/kg	<410	<390	<450	<430	<420	<440	<390	<430	<380	<380
3,3'-Dichlorobenzidine	ug/kg	<820	<790	<890	<850	<840	<890	<770	<860	<750	<770
2,4-Dichlorophenol	ug/kg	<410	<390	<450	<430	<420	<440	<390	<430	<380	<380
Diethylphthalate	ug/kg	<410	<390	<450	<430	<420	<440	<390	<430	<380	<380
2,4-Dimethylphenol	ug/kg	<410	<390	<450	<430	<420	<440	<390	<430	<380	<380
Dimethylphthalate	ug/kg	<410	<390	<450	<430	<420	<440	<390	<430	<380	<380
Di-n-butylphthalate	ug/kg	<410	<390	<450	<430	<420	<440	<390	<430	<380	<380
4,6-Dinitro-2-methylphenol	ug/kg	<410	<390	<450	<430	<420	<440	<390	<430	<380	<380
2,4-Dinitrophenol	ug/kg	<2100	<2000	<2200	<2100	<2100	<2200	<1900	<2200	<1900	<1900
2,4-Dinitrotoluene	ug/kg	<410	<390	<450	<430	<420	<440	<390	<430	**750**	<380
2,6-Dinitrotoluene	ug/kg	<410	<390	<450	<430	<420	<440	<390	<430	<380	<380
Di-n-octylphthalate	ug/kg	<410	<390	<450	<430	<420	<440	<390	<430	<380	<380
1,2-Diphenylhydrazine	ug/kg	<410	<390	<450	<430	<420	<440	<390	<430	<380	<380
bis(2-Ethylhexyl)phthalate	ug/kg	**530**	<390	<450	<430	<420	<440	<390	<430	<380	<380
Fluoranthene	ug/kg	**1200**	<390	**220**	<430	<420	<440	<390	**220**	**2300**	<380
Fluorene	ug/kg	<410	<390	<450	<430	<420	<440	<390	<430	**260**	<380
Hexachloro-1,3-butadiene	ug/kg	<410	<390	<450	<430	<420	<440	<390	<430	<380	<380
Hexachlorobenzene	ug/kg	<410	<390	<450	<430	<420	<440	<390	<430	<380	<380
Hexachlorocyclopentadiene	ug/kg	<410	<390	<450	<430	<420	<440	<390	<430	<380	<380

Table 3-2. Soil Sample Analytical Results: Semivolatile Organic Compounds

		B15-05 (2-3')	B15-05 (4-6')	B15-06 (0-2)	B15-06 (4-6)	B15-06 (8-10)	B15-06 (14-16)	B18-01 (4-6)	B18-01 (8-10)	B18-01 (12-14)	B18-02 (12-14)
Hexachloroethane	ug/kg	<410	<390	<450	<430	<420	<440	<390	<430	<380	<380
Indeno(1,2,3-cd)pyrene	ug/kg	<410	<390	<450	<430	<420	<440	<390	<430	**610**	<380
Isophorone	ug/kg	<410	<390	<450	<430	<420	<440	<390	<430	<380	<380
1-Methylnaphthalene	ug/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	<380
2-Methylnaphthalene	ug/kg	**530**	<390	<450	<430	<420	<440	<390	<430	**130**	<380
2-Methylphenol (o-Cresol)	ug/kg	<410	<390	<450	<430	<420	<440	<390	<430	<380	<380
3&4-Methylphenol	ug/kg	<410	<390	<450	<430	<420	<440	<390	<430	<380	<380
Naphthalene	ug/kg	**520**	<390	<450	<430	<420	<440	<390	<430	**130**	<380
2-Nitroaniline	ug/kg	<2100	<2000	<2200	<2100	<2100	<2200	<1900	<2200	<1900	<1900
3-Nitroaniline	ug/kg	<2100	<2000	<2200	<2100	<2100	<2200	<1900	<2200	<1900	<1900
4-Nitroaniline	ug/kg	<2100	<2000	<2200	<2100	<2100	<2200	<1900	<2200	<1900	<1900
Nitrobenzene	ug/kg	<410	<390	<450	<430	<420	<440	<390	<430	<380	<380
2-Nitrophenol	ug/kg	<410	<390	<450	<430	<420	<440	<390	<430	<380	<380
4-Nitrophenol	ug/kg	<2100	<2000	<2200	<2100	<2100	<2200	<1900	<2200	<1900	<1900
N-Nitroso-di-n-propylamine	ug/kg	<410	<390	<450	<430	<420	<440	<390	<430	<380	<380
N-Nitrosodiphenylamine	ug/kg	<410	<390	<450	<430	<420	<440	<390	<430	<380	<380
Pentachlorophenol	ug/kg	<2100	<2000	<2200	<2100	<2100	<2200	<1900	<2200	<1900	<1900
Phenanthrene	ug/kg	**1600**	<390	**220**	<430	<420	<440	<390	**220**	**2800**	<380
Phenol	ug/kg	<410	<390	<450	<430	<420	<440	<390	<430	<380	<380
Pyrene	ug/kg	**1000**	<390	**150**	<430	<420	<440	<390	<430	**1900**	<380
1,2,4-Trichlorobenzene	ug/kg	<410	<390	<450	<430	<420	<440	<390	<430	<380	<380
2,4,5-Trichlorophenol	ug/kg	<410	<390	<450	<430	<420	<440	<390	<430	<380	<380
2,4,6-Trichlorophenol	ug/kg	<410	<390	<450	<430	<420	<440	<390	<430	<380	<380

Table 3-3. Soil Sample Analytical Results: Polychlorinated Biphenyls

		B4-06 (0'-2')	B4-06 (4'-6')	B6-05 (4.5')	B6-08 (6.0')	B6-09 (6.0')	AREA 6 WEST PIT	AREA 6 EAST PIT	AREA 6 WEST PIT	B10-09 (0-2)	B10-09 (4-7)
Polychlorinated Biphenyls											
PCB-1016 (Aroclor 1016)	ug/kg	<46	<41	<11000	<41	<410	<72	<240	<52.	<38.	<48.
PCB-1221 (Aroclor 1221)	ug/kg	<46	<41	<11000	<41	<410	<72	<240	<52.	<38.	<48.
PCB-1232 (Aroclor 1232)	ug/kg	<46	<41	<11000	<41	<410	<72	<240	<52.	<38.	<48.
PCB-1242 (Aroclor 1242)	ug/kg	<46	<41	<11000	<41	<410	<72	<240	<52.	<38.	<48.
PCB-1248 (Aroclor 1248)	ug/kg	<46	<41	<11000	<41	<410	<72	<240	<52.	<38.	<48.
PCB-1254 (Aroclor 1254)	ug/kg	<46	<41	**41000**	<41	<410	**660**	**2100**	<52.	<38.	<48.
PCB-1260 (Aroclor 1260)	ug/kg	<46	<41	<11000	<41	<410	**850**	<240	<52.	<38.	<48.

Table 3-3. Soil Sample Analytical Results: Polychlorinated Biphenyls

		B10-11 (0-4)	B10-12 (1-4)	B10-20 (4-7)	B10-20 SEWER RESIDUE	B10-22 (6-8)	B15-01 CINDERS	B15-01 GRAVEL	B15-01 (0'-0.5')	B15-01 (7'-8')	B18-01 (4-6)
Polychlorinated Biphenyls											
PCB-1016 (Aroclor 1016)	ug/kg	<39.	<40.	<49.	<34.	<39.	<5900	<4600	<580	<43	<39.
PCB-1221 (Aroclor 1221)	ug/kg	<39.	<40.	<49.	<34.	<39.	<5900	<4600	<580	<43	<39.
PCB-1232 (Aroclor 1232)	ug/kg	<39.	<40.	<49.	<34.	<39.	<5900	<4600	<580	<43	<39.
PCB-1242 (Aroclor 1242)	ug/kg	<39.	<40.	<49.	<34.	<39.	<5900	<4600	<580	<43	<39.
PCB-1248 (Aroclor 1248)	ug/kg	<39.	<40.	<49.	<34.	<39.	<5900	<4600	<580	<43	<39.
PCB-1254 (Aroclor 1254)	ug/kg	<39.	<40.	<49.	**100**	<39.	<5900	<4600	<580	<43	**2500**
PCB-1260 (Aroclor 1260)	ug/kg	<39.	<40.	<49.	<34.	<39.	<5900	<4600	<580	<43	<39.

Table 3-3. Soil Sample Analytical Results: Polychlorinated Biphenyls

		B18-01 (8-10)	B18-01 (12-14)	B18-02 (4-6)
Polychlorinated Biphenyls				
PCB-1016 (Aroclor 1016)	ug/kg	<43.	<38.	<38.
PCB-1221 (Aroclor 1221)	ug/kg	<43.	<38.	<38.
PCB-1232 (Aroclor 1232)	ug/kg	<43.	<38.	<38.
PCB-1242 (Aroclor 1242)	ug/kg	<43.	<38.	<38.
PCB-1248 (Aroclor 1248)	ug/kg	<43.	<38.	<38.
PCB-1254 (Aroclor 1254)	ug/kg	**33.**	<38.	<38.
PCB-1260 (Aroclor 1260)	ug/kg	<43.	<38.	<38.

Table 3-4. Soil Sample Analytical Results: Metals and Cyanide

		B4-06 (0'-2')	B4-06 (2'-4')	B4-06 (4'-6')	B4-06 (6'-8')	B6-05 (4.5')	B6-08 (6.0')	B6-09 (6.0')	AREA 6 WEST PIT	AREA 6 EAST PIT	AREA 6 WEST PIT
Metals											
Antimony	mg/kg	<0.70	<0.80	<0.58	<0.59	**1.5**	<0.62	<0.62	**1.2**	NA	NA
Arsenic	mg/kg	<0.70	**1.5**	**1.1**	<0.59	**16**	**2.2**	**2.4**	**13**	NA	NA
Barium	mg/kg	**37**	**54**	**220**	**160**	**720**	**84**	**68**	**1100**	NA	NA
Beryllium	mg/kg	<0.14	**0.20**	<0.12	<0.12	**0.33**	<0.12	**0.34**	**0.30**	NA	NA
Cadmium	mg/kg	**3.9**	**3.4**	**0.74**	**0.58**	**34**	<0.12	<0.12	**17**	NA	NA
Chromium	mg/kg	**43**	**50**	**5.4**	**6.0**	**430**	**46**	**24**	**220**	NA	NA
Chromium, Hexavalent	mg/kg	<0.70	NA	<0.62	NA	<0.86	<0.38	<0.56	**8.9**	<7.44	<8.28
Copper	mg/kg	**34**	**38**	**25**	**23**	**1800**	**42**	**18**	**430**	NA	NA
Lead	mg/kg	**21**	**18**	**8.1**	**9.2**	**870**	**16**	**19**	**690**	NA	NA
Manganese	mg/kg	**81**	**49**	**320**	**390**	**3300**	**280**	**430**	**2100**	NA	NA
Mercury	mg/kg	**0.16**	**0.031**	**0.010**	**0.020**	**27**	**0.040**	**0.082**	**9.2**	NA	NA
Nickel	mg/kg	**3.2**	**3.9**	**4.1**	**3.8**	**350**	**16**	**4.9**	**4900**	NA	NA
Selenium	mg/kg	<0.70	<0.80	<0.58	<0.59	<0.76	<0.62	<0.62	<0.68	NA	NA
Silver	mg/kg	<0.28	<0.32	<0.23	<0.24	**9.6**	<0.25	<0.25	**1.7**	NA	NA
Thallium	mg/kg	<1.4	<1.6	<1.2	<1.2	<1.5	<1.2	<1.2	<1.4	NA	NA
Zinc	mg/kg	**15**	**17**	**43**	**36**	**1300**	**56**	**21**	**3300**	NA	NA
Other Inorganics											
Cyanide	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 3-4. Soil Sample Analytical Results: Metals and Cyanide

		B10-09 (0-2)	B10-09 (4-7)	B10-11 (0-4)	B10-12 (1-4)	B10-20 (4-7)	B10-20 SEWER RESIDUE	B10-22 (6-8)	B15-01 CINDERS	B15-01 GRAVEL	B15-01 (0'-0.5')
Metals											
Antimony	mg/kg	<0.53	<0.66	<0.54	<0.57	<0.75	**0.35**	<0.53	<0.47	<0.50	<0.81
Arsenic	mg/kg	**2.0**	**2.6**	**1.4**	**2.0**	**1.3**	**19.**	**0.75**	**1.3**	**2.1**	**1.9**
Barium	mg/kg	**86.**	**190**	**85.**	**42.**	**89.**	**36.**	**110**	**1.5**	**2.7**	**31**
Beryllium	mg/kg	**0.97**	**1.4**	**1.5**	**0.42**	**0.87**	**0.20**	**0.64**	**0.14**	<0.10	**0.17**
Cadmium	mg/kg	<0.11	<0.13	<0.11	<0.11	<0.15	<0.098	<0.11	**0.22**	**0.24**	**3.8**
Chromium	mg/kg	**40.**	**38.**	**190**	**26.**	**30.**	**19.**	**31.**	**1.4**	**4.5**	**82**
Chromium, Hexavalent	mg/kg	<5.93	<7.36	<5.96	<6.68	<7.48	<5.31	<6.23	<0.099	<0.11	<0.17
Copper	mg/kg	**45.**	**46.**	**89.**	**17.**	**29.**	**69.**	**84.**	**0.50**	**7.7**	**37**
Lead	mg/kg	**38.**	**14.**	**13.**	**16.**	**11.**	**54.**	**3.4**	**2.7**	**2.2**	**12**
Manganese	mg/kg	**200**	**400**	**800**	**130**	**780**	**240**	**580**	**3.9**	**65**	**160**
Mercury	mg/kg	**0.032**	**0.055**	**0.071**	**0.31**	**0.055**	**0.025**	**0.028**	**0.012**	**0.092**	**0.073**
Nickel	mg/kg	**13.**	**36.**	**52.**	**3.8**	**7.9**	**13.**	**26.**	**0.67**	**5.6**	**5.0**
Selenium	mg/kg	<0.53	<0.66	<0.54	<0.57	<0.75	<0.49	<0.53	<0.47	<0.50	<0.81
Silver	mg/kg	<0.21	<0.26	<0.22	<0.23	<0.30	<0.20	<0.21	<0.19	<0.20	<0.32
Thallium	mg/kg	<1.1	<1.3	<1.1	<1.1	**0.37**	<0.98	<1.1	<0.93	<1.0	<1.6
Zinc	mg/kg	**120**	**140**	**81.**	**24.**	**20.**	**200**	**60.**	**7.7**	**12**	**14**
Other Inorganics											
Cyanide	mg/kg	<0.58	<0.72	<0.60	<0.60	**1.0**	<0.53	<0.61	NA	NA	NA

Table 3-4. Soil Sample Analytical Results: Metals and Cyanide

		B15-01 (1.0'-1.5')	B15-01 (3'-4')	B15-01 (5'-6')	B15-01 (7'-8')	B15-01 (11'-12')	B18-01 (4-6)	B18-01 (8-10)	B18-01 (12-14)	B18-02 (8-10)
Metals										
Antimony	mg/kg	<0.70	<0.71	<0.79	<0.65	<0.57	<0.59	<0.64	<0.53	NA
Arsenic	mg/kg	<0.70	**1.0**	**2.5**	**1.1**	**1.6**	**1.1**	**1.6**	**0.33**	NA
Barium	mg/kg	**21**	**50**	**160**	**150**	**160**	**17.**	**64.**	**170**	NA
Beryllium	mg/kg	**0.18**	<0.14	<0.16	<0.13	<0.11	**0.35**	**1.6**	**0.50**	**0.41**
Cadmium	mg/kg	**2.7**	**3.1**	**1.4**	**1.5**	**2.2**	<0.12	<0.13	<0.11	NA
Chromium	mg/kg	**79**	**190**	**13**	**15**	**4.4**	**30.**	**110**	**19.**	**30.**
Chromium, Hexavalent	mg/kg	NA	NA	NA	<0.13	NA	<5.86	<6.80	<5.37	NA
Copper	mg/kg	**28**	**60**	**35**	**80**	**77**	**11.**	**110**	**40.**	**9.5**
Lead	mg/kg	**10**	**11**	**6.3**	**6.5**	**6.2**	**4.5**	**19.**	**7.0**	NA
Manganese	mg/kg	**160**	**1200**	**270**	**380**	**670**	**15.**	**320**	**230**	NA
Mercury	mg/kg	**0.11**	**0.018**	<0.0070	<0.0061	<0.0056	**0.11**	<0.0059	**0.016**	NA
Nickel	mg/kg	**3.5**	**24**	**4.0**	**3.2**	**5.6**	**3.1**	**40.**	**11.**	**1.5**
Selenium	mg/kg	<0.70	<0.71	<0.79	<0.65	<0.57	**0.22**	<0.64	<0.53	NA
Silver	mg/kg	<0.28	<0.28	<0.32	<0.26	<0.23	<0.23	<0.26	**0.043**	NA
Thallium	mg/kg	<1.4	<1.4	<1.6	<1.3	<1.1	<1.2	**0.55**	<1.1	NA
Zinc	mg/kg	**11**	**59**	**46**	**45**	**68**	**6.1**	**100**	**39.**	NA
Other Inorganics										
Cyanide	mg/kg	NA	NA	NA	NA	NA	<0.59	<0.65	**8.4**	NA

Table 3-5. Soil Sample Analytical Results: TCLP

	Units	B4-06 (0'-2')	B4-06 (2'-4')	B4-06 (4'-6')	B4-06 (6'-8')	B15-01 CINDERS	B15-01 GRAVEL	B15-01 (0'-0.5')	B15-01 (1.0'-1.5')	B15-01 (3'-4')
TCLP - Semivolatile Organic Compounds										
Acenaphthene	mg/l	<0.050	<0.050	-	-	**0.16**	**0.089**	<0.050	<0.050	-
Acenaphthylene	mg/l	<0.050	<0.050	-	-	<0.050	<0.050	<0.050	<0.050	-
Anthracene	mg/l	<0.050	<0.050	-	-	<0.050	<0.050	<0.050	<0.050	-
Benzidine	mg/l	<0.010	<0.010	-	-	<0.010	<0.010	<0.010	<0.010	-
Benzo(k)fluoranthene	mg/l	<0.050	<0.050	-	-	<0.050	<0.050	<0.050	<0.050	-
Benzo(b)fluoranthene	mg/l	<0.050	<0.050	-	-	<0.050	<0.050	<0.050	<0.050	-
Benzo(a)fluoranthene	mg/l	<0.050	<0.050	-	-	<0.050	<0.050	<0.050	<0.050	-
Benzoic acid	mg/l	<0.25	<0.25	-	-	<0.25	<0.25	<0.25	<0.25	-
Benzo(g,h,i)perylene	mg/l	<0.050	<0.050	-	-	<0.050	<0.050	<0.050	<0.050	-
Benzyl alcohol	mg/l	<0.10	<0.10	-	-	<0.10	<0.10	<0.10	<0.10	-
Benzo(a)pyrene	mg/l	<0.050	<0.050	-	-	<0.050	<0.050	<0.050	<0.050	-
4-Bromophenylphenyl ether	mg/l	<0.050	<0.050	-	-	<0.050	<0.050	<0.050	<0.050	-
Butylbenzylphthalate	mg/l	<0.050	<0.050	-	-	<0.050	<0.050	<0.050	<0.050	-
4-Chloro-3-methylphenol	mg/l	<0.10	<0.10	-	-	<0.10	<0.10	<0.10	<0.10	-
4-Chloroaniline	mg/l	<0.10	<0.10	-	-	<0.10	<0.10	<0.10	<0.10	-
bis(2-Chloroethoxy)methane	mg/l	<0.050	<0.050	-	-	<0.050	<0.050	<0.050	<0.050	-
bis(2-Chloroethyl) ether	mg/l	<0.050	<0.050	-	-	<0.050	<0.050	<0.050	<0.050	-
bis(2-Chloroisopropyl) ether	mg/l	<0.050	<0.050	-	-	<0.050	<0.050	<0.050	<0.050	-
2-Chloronaphthalene	mg/l	<0.050	<0.050	-	-	<0.050	<0.050	<0.050	<0.050	-
2-Chlorophenol	mg/l	<0.050	<0.050	-	-	<0.050	<0.050	<0.050	<0.050	-
4-Chlorophenylphenyl ether	mg/l	<0.050	<0.050	-	-	<0.050	<0.050	<0.050	<0.050	-
Chrysene	mg/l	<0.050	<0.050	-	-	<0.050	<0.050	<0.050	<0.050	-
Dibenz(a,h)anthracene	mg/l	<0.050	<0.050	-	-	<0.050	<0.050	<0.050	<0.050	-
Dibenzofuran	mg/l	<0.050	<0.050	-	-	**0.19**	**0.10**	<0.050	<0.050	-
1,2-Dichlorobenzene	mg/l	<0.050	<0.050	-	-	<0.050	<0.050	<0.050	<0.050	-
1,3-Dichlorobenzene	mg/l	<0.050	<0.050	-	-	<0.050	<0.050	<0.050	<0.050	-
1,4-Dichlorobenzene	mg/l	<0.75	<0.75	<0.75	<0.75	<0.75	<0.75	<0.75	<0.75	<0.75
3,3'-Dichlorobenzidine	mg/l	<0.50	<0.50	-	-	<0.50	<0.50	<0.50	<0.50	-
2,4-Dichlorophenol	mg/l	<0.050	<0.050	-	-	<0.050	<0.050	<0.050	<0.050	-
Diethylphthalate	mg/l	<0.050	<0.050	-	-	<0.050	<0.050	<0.050	<0.050	-

Table 3-5. Soil Sample Analytical Results: TCLP

	Units	B4-06 (0'-2')	B4-06 (2'-4')	B4-06 (4'-6')	B4-06 (6'-8')	B15-01 CINDERS	B15-01 GRAVEL	B15-01 (0'-0.5')	B15-01 (1.0'-1.5')	B15-01 (3'-4')
2,4-Dimethylphenol	mg/l	<0.050	<0.050	-	-	<0.050	<0.050	<0.050	<0.050	-
Dimethylphthalate	mg/l	<0.050	<0.050	-	-	<0.050	<0.050	<0.050	<0.050	-
Di-n-butylphthalate	mg/l	<0.050	<0.050	-	-	<0.050	<0.050	<0.050	<0.050	-
4,6-Dinitro-2-methylphenol	mg/l	<0.25	<0.25	-	-	<0.25	<0.25	<0.25	<0.25	-
2,4-Dinitrophenol	mg/l	<0.25	<0.25	-	-	<0.25	<0.25	<0.25	<0.25	-
2,4-Dinitrotoluene	mg/l	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013
2,6-Dinitrotoluene	mg/l	<0.050	<0.050	-	-	<0.050	<0.050	<0.050	<0.050	-
Di-n-octylphthalate	mg/l	<0.050	<0.050	-	-	<0.050	<0.050	<0.050	<0.050	-
1,2-Diphenylhydrazine	mg/l	<0.10	<0.10	-	-	<0.10	<0.10	<0.10	<0.10	-
bis(2-Ethylhexyl)phthalate	mg/l	<0.050	<0.050	-	-	<0.050	<0.050	<0.050	<0.050	-
Fluoranthene	mg/l	<0.050	<0.050	-	-	<0.050	<0.050	<0.050	<0.050	-
Fluorene	mg/l	<0.050	<0.050	-	-	**0.11**	**0.067**	<0.050	<0.050	-
Hexachloro-1,3-butadiene	mg/l	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Hexachlorobenzene	mg/l	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013	<0.013
Hexachlorocyclopentadiene	mg/l	<0.050	<0.050	-	-	<0.050	<0.050	<0.050	<0.050	-
Hexachloroethane	mg/l	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Indeno(1,2,3-cd)pyrene	mg/l	<0.050	<0.050	-	-	<0.050	<0.050	<0.050	<0.050	-
Isophorone	mg/l	<0.050	<0.050	-	-	<0.050	<0.050	<0.050	<0.050	-
2-Methylnaphthalene	mg/l	<0.050	<0.050	-	-	**0.076**	<0.050	<0.050	<0.050	-
2-Methylphenol (o-Cresol)	mg/l	<0.050	<0.050	<0.010	<0.010	<0.050	<0.050	<0.050	<0.050	<0.010
3&4-Methylphenol	mg/l	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Naphthalene	mg/l	<0.050	<0.050	-	-	**0.052**	<0.050	<0.050	<0.050	-
2-Nitroaniline	mg/l	<0.25	<0.25	-	-	<0.25	<0.25	<0.25	<0.25	-
3-Nitroaniline	mg/l	<0.25	<0.25	-	-	<0.25	<0.25	<0.25	<0.25	-
4-Nitroaniline	mg/l	<0.25	<0.25	-	-	<0.25	<0.25	<0.25	<0.25	-
Nitrobenzene	mg/l	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
2-Nitrophenol	mg/l	<0.050	<0.050	-	-	<0.050	<0.050	<0.050	<0.050	-
4-Nitrophenol	mg/l	<0.25	<0.25	-	-	<0.25	<0.25	<0.25	<0.25	-
N-Nitroso-di-n-propylamine	mg/l	<0.050	<0.050	-	-	<0.050	<0.050	<0.050	<0.050	-
N-Nitrosodiphenylamine	mg/l	<0.050	<0.050	-	-	<0.050	<0.050	<0.050	<0.050	-
Pentachlorophenol	mg/l	<10	<10	<10	<10	<10	<10	<10	<10	<10

Table 3-5. Soil Sample Analytical Results: TCLP

	Units	B4-06 (0'-2')	B4-06 (2'-4')	B4-06 (4'-6')	B4-06 (6'-8')	B15-01 CINDERS	B15-01 GRAVEL	B15-01 (0'-0.5')	B15-01 (1.0'-1.5')	B15-01 (3'-4')
Phenanthrene	mg/l	<0.050	<0.050	-	-	**0.24**	**0.23**	<0.050	<0.050	-
Phenol	mg/l	<0.050	<0.050	-	-	<0.050	<0.050	<0.050	<0.050	-
Pyrene	mg/l	<0.050	<0.050	-	-	<0.050	<0.050	<0.050	<0.050	-
Pyridine	mg/l	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,2,4-Trichlorobenzene	mg/l	<0.050	<0.050	-	-	<0.050	<0.050	<0.050	<0.050	-
2,4,5-Trichlorophenol	mg/l	<40	<40	<40	<40	<40	<40	<40	<40	<40
2,4,6-Trichlorophenol	mg/l	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
TCLP - Volatile Organic Compounds										
Acetone	mg/l	**0.21**	**0.037**	-	-	-	-	-	-	-
Benzene	mg/l	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Bromobenzene	mg/l	<0.010	<0.010	-	-	-	-	-	-	-
Bromochloromethane	mg/l	<0.010	<0.010	-	-	-	-	-	-	-
Bromodichloromethane	mg/l	<0.010	<0.010	-	-	-	-	-	-	-
Bromoform	mg/l	<0.010	<0.010	-	-	-	-	-	-	-
Bromomethane	mg/l	<0.010	<0.010	-	-	-	-	-	-	-
2-Butanone (MEK)	mg/l	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
sec-Butylbenzene	mg/l	<0.010	<0.010	-	-	-	-	-	-	-
tert-Butylbenzene	mg/l	<0.010	<0.010	-	-	-	-	-	-	-
Carbon tetrachloride	mg/l	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Chlorobenzene	mg/l	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Chloroethane	mg/l	<0.010	<0.010	-	-	-	-	-	-	-
Chloroform	mg/l	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
2-Chlorotoluene	mg/l	<0.010	<0.010	-	-	-	-	-	-	-
4-Chlorotoluene	mg/l	<0.010	<0.010	-	-	-	-	-	-	-
Dibromochloromethane	mg/l	<0.010	<0.010	-	-	-	-	-	-	-
1,2-Dibromoethane (EDB)	mg/l	<0.010	<0.010	-	-	-	-	-	-	-
Dibromomethane	mg/l	<0.010	<0.010	-	-	-	-	-	-	-
1,2-Dichlorobenzene	mg/l	<0.020	<0.020	-	-	-	-	-	-	-
1,3-Dichlorobenzene	mg/l	<0.020	<0.020	-	-	-	-	-	-	-
1,4-Dichlorobenzene	mg/l	<0.020	<0.020	-	-	-	-	-	-	-

Table 3-5. Soil Sample Analytical Results: TCLP

	Units	B4-06 (0'-2')	B4-06 (2'-4')	B4-06 (4'-6')	B4-06 (6'-8')	B15-01 CINDERS	B15-01 GRAVEL	B15-01 (0'-0.5')	B15-01 (1.0'-1.5')	B15-01 (3'-4')
Dichlorodifluoromethane	mg/l	<0.020	<0.020	-	-	-	-	-	-	-
1,1-Dichloroethane	mg/l	<0.010	<0.010	-	-	-	-	-	-	-
1,2-Dichloroethane	mg/l	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
1,1-Dichloroethene	mg/l	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
cis-1,2-Dichloroethene	mg/l	<0.020	<0.020	-	-	-	-	-	-	-
trans-1,2-Dichloroethene	mg/l	<0.020	<0.020	-	-	-	-	-	-	-
1,2-Dichloropropane	mg/l	<0.020	<0.020	-	-	-	-	-	-	-
1,3-Dichloropropane	mg/l	<0.010	<0.010	-	-	-	-	-	-	-
2,2-Dichloropropane	mg/l	<0.010	<0.010	-	-	-	-	-	-	-
1,1-Dichloropropene	mg/l	<0.010	<0.010	-	-	-	-	-	-	-
cis-1,3-Dichloropropene	mg/l	<0.010	<0.010	-	-	-	-	-	-	-
trans-1,3-Dichloropropene	mg/l	<0.010	<0.010	-	-	-	-	-	-	-
Diisopropyl ether	mg/l	<0.010	<0.010	-	-	-	-	-	-	-
Ethylbenzene	mg/l	<0.020	<0.020	-	-	-	-	-	-	-
Hexachloro-1,3-butadiene	mg/l	<0.010	<0.010	-	-	-	-	-	-	-
2-Hexanone	mg/l	<0.010	<0.010	-	-	-	-	-	-	-
Isopropylbenzene (Cumene)	mg/l	<0.010	<0.010	-	-	-	-	-	-	-
p-Isopropyltoluene	mg/l	<0.010	<0.010	-	-	-	-	-	-	-
Methylene chloride	mg/l	<0.020	<0.020	-	-	-	-	-	-	-
4-Methyl-2-pentanone (MIBK)	mg/l	<0.010	<0.010	-	-	-	-	-	-	-
Methyl-tert-butyl ether	mg/l	<0.010	<0.010	-	-	-	-	-	-	-
Naphthalene	mg/l	**0.24**	**0.011**	-	-	-	-	-	-	-
n-Propylbenzene	mg/l	<0.010	<0.010	-	-	-	-	-	-	-
Styrene	mg/l	<0.020	<0.020	-	-	-	-	-	-	-
1,1,1,2-Tetrachloroethane	mg/l	<0.010	<0.010	-	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane	mg/l	<0.010	<0.010	-	-	-	-	-	-	-
Tetrachloroethene	mg/l	<0.010	<0.010	<0.010	<0.010	**0.028**	<0.010	<0.010	<0.010	<0.010
Toluene	mg/l	<0.020	<0.020	-	-	-	-	-	-	-
1,2,3-Trichlorobenzene	mg/l	<0.010	<0.010	-	-	-	-	-	-	-
1,2,4-Trichlorobenzene	mg/l	<0.020	<0.020	-	-	-	-	-	-	-
1,1,1-Trichloroethane	mg/l	-	<0.020	-	-	-	-	-	-	-

Table 3-5. Soil Sample Analytical Results: TCLP

	Units	B4-06 (0'-2')	B4-06 (2'-4')	B4-06 (4'-6')	B4-06 (6'-8')	B15-01 CINDERS	B15-01 GRAVEL	B15-01 (0'-0.5')	B15-01 (1.0'-1.5')	B15-01 (3'-4')
1,1,2-Trichloroethane	mg/l	<0.020	<0.020	-	-	-	-	-	-	-
Trichloroethene	mg/l	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Trichlorofluoromethane	mg/l	<0.010	<0.010	-	-	-	-	-	-	-
1,2,3-Trichloropropane	mg/l	<0.010	<0.010	-	-	-	-	-	-	-
1,1,2-Trichlorotrifluoroethane	mg/l	<0.010	-	-	-	-	-	-	-	-
1,2,4-Trimethylbenzene	mg/l	<0.010	<0.010	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene	mg/l	<0.010	<0.010	-	-	-	-	-	-	-
Vinyl acetate	mg/l	<0.010	<0.010	-	-	-	-	-	-	-
Vinyl chloride	mg/l	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Xylene (total)	mg/l	-	-	-	-	-	-	-	-	-
m&p-Xylene	mg/l	<0.020	<0.020	-	-	-	-	-	-	-
o-Xylene	mg/l	<0.020	<0.020	-	-	-	-	-	-	-

Table 3-6. Sample Analytical Results: Characterization of Building Materials and Residues

	Units	AREA 6 EAST PIT	AREA 6 WEST PIT	WOOD-01	WOOD-02	WOOD-03	EPA Limit	NCDENR Contained Out Limit
Metals, TCLP								
Antimony	mg/l	NA	NA	NA	NA	NA	**NA**	**1.5**
Arsenic	mg/l	**0.013**	**0.023**	**0.020**	**0.014**	**0.028**	**5.0**	**<5**
Barium	mg/l	**2.8**	**0.88**	**0.53**	**0.46**	**0.42**	**100.0**	**<100**
Beryllium	mg/l	NA	NA	NA	NA	NA	**NA**	**7.3**
Cadmium	mg/l	**0.042**	**0.034**	**0.014**	**0.020**	**0.0089**	**1.0**	**<1**
Chromium	mg/l	**0.028**	**0.029**	**1.1**	**0.66**	**0.82**	**5.0**	**<5**
Hexavalent Chromium	mg/l	NA	NA	NA	NA	NA	**NA**	**NA**
Copper	mg/l	NA	NA	NA	NA	NA	**NA**	**100**
Lead	mg/l	**0.018**	**0.0066**	**0.15**	**0.096**	**0.033**	**5.0**	**<5.0**
Manganese	mg/l	NA	NA	NA	NA	NA	**NA**	**NA**
Mercury	mg/l	**0.00019**	**0.00011**	**0.00012**	**0.00014**	**0.00022**	**0.2**	**<0.2**
Nickel	mg/l	NA	NA	NA	NA	NA	**NA**	**10**
Selenium	mg/l	<0.025	**0.015**	<0.025	<0.025	**0.041**	**1.0**	**<1**
Silver	mg/l	<0.010	<0.010	**0.0041**	**0.0025**	**0.0025**	**5.0**	**<5**
Thallium	mg/l	NA	NA	NA	NA	NA	**NA**	**0.24**
Zinc	mg/l	NA	NA	NA	NA	NA	**NA**	**105**
RCRA Characteristics								
pH	units	**9.60**	**8.70**	NA	NA	NA	**<2, >12.5**	**NA**
Free Liquids	ml/5min	<1.0	<1.0	NA	NA	NA	**Any**	**NA**
Flash Point	deg F	>140 deg F	>140 deg F	NA	NA	NA	**<140 deg F**	**NA**
Ignitability	mm/sec	NA	NA	NA	NA	NA	**NA**	**NA**
Cyanide (Reactive)	mg/kg **or** mg/L	<1.6	<1.6	NA	NA	NA	**250(1)**	**NA**
Sulfide (Reactive)	mg/kg **or** mg/L	<16	<16	NA	NA	NA	**500(1)**	**NA**
Polychlorinated Biphenyls								
PCB-1016 (Aroclor 1016)	ug/kg	<240	<52.	<280	<3200	<300	**NA**	**NA**
PCB-1221 (Aroclor 1221)	ug/kg	<240	<52.	<280	<3200	<300	**NA**	**NA**
PCB-1232 (Aroclor 1232)	ug/kg	<240	<52.	<280	<3200	<300	**NA**	**NA**
PCB-1242 (Aroclor 1242)	ug/kg	<240	<52.	<280	<3200	<300	**NA**	**NA**
PCB-1248 (Aroclor 1248)	ug/kg	<240	<52.	<280	<3200	<300	**NA**	**NA**

Table 3-6. Sample Analytical Results: Characterization of Building Materials and Residues

	Units	AREA 6 EAST PIT	AREA 6 WEST PIT	WOOD-01	WOOD-02	WOOD-03	EPA Limit	NCDENR Contained Out Limit
PCB-1254 (Aroclor 1254)	ug/kg	**2100**	<52.	**1800**	**28000**	**970**	**NA**	**NA**
PCB-1260 (Aroclor 1260)	ug/kg	<240	<52.	<280	<3200	<300	**NA**	**NA**
Total PCBs	ug/kg	**2100**	ND	**1800**	**28000**	**970**	**50,000(2)**	**50,000**
Volatile Organic Compounds, TCLP								
Acetone	mg/l	NA	NA	NA	NA	NA	**NA**	**70**
Acetonitrile	mg/l	NA	NA	NA	NA	NA	**NA**	**10**
Acrolein	mg/l	NA	NA	NA	NA	NA	**NA**	**0.0042**
Acrylonitrile	mg/l	NA	NA	NA	NA	NA	**NA**	**0.0039**
Allyl chloride	mg/l	NA	NA	NA	NA	NA	**NA**	**1**
tert-Amylmethyl ether	mg/l	NA	NA	NA	NA	NA	**NA**	**NA**
tert-Amyl Alcohol	mg/l	NA	NA	NA	NA	NA	**NA**	**NA**
Benzene	mg/l	<0.010	**0.011**	NA	<0.0050	<0.16	**0.5**	**<0.5**
Bromobenzene	mg/l	NA	NA	NA	NA	NA	**NA**	**NA**
Bromochloromethane	mg/l	NA	NA	NA	NA	NA	**NA**	**NA**
Bromodichloromethane	mg/l	NA	NA	NA	NA	NA	**NA**	**0.056**
Bromoform	mg/l	NA	NA	NA	NA	NA	**NA**	**0.44**
Bromomethane	mg/l	NA	NA	NA	NA	NA	**NA**	**NA**
2-Butanone (MEK)	mg/l	<0.010	**0.012**	NA	<0.10	<3.1	**NA**	**<200**
n-Butylbenzene	mg/l	NA	NA	NA	NA	NA	**NA**	**7**
sec-Butylbenzene	mg/l	NA	NA	NA	NA	NA	**NA**	**7**
tert-Butylbenzene	mg/l	NA	NA	NA	NA	NA	**NA**	**7**
3,3-Dimethyl-1-Butanol	mg/l	NA	NA	NA	NA	NA	**NA**	**NA**
tert-Butyl Formate	mg/l	NA	NA	NA	NA	NA	**NA**	**NA**
Carbon disulfide	mg/l	NA	NA	NA	NA	NA	**NA**	**NA**
Carbon tetrachloride	mg/l	<0.010	<0.010	NA	<0.0050	<0.16	**0.5**	**<0.5**
Chlorobenzene	mg/l	<0.010	<0.010	NA	<0.0050	<0.16	**100.0**	**<100**
Chloroethane	mg/l	NA	NA	NA	NA	NA	**NA**	**NA**
2-Chloroethylvinyl ether	mg/l	NA	NA	NA	NA	NA	**NA**	**NA**
Chloroform	mg/l	<0.010	<0.010	NA	<0.0050	<0.16	**6.0**	**<6**
Chloromethane	mg/l	NA	NA	NA	NA	NA	**NA**	**NA**
Chloroprene	mg/l	NA	NA	NA	NA	NA	**NA**	**NA**

Table 3-6. Sample Analytical Results: Characterization of Building Materials and Residues

	Units	AREA 6 EAST PIT	AREA 6 WEST PIT	WOOD-01	WOOD-02	WOOD-03	EPA Limit	NCDENR Contained Out Limit
2-Chlorotoluene	mg/l	NA	NA	NA	NA	NA	**NA**	**14**
4-Chlorotoluene	mg/l	NA	NA	NA	NA	NA	**NA**	**NA**
Cyclohexane	mg/l	NA	NA	NA	NA	NA	**NA**	**NA**
1,2-Dibromo-3-chloropropane	mg/l	NA	NA	NA	NA	NA	**NA**	**0.0025**
Dibromochloromethane	mg/l	NA	NA	NA	NA	NA	**NA**	**0.041**
1,2-Dibromoethane (EDB)	mg/l	NA	NA	NA	NA	NA	**NA**	**0.00004**
Dibromomethane	mg/l	NA	NA	NA	NA	NA	**NA**	**NA**
1,2-Dichlorobenzene	mg/l	NA	NA	NA	NA	NA	**NA**	**2.4**
1,3-Dichlorobenzene	mg/l	NA	NA	NA	NA	NA	**NA**	**17**
1,4-Dichlorobenzene	mg/l	<0.0050	<0.0050	NA	<0.0050	<0.16	**7.5**	**<7.5**
cis-1,4-Dichloro-2-butene	mg/l	NA	NA	NA	NA	NA	**NA**	**NA**
trans-1,4-Dichloro-2-butene	mg/l	NA	NA	NA	NA	NA	**NA**	**0.00012**
Dichlorodifluoromethane	mg/l	NA	NA	NA	NA	NA	**NA**	**NA**
1,1-Dichloroethane	mg/l	NA	NA	NA	NA	NA	**NA**	**NA**
1,2-Dichloroethane	mg/l	<0.010	<0.010	NA	<0.0050	<0.16	**0.5**	**<0.5**
1,1-Dichloroethene	mg/l	<0.010	<0.010	NA	<0.0050	<0.16	**0.7**	**<0.7**
cis-1,2-Dichloroethene	mg/l	NA	NA	NA	NA	NA	**NA**	**7**
trans-1,2-Dichloroethene	mg/l	NA	NA	NA	NA	NA	**NA**	**10**
1,2-Dichloropropane	mg/l	NA	NA	NA	NA	NA	**NA**	**NA**
1,3-Dichloropropane	mg/l	NA	NA	NA	NA	NA	**NA**	**0.019**
2,2-Dichloropropane	mg/l	NA	NA	NA	NA	NA	**NA**	**NA**
1,1-Dichloropropene	mg/l	NA	NA	NA	NA	NA	**NA**	**NA**
cis-1,3-Dichloropropene	mg/l	NA	NA	NA	NA	NA	**NA**	**0.019**
trans-1,3-Dichloropropene	mg/l	NA	NA	NA	NA	NA	**NA**	**0.019**
Diisopropyl ether	mg/l	NA	NA	NA	NA	NA	**NA**	**NA**
1,4-Dioxane (p-Dioxane)	mg/l	NA	NA	NA	NA	NA	**NA**	**0.7**
Ethanol	mg/l	NA	NA	NA	NA	NA	**NA**	**NA**
Ethylbenzene	mg/l	NA	NA	NA	NA	NA	**NA**	**NA**
Ethyl methacrylate	mg/l	NA	NA	NA	NA	NA	**NA**	**NA**
Ethyl-tert-butyl ether	mg/l	NA	NA	NA	NA	NA	**NA**	**NA**
Hexachloro-1,3-butadiene	mg/l	NA	NA	NA	NA	NA	**0.5**	**<0.5**
2-Hexanone	mg/l	NA	NA	NA	NA	NA	**NA**	**28**

Table 3-6. Sample Analytical Results: Characterization of Building Materials and Residues

	Units	AREA 6 EAST PIT	AREA 6 WEST PIT	WOOD-01	WOOD-02	WOOD-03	EPA Limit	NCDENR Contained Out Limit
Iodomethane	mg/l	NA	NA	NA	NA	NA	**NA**	**NA**
Isobutanol	mg/l	NA	NA	NA	NA	NA	**NA**	**NA**
Isopropylbenzene (Cumene)	mg/l	NA	NA	NA	NA	NA	**NA**	**7**
p-Isopropyltoluene	mg/l	NA	NA	NA	NA	NA	**NA**	**NA**
Methacrylonitrile	mg/l	NA	NA	NA	NA	NA	**NA**	**0.1**
Methyl acetate	mg/l	NA	NA	NA	NA	NA	**NA**	**NA**
Methylcyclohexane	mg/l	NA	NA	NA	NA	NA	**NA**	**NA**
Methylene chloride	mg/l	NA	NA	NA	NA	NA	**NA**	**0.5**
Methyl methacrylate	mg/l	NA	NA	NA	NA	NA	**NA**	**NA**
4-Methyl-2-pentanone (MIBK)	mg/l	NA	NA	NA	NA	NA	**NA**	**NA**
2-Methyl-2-propanol	mg/l	NA	NA	NA	NA	NA	**NA**	**NA**
Methyl-tert-butyl ether	mg/l	NA	NA	NA	NA	NA	**NA**	**NA**
Naphthalene	mg/l	NA	NA	NA	NA	NA	**NA**	**2.1**
Propionitrile	mg/l	NA	NA	NA	NA	NA	**NA**	**NA**
n-Propylbenzene	mg/l	NA	NA	NA	NA	NA	**NA**	**7**
Styrene	mg/l	NA	NA	NA	NA	NA	**NA**	**10**
1,1,1,2-Tetrachloroethane	mg/l	NA	NA	NA	NA	NA	**NA**	**0.043**
1,1,2,2-Tetrachloroethane	mg/l	NA	NA	NA	NA	NA	**NA**	**0.017**
Tetrachloroethene	mg/l	**0.062**	**0.010**	NA	**0.056**	**0.39**	**0.7**	**<0.7**
Tetrahydrofuran	mg/l	NA	NA	NA	NA	NA	**NA**	**0.16**
Toluene	mg/l	NA	NA	NA	NA	NA	**NA**	**NA**
1,2,3-Trichlorobenzene	mg/l	NA	NA	NA	NA	NA	**NA**	**NA**
1,2,4-Trichlorobenzene	mg/l	NA	NA	NA	NA	NA	**NA**	**0.72**
1,1,1-Trichloroethane	mg/l	NA	NA	NA	NA	NA	**NA**	**NA**
1,1,2-Trichloroethane	mg/l	NA	NA	NA	NA	NA	**NA**	**0.02**
Trichloroethene	mg/l	<0.010	<0.010	NA	<0.0050	<0.16	**0.5**	**<0.5**
Trichlorofluoromethane	mg/l	NA	NA	NA	NA	NA	**NA**	**NA**
1,2,3-Trichloropropane	mg/l	NA	NA	NA	NA	NA	**NA**	**NA**
1,1,2-Trichlorotrifluoroethane	mg/l	NA	NA	NA	NA	NA	**NA**	**NA**
1,2,4-Trimethylbenzene	mg/l	NA	NA	NA	NA	NA	**NA**	**NA**
1,3,5-Trimethylbenzene	mg/l	NA	NA	NA	NA	NA	**NA**	**NA**
Vinyl acetate	mg/l	NA	NA	NA	NA	NA	**NA**	**41**

Table 3-6. Sample Analytical Results: Characterization of Building Materials and Residues

	Units	AREA 6 EAST PIT	AREA 6 WEST PIT	WOOD-01	WOOD-02	WOOD-03	EPA Limit	NCDENR Contained Out Limit
Vinyl chloride	mg/l	<0.010	<0.010	NA	<0.0050	<0.16	**0.2**	**<0.2**
Xylene (Total)	mg/l	NA	NA	NA	NA	NA	**NA**	**NA**
m&p-Xylene	mg/l	NA	NA	NA	NA	NA	**NA**	**NA**
o-Xylene	mg/l	NA	NA	NA	NA	NA	**NA**	**NA**
Semivolatile Organic Compounds, TCLP								
1,4-Dichlorobenzene	mg/l	<0.75	<0.75	NA	NA	NA	**7.5**	**<7.5**
2,4-Dinitrotoluene	mg/l	<0.013	<0.013	NA	NA	NA	**0.13**	**<0.13**
Hexachloro-1,3-butadiene	mg/l	<0.050	<0.050	NA	NA	NA	**0.5**	**<0.5**
Hexachlorobenzene	mg/l	<0.013	<0.013	NA	NA	NA	**0.13**	**<0.13**
Hexachloroethane	mg/l	<0.30	<0.30	NA	NA	NA	**3.0**	**<3.0**
2-Methylphenol (o-Cresol)	mg/l	<0.050	<0.050	NA	NA	NA	**200.0**	**<200**
3&4-Methylphenol	mg/l	<0.010	<0.010	NA	NA	NA	**200.0**	**<200**
Nitrobenzene	mg/l	<0.20	<0.20	NA	NA	NA	**2.0**	**<2.0**
Pentachlorophenol	mg/l	<10.	<10.	NA	NA	NA	**100.0**	**<100**
Pyridine	mg/l	<0.50	<0.50	NA	NA	NA	**5.0**	**<5**
2,4,5-Trichlorophenol	mg/l	<40.	<40.	NA	NA	NA	**400.0**	**<400**
2,4,6-Trichlorophenol	mg/l	<0.20	<0.20	NA	NA	NA	**2.0**	**<2**

(1) EPA interim guidance limit
(2) Toxic Substance Disposal Act disposal limit for wastes containing PCBs

APPENDIX B

KELLY-BUCK
COMPANY

SAMPLING AND ANALYSIS PLAN

REMEDIAL ACTION PLAN – STEP ONE
FORMER COPES-VULCAN FACILITY
601 WEST SUMMIT AVENUE
CHARLOTTE, NORTH CAROLINA

Prepared for:

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KELLY-BUCK PROJECT NO. 2001.01.07.10

OCTOBER 2006 REVISION

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1.0 Introduction

This August 2006 update to the original 2004 Sampling and Analysis Plan reflects changes necessary to address sampling concerns for work to be completed during Step 1 of the Remedial Action. Any further updates to this plan will address further steps of the Remedial Action.

This Sampling and Analysis Plan (SAP) has been prepared for Electrolux Home Products, Inc. (Electrolux) by The Kelly-Buck Company (Kelly-Buck) to describe field sampling and other data collection procedures for a Remedial Investigation (RI) and Step 1 of the Remedial Action (RA) at the former Copes-Vulcan site (the site) in Charlotte, North Carolina. Electrolux currently owns the site, and has entered into an Administrative Agreement with the North Carolina Department of Environment and Natural Resources (NCDENR) to implement a voluntary remedial action under the Registered Environmental Consultant (REC) Program. Kelly-Buck is the REC assigned to this project, and Michael J. Lyden, P.E. (NC #28510) is the Registered Site Manager (RSM).

This SAP establishes field sampling protocols and documentation requirements necessary to ensure the data are collected in an accurate and consistent manner. The overall work scope and objectives for this project are contained in the project Work Plan and Work Plan Addendum, prepared by Kelly-Buck. The project Quality Assurance/Quality Control procedures are contained in the Quality Assurance Project Plan (QAPP), and site safety procedures are covered in the Health and Safety Plan (HASP).

1.1 Site Description

The Copes-Vulcan site is located at 601 West Summit Avenue in the City of Charlotte, Mecklenburg County, North Carolina (Figure 1). The property measures approximately 19 acres, and is situated within a mixture of industrial, commercial and residential properties just southwest of the Charlotte Central Business District.

Site structures include a 185,000 square feet (sq ft) manufacturing and office building and two smaller steel buildings. Landscaped areas, paved driveways and parking lots surround the structures; the rest of the property is undeveloped, wooded land. During most of the RI, approximately one-third of the main building was being leased to Carocraft, Inc. (Carocraft), a commercial manufacturer of wood cabinetry and fixtures. The building is currently vacant.

To the north and east of the site are active railroad tracks, along with industrial facilities and commercial properties along West Summit Avenue. To the south and west of the site are residential properties and a small city park, followed by Interstate Route 77.

1.2 Site History

From the mid-1940's until the 1970's, the site was occupied by Whitin Machine Works for the manufacturing of textile machinery. From the late-1970s until the early-1990's, Copes-Vulcan, Inc. manufactured industrial valves, boiler cleaning equipment and electronic components on the site. From 1992 until 2001, the property was owned by a private developer, who leased portions of the main building to commercial tenants. Electrolux repossessed the property in 2001, and continued to lease a portion of the building to Carocraft until April of 2006.

Phase I and II Environmental Site Assessments (ESA's) were completed at the site between 2002 and 2003. The ESA's identified areas of concern, and detected soil and ground-water contamination at several of those locations. The two areas of greatest significance involve: tetrachloroethene (PCE) contamination in soil and shallow ground water beneath a former solvent degreaser area in the southeast portion of the main building; and polycyclic aromatic hydrocarbon (PAH) contamination beneath creosote-treated wood flooring and soil, encompassing approximately one-third of the building. Several other contamination areas, of lesser extent and/or magnitude, were detected elsewhere onsite.

Upon discovery of this contamination, Electrolux notified the NCDENR, and subsequently entered into an Administrative Agreement to complete a voluntary remedial action under the State's REC program. Electrolux is designated as the Remediator for this project, and Kelly-Buck is the designated REC firm.

The RI was completed in two phases, beginning in 2004, after submittal of the project Work Plan, and ending in 2006, whereupon a final RI report was issued. During the RI, several more areas of concern were identified and investigated. Heavy PCE contamination was also detected underneath the northwest corner of the main building and extending westward, as well as at an area at the top of the west slope. PCE, along with hexavalent chromium, was also detected in ground water at the site. All contaminants were delineated during the Phase II RI.

Given the contamination described above and in the final RI report, Step 1 of a Remedial Action Plan (RAP) has been developed. This updated Sampling and Analysis Plan serves as an attachment to the RAP. Updates focus on confirmation sampling and analysis required to demonstrate compliance with remediation goals developed by NCDENR.

1.3 Project Work Scope

The RI was conducted in order to evaluate the presence or absence of contamination in potential areas of concern, and to delineate more fully the extent of contamination exceeding the computed Preliminary Remediation Goals (PRGs) for the site. A summary of the work is as follows:

- Completion of soil borings using direct-push methods, to assess subsurface conditions and collect soil samples for laboratory analysis in areas of known or potential concern, and to determine background soil concentrations for selected analytes
- Installation of ground-water monitoring wells
- Collection of ground-water samples for laboratory analysis
- Collection of surface water and sediment samples for laboratory analysis
- Sampling of potentially contaminated sludges and structural materials (e.g., wood, flooring, concrete)
- Test pit excavations
- Site mapping and surveying
- Screening of potentially feasible remedial alternatives (e.g., monitored natural attenuation)
- Screening for areas of potential contamination (e.g., soil vapor survey, electromagnetic survey)

Step 1 of the RAP was developed to address contamination discovered and delineated during the RI only in area of concern #15. A summary of the work to be completed during Step 1 of the RAP is as follows:

- Removal of approximately 70,000 square feet of a creosote-treated flooring system, along with approximately 2 feet of underlying soil. Where confirmation sampling indicates deeper migration of contamination due to co-mingling of VOCs and SVOCs, this soil will be removed, as well.
- Disposal of flooring system and underlying soil, in accordance with USEPA and REC guidelines.
- Site mapping and surveying of all excavations and sampling points

2.0 Field Sampling and Data Collection Procedures

2.1 General Considerations

The following sections contain a brief discussion of field procedures to be employed during the project. In general, all field procedures will be consistent with U.S. Environmental Protection Agency (EPA) Region IV Environmental Investigations

Standard Operating Procedures and Quality Assurance Manual, November 2001, incorporated herein by reference. In addition, procedures outlined in the REC Program Implementation Guidance Manual (December 2001, Appendix A, pg. A-6 & A-7) will be observed, including the following items:

- At least one duplicate sample, per medium, per container type, per field day will be collected. In addition, equipment rinse blanks and VOA trip blanks will also be included.
- All types of samples slated for volatiles analysis will be collected into separate sample containers without mixing.
- All boring and sampling locations will be staked and flagged during the entirety of the remedial investigation.
- A North Carolina-registered land surveyor will survey all monitoring well and soil boring locations.
- If turbidity complicates ground-water sampling, samples will be collected using a low-flow purging and sampling technique, as filtration of samples is not permitted.
- Samples may be decanted into the sample container from a separate collection container (of the same material) if surface waters are very shallow or highly turbid. These collection containers will be handled in the same manner as sample containers and will be pre-cleaned. If samples will be submitted for organic analysis, they must be immediately decanted into the sample container. For metals analysis, the samples will be allowed to settle prior to decanting.
- Drill cuttings and well development purge and decontamination water will be containerized pending laboratory analysis of the material, and managed according to USEPA and NCDENR (contained-out policy) guidelines. If the material is found to exceed remediation goals, it will not be replaced on-site.
- Excavated soil and solid residues from test pit excavations will be placed in secured roll-off containers, stockpiles or drums pending laboratory analysis of the material.

2.2 Drilling and Sampling

Prior to any drilling activities, the locations of underground utilities will be confirmed by contacting the underground utility locating service, and by reviewing site drawings and other available information. These utility routes will be marked. A qualified individual will be present at all drilling locations to log samples, supervise drilling operations, describe and record soil conditions, collect ground-water data, and supervise and document well installation procedures.

2.2.1 Shallow Borings for Soil Sampling and Shallow Well Installation

Soil borings will be advanced using either direct-push equipment, or a truck-mounted hollow stem auger drilling rig, depending on the anticipated depth of boring, anticipated soil types and other factors. Soil samples will be collected at appropriate intervals for description purposes using a retrievable plastic tube sampler (direct-push) or a 2 foot long split barrel sampler (auger rig).

Borings will generally be advanced to at least a depth where the first ground-water zone (water table) is encountered in the unconsolidated sediments. Borings may be advanced to greater depths, depending on objectives; however, care must be taken to avoid full penetration of any confining units when contamination is suspected.

Soil samples will be inspected and classified in the field using the Unified Soil Classification System. Soil characteristics will be described using color, textural classification, grain size, moisture content, and degree of odor or staining. Each soil sample description will be recorded on a soil boring log, an example of which is included as Figure 2.

Selected sample intervals representing the lithologic zones encountered in each sample will be split into two portions. One-half of each sample will be placed into a new, laboratory-supplied glass container with a Teflon-lined lid. The sealed containers will then be placed in coolers and iced to maintain a temperature of approximately 4 °C until receipt by the laboratory.

The other half of each sample will be placed in a foil-covered jar or a Ziploc bag, labeled, and allowed to reach ambient temperature. These samples will be field-screened with a photoionization detector (PID). Based on PID readings and other indications, soil samples from certain depths will be sent to the laboratory for the targeted analyses. PID readings will also help to determine if additional borings will be needed at a given area.

After each soil boring is advanced to the desired depth, it will either be completed as a monitoring well or filled with a cement-bentonite grout seal to the surface.

2.2.2 Deeper Borings for Soil/Bedrock Characterization and Deeper Well Installation

Some boring locations will be advanced into the upper portion of consolidated bedrock in order to characterize subsurface conditions and install deep-interval monitoring wells. The approach for this work will involve: (1) advancing the borehole to competent bedrock with air or mud rotary drilling methods; (2) installing and grouting a 6-inch diameter galvanized steel surface casing; (3) after allowing the grout to set for a

minimum of 72 hours, drilling the grout plug and several feet of rock with a roller cone bit (to confirm competent rock); and (4) rock coring with an NQ-2 wireline system.

Bedrock core will typically be 10 ft in length, but may vary in some cases, depending upon drilling conditions; for example, where the diamond core-bit encounters resistance. Drilling conditions encountered during rock coring will be recorded on the boring logs, including: drill action, penetration rates, hydraulic pressure, drill rotation rate, water recirculation rate and other observations such as discoloration, odor or sheen. After each core run, details associated with the retrieved core samples will be noted and recorded. These details will include the following: run number, run depth, percent recovery, bedrock lithology, indications of weathering, oxidation, alteration or mineralization, and any jointing or other fractures. The rock quality designation (RQD) will also be determined and recorded (RQD is defined as the total length of all core sample pieces greater than four inches, divided by the total length of the core run, expressed as a percentage). Lithologic descriptions, along with joints and fractures, will be illustrated on the boring logs (see sample Figure 2).

All rock core samples and rock fragments retrieved from the borehole will be washed and placed in new wooden boxes. Depths will be noted on both the samples and the box dividers. Boxes will be labeled with the boring number, date and depth interval. Once full, each box will be photographed and stored onsite for future reference.

After each soil boring is advanced to the desired depth, it will be completed as a monitoring well.

2.3 Monitoring Well Construction

The monitoring wells will be constructed of 2-inch ID screen and casing with a threaded bottom cap. All connections will be flush threaded. The well materials (screen and riser) will be grade 304 stainless steel. This selection is based on EPA's guidelines for material compatibility with contaminants such as tetrachloroethene (PCE). The screen slot size will be sized to correspond to the type of aquifer materials encountered (0.010-inch slot anticipated).

The wells will be constructed by suspending the casing and screen assembly inside the augers and slowly adding the filter pack as the augers are removed. The filter pack will consist of coarse, pre-washed and bagged silica sand at the proper size for the selected screen size. It will be placed around the screen from the bottom of the borehole to approximately one foot above the top of the screen. A cement-bentonite seal will be placed to approximately two feet above the filter pack. Clean potable water will be added to ensure the hydration of this seal. A bentonite grout mixture will then be added using a tremie pipe (if necessary, depending on depth) to within two feet of the ground surface.

Monitoring wells will generally be completed with approximately 2.5 feet of the casing extending above grade. In some instances, wells will be completed flush with grade level, depending on traffic issues and other factors at a particular well site. A steel protective casing, or cover, with a locking lid will be placed on each well. Concrete will be placed into the annular space between the protective casing and the borehole wall. A concrete pad will then be constructed around each well and the concrete sloped to direct any surface water away from the well.

2.4 Monitoring Well Development

Ground-water monitoring wells will be developed and sampled after being allowed to stabilize for at least 24 hours. This will give the cement-bentonite grout a chance to cure prior to pumping and disturbing the well.

Well development is the process by which sediment and foreign materials are removed from the well to ensure as representative a ground-water sample as possible. Before development begins, the static water level and total well depth will be measured. The well will then be surged and pumped using either bailers and or submersible pumps to remove the accumulation of fine grained materials in the wells. Well development will continue until pH, temperature and conductivity measurements stabilize, or for a minimum period of one hour. Stabilization will be identified as three consecutive measurements within a pH range of plus or minus 0.5 standard units (S.U.), a conductivity range of plus or minus 10%, and a temperature range of plus or minus 2 degrees Fahrenheit. If a well is bailed or pumped dry during development, it will be considered developed. During the development process, care will be taken to prevent equipment from coming into contact with the ground and introducing contaminants to the well.

2.5 Ground-Water Sampling

Prior to ground-water sample collection, the static water level will be measured to the nearest 0.01 foot with an electronic water level indicator and recorded from grade level. Wells will also be screened for the presence of dense non-aqueous phase liquids (DNAPLs) using and interface probe, sample thief (e.g., bacon bomb) or other devise. Well measurements will be recorded on a field sampling log developed for the project, an example of which is included as Figure 3.

A minimum of three times the volume of standing water in the well will be removed before taking ground-water samples with new, disposable bailers. Alternately, bladder pumps, low-flow (micro-purge) sampling procedures, or other well purging and sampling

methods may be followed, as per EPA guidelines. As with the development process, steps will be taken to prevent equipment from coming in contact with the ground and introducing contaminants to the well.

Temperature, conductivity, and pH will be measured periodically as the well is purged. When these measurements stabilize (i.e., pH range of plus or minus 0.5 S.U., a conductivity range of plus or minus 10%, and a temperature range of plus or minus 2 degrees F), ground-water sampling will begin.

Samples will be collected into laboratory-supplied containers and placed in the ice-filled cooler for delivery to the laboratory.

2.5.1 Preliminary Screening for Anaerobic Biodegradation Processes

This screening process will include collection of specific geochemical data from various monitoring wells on the site, and comparison of these results to specified criteria to determine if anaerobic biodegradation of halogenated VOCs is potentially viable. For these parameters, the well will initially be purged at a low, steady flow rate, and conveyed through a flow-through cell with attached multi-parameter probe. Temperature, pH, dissolved oxygen and oxidation reduction potential (ORP) will be measured and recorded using the probe. Once these readings stabilize (i.e., within ±10%), the well is ready to sample. Ground-water samples for lab analysis will be collected into laboratory-supplied containers and placed in the ice-filled cooler for delivery to the laboratory. A specific field collection method using a gas stripping cell will be used for dissolved gases (see Appendix A for detailed instructions).

2.6 Surface Water and Sediment Sampling

Surface water sampling will progress rapidly from upstream to downstream in a channel in order to follow the same "slug" of surface water as it moves downstream. However, in order to minimize cross-contamination between samples, it will be imperative that all surface water samples are collected before sediment sampling starts, and that no disturbance of the stream channel occurs (such as walking or standing in the channel).

Surface water samples will be collected by directly filling each laboratory container, unless the depth of flow is too shallow, in which case a duplicate (but unpreserved) sample container will be used for collection, suspended sediment will be allowed to settle briefly, and the water sample decanted to the laboratory container. Where sampling occurs in a wide channel, an extension rod will be used.

Sediment samples will be collected from a submerged section of channel, using a hand auger or soil coring device. Free water will be allowed to drain from the sediment prior to filling sample containers.

2.7 Surficial Soil Sampling

Surface and shallow subsurface soil samples will be collected using a pre-cleaned trowel or hand auger, and transferred directly into designated containers for laboratory analysis.

2.8 Other Environmental Sampling

Samples of other materials (e.g., waste residues, oil, surface wipe samples) will be collected and handled following procedures outlined above for water, soil and sediment samples, and specifically, in accordance with USEPA Region IV Standard Operating Procedures.

2.9 Post-Remediation Sampling and Analysis

Excavations will be sampled using the requirements below (as per REC Guidelines, Appendix C) to verify that soil with contaminant levels above remediation goals has been removed. As per guidelines, all confirmation samples will be analyzed for the list of constituents developed during the Phase II Remedial Investigation.

1. A sampling grid will be established over the base and sidewalls of the excavation. Grid nodes will be set no more than 50 feet apart. At each grid node, a sample will be collected from 0-3 inches into the base or sidewall.
2. Small excavations are not expected. However, for very small excavations, at least one composite sample would be collected from the base and one from each sidewall. Composite samples would consist of at least 4 aliquots each.
3. Biased samples will also be collected from areas of residual contamination, based on visible or field-screening evidence.
4. The REC guidelines make distinctions for excavations of different sizes. The expected area of excavations covers approximately 70,000 square feet. For excavations >62,500 square feet, a greater number of grid nodes may be composited, but a minimum of five resulting composite samples must be submitted for laboratory analysis. (For excavations <62,500 square feet, samples from up to four adjacent grid nodes would be composited.) For all excavations, samples from different sidewalls can not be composited. For samples submitted for volatile analysis, at least five samples, or 25% of the samples, whichever is greater, must be unmixed grab samples. Field screening methods may be used to

select these unmixed samples, or the unmixed samples should be collected from locations that are evenly distributed across the area of suspected contamination. The remaining samples must be collected as either unmixed grab samples or composited samples. Composited samples will be used for qualitative data only.

2.10 Sample Handling

All environmental samples will be placed in pre-cleaned bottles provided by the laboratory. Sample preservation will be completed as per USEPA SW846 requirements immediately in the field. Sample bottles will then be placed into insulated shipping coolers with plastic bags of ice to keep samples cool prior to laboratory pick-up. Chain of custody records identifying sample collection times and dates along with analytical requirements will be signed and accompany samples to the laboratory. Detailed sample handling, preservation and custody procedures are described in the Quality Assurance Project Plan (QAPP). All analytical methods and procedures for this project are also included in the QAPP.

2.11 Laboratory Analysis

All soil, water and other samples collected during the remedial investigation will be immediately placed in an iced cooler and handled under strict Chain-of-Custody procedures. Samples will be transferred to the project laboratory for analysis. Laboratory analytical methods, and quality assurance/quality control (QA/QC) procedures for the project laboratory are discussed in the Quality Assurance Plan (Attachment B-2).

Samples will be analyzed for specified parameters using USEPA SW846 Methods, including: volatile organic compounds (VOC's), semivolatile organic compounds (SVOC's), Target Analyte List (TAL) metals, polychlorinated biphenyls (PCBs), and cyanide and/or hexavalent chromium, when suspected.

Samples collected for the screening of anaerobic biodegradation will be analyzed for specified parameters using USEPA approved methods, where available. These include: nitrate, iron, sulfate, sulfide, total organic carbon (TOC), chloride, VOC's, dissolved gases, alkalinity and volatile fatty acids.

2.12 Elevation Survey

All monitoring wells will be surveyed by a North Carolina-registered land surveyor to define their horizontal locations and elevations with respect to a local site datum, and to

mean sea level if feasible. Monitoring wells will be located to within approximately 3.0 feet horizontally, and approximately 0.01 feet vertically, referenced to a local site datum and to a USGS-referenced datum. This information will then be plotted on the site plan.

2.13 Decontamination Procedures

Sampling equipment requiring decontamination during this project includes the following:

- Down-hole drilling equipment (hollow-stem augers, drill bits, drilling rods)
- Soil sample collection equipment (split-barrel samplers)
- Ground-water sampling equipment (bailers, sampling and development pumps)

Down-hole drilling and soil sample collection equipment will be cleaned before the start of each monitoring well location by steam cleaning with potable water. The soil and ground-water sampling equipment will be cleaned between collection of each sample according to the following decontamination procedure: (1) wash with a solution of laboratory grade detergent (e.g., Liquonox); (2) rinse with potable water; and (3) rinse thoroughly with distilled water. If a clean piece of equipment is not to be immediately used, it will be covered with plastic or aluminum foil. Pumps will be cleaned on the outside according to the above procedure and the inside will be cleaned by drawing a laboratory grade detergent solution through the pump followed by potable and distilled water rinses.

Verification of proper equipment cleaning procedures will be evaluated through the use of field equipment rinse blanks, as discussed in the QAPP.

2.14 Management and Characterization of Residues

Liquid and solid residues generated during sampling activities will be collected and transferred to containers for characterization and disposal. Liquid residues (i.e. wash water from steam cleaning of drilling equipment, and other equipment decontamination fluids, including monitoring well development and purge water) will be placed in a bulk liquid storage container.

Small amounts of solid residues (i.e., soil from drill cuttings) will be placed in secure bulk containers such as a metal hopper or small roll-off container, and covered. At least two (2) grab samples will be collected from each container or 25 cubic yards. Sample locations shall be selected at random. At each sampling location, samples will be collected from two depths.

Larger amounts of solid residues (i.e., soil from excavations) will be arranged in stockpiles and sampled. The maximum stockpile volume is 300 cubic yards. Each stockpile shall be gridded into 100 cubic yard segments. Within each segment, three (3) sampling locations shall be selected at random. Additional samples shall be selected based on visible evidence. Samples will be collected from two depths at each location, resulting in a minimum of six (6) samples per segment. For non-volatile analysis, the six samples collected at each segment shall be composited, resulting in three (3) samples for each stockpile. For volatile analysis, the two samples (unmixed) exhibiting the highest PID readings from each segment shall be composited, resulting in six (6) samples for each stockpile.

The guidelines for sampling soil or sediment for waste characterization were derived from the North Carolina Inactive Hazardous Sites Program Guidelines for Assessment and Cleanup (August 2006) and the North Carolina Hazardous Waste Section "Contained-in" Policy for Soil Contaminated with a Listed Hazardous Waste (March 2004).

Non-volatile

One composite sample will be required for each roll-off box or 25 cubic yards of soil from a stockpile. When sampling a roll-off box or stockpile, a minimum of two sampling locations should be selected at random. Using an auger or Shelby tube, an aliquot of soil will be collected from the upper, middle and bottom portion at each sample location. The sample aliquots should be mixed and composited into one sample for analysis.

Volatile

Primary samples will be collected by filling two sample containers at each sample location. Sample aliquots must be collected from the middle or lower portion at each sample location using an auger or Shelby tube. For volatile analysis, each sample must be submitted (i.e., samples may not be mixed).

For areas where soil or sediment is expected to be characterized as a hazardous waste or PCB-contaminated, and has been collected in drums, roll-off box, or in a stockpile, sampling shall be conducted separately for those parameters of concern. For water that is collected in drums, one sample from each drum should be collected using a bailer and composited into one sample for analysis.

The samples will be analyzed by the laboratory for all known or suspected site contaminants, and for the following RCRA hazardous waste characteristics: ignitibility, corrosivity, reactivity and toxicity. If results are below NCDENR Preliminary Remediation Goals (PRG's), disposal will be as follows: liquids will be discharged onsite or conveyed to the sanitary sewer for processing at the municipal wastewater treatment

facility (subject to approval by the treatment facility); and solids will be disposed of onsite. If any PRG's are exceeded, the corresponding residues will be disposed of at a solid waste landfill (soil) or wastewater treatment facility (water). Residues that exceed any RCRA thresholds for hazardous waste characteristics will be managed as a hazardous waste.

2.15 Documentation

Field notes will be kept throughout the sampling program. Drilling activities will be documented and will include time and date of installation, detailed descriptions of soil characteristics, standard penetration test blow counts, water levels, and other details gathered during the drilling activities. In addition to this, construction information for each monitoring well will also be included. These notes will include information such as screen and casing length and location, slot size, sand filter pack, and bentonite seal thickness and location. The soil boring log (Figure 2) will document all information on well installation and construction.

Notes will also be kept on monitoring well development and sampling. Field measurements of water levels, pH, temperature, and conductivity will be recorded in the logbook. Purge volumes, sample collection methods and weather conditions will also be included.

2.16 Equipment Calibration

Equipment used to measure parameters such as pH, conductivity, total organic vapors and other field parameters will be calibrated according to methods and frequencies recommended by the manufacturer. Calibration kits for each instrument will accompany the instrument to the field.

3.0 Additional Data Collection Methods

3.1 Electromagnetic Survey

In areas where buried materials are suspect, an electromagnetic survey may be conducted using a Geonics EM31 terrain conductivity meter. The EM31 has the ability to detect anomalies in the conductance of electromagnetic current through shallow subsurface, which may indicate the presence of buried (metallic) objects, geologic variations, ground-water contaminants or other subsurface feature. The EM31 is a one person device containing both transmitter and receiver coils on a 3.7-meter frame. Effective exploration

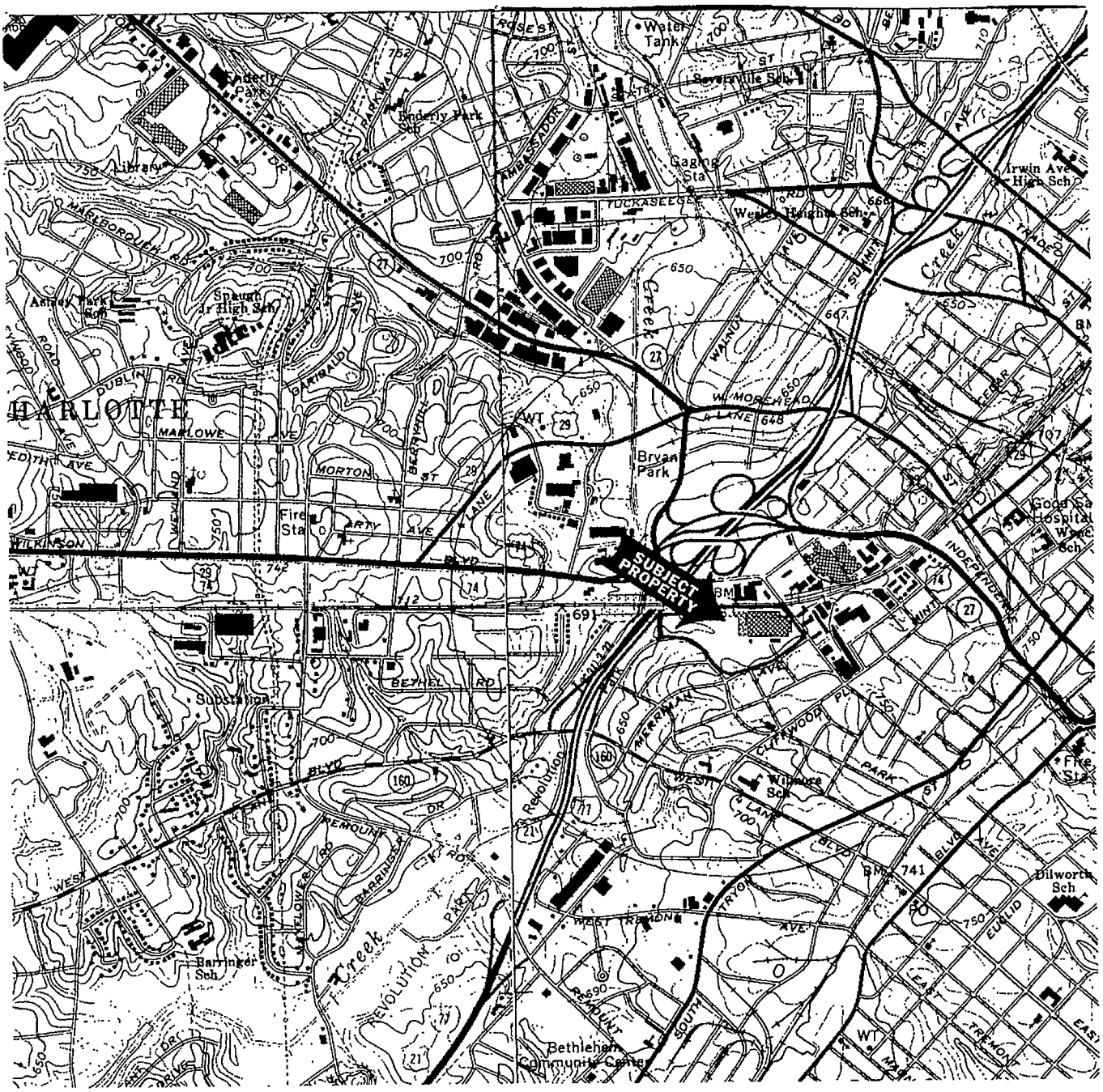
depth for this instrument is approximately 18 feet. The survey will include the following steps:

1. Locate, mark and clear survey lines, spaced approximately 50 feet on center.
2. Assemble, inspect and calibrate instrument according to operating manual.
3. Walk survey lines with instrument and record data.
4. Download survey data to computer, or manually record readings at survey markers (and at anomalies indicated between markers).
5. Process and interpret data.
6. Prepare map of the survey area.

3.2 Soil Vapor Survey

Soil gas monitoring is a method used to screen for the presence of volatile contaminants in and/or below the vadose zone. It is a survey method that can be used to help identify the possible presence of a volatile material in the subsurface and to gauge relative concentrations. The following steps expected to be applied at selected locations during the project, using the whole-air active approach, and direct reading of the gas sample using a photoionization detector (PID).

1. Locate, mark and clear survey lines, spaced approximately 50 feet on center.
2. Assemble, inspect and calibrate vapor extraction rods and PID according to operating manual.
3. Use a slam bar or impact hammer to drive a ½ inch hole to a depth of 18-24 inches.
4. Place a clean vapor extraction rod into the hole and drive it to the desired depth into soil.
5. Using the PID sample probe, draw air directly from the vapor extraction rod into the PID and record the peak concentration that occurs as vapor is being drawn in. If necessary, use a small vacuum pump to help extract soil gas.
6. After sampling is complete, withdraw the probe. Properly decontaminate extraction rod and allow to fully dry before taking another sample. A propane torch may be used, if necessary, to help dry the probe.
7. Record location and peak concentration on site plan.



APPROXIMATE SCALE 1 INCH = 2,000 FEET

Map Source: U.S. GEOLOGICAL SURVEY

APPROXIMATE NORTH

FIGURE 1. SITE LOCATION MAP

SUBJECT PROPERTY
CHARLOTTE, NORTH CAROLINA

Project No. 2001.01.07.10

The Kelly-Buck Company
2130 Superior Avenue #3-A
Cleveland, Ohio 44114
(216) 861-1716

KELLY-BUCK

FIGURE 2.

KELLY-BUCK

SOIL BORING LOG

Project Name:	Project No:	Location:	Boring/Well No:
Copes-Vulcan, 601 W Summit Ave, Remedial Investigation	2001.01.07.10	Charlotte, North Carolina	

Depth in Feet	Lithologic Description	Graphic Log & Class	Soil/ Rock Class	STP Blows/ RQD	Headspace PID/ Core Box	Soil Sample No.	Type	Depth	Rec.	Monitoring Well Diagram
20										
40										
60										
80										

EXPLANATION

- WATER TABLE (24 hr.)
- Water Table (Time of Boring)
- PID Photoionization Detection
- NO. Identifies Sample by Number
- TYPE Sample Collection Method
  - SPLIT-BARREL
  - AUGER
  - ROCK CORE
  - THIN-WALLED TUBE
  - CONTINUOUS SAMPLER
  - NO RECOVERY
- DEPTH Depth Top and Bottom of Sample
- REC. Actual Length of Recovered Sample in Feet

Graphic Log Legend

Clay	Sand & Gravel
Silty Sand	Sandy Clay
Sand	Clayey Sand
Gravel	Fill & Debris
Silty Clay	Asphalt
Clayey Silt	Bedrock

Date Drilled: **Page:**

Drilling Method:

Drilled By: Geologic Explorations

Logged By:

Grade & Ref Elev. (ft MSL): - -

Location or Grid Coord:

SAMPLE LOG

(circle one)

SOIL - GW - SFC WATER - SEDIMENT - OTHER

LOCATION NO.	SITE NAME 601 W. SUMMIT AVE	PROJECT NO. 2001.01.07.10
PERSONNEL:		
WEATHER:		

1. MEASURED DEPTH & STATIC WATER LEVEL

Date	Time	Diameter (in)	Total Depth (ft below top of casing)	Total Depth (ft below grade)	Depth to water (ft below top of casing)	Depth to water (ft below grade)	Stick-Up Depth (ft)	Approx. purge vol. (gal - 3x)	Notes

2. SAMPLE/PURGE INFORMATION

Purge Method: _____ Req'd Vol (gal. @ 3 x well volume)/Actual Vol Purged: _____/_____

Date	Time	Depth (ft)	PID (ppm)	Volume purged (gal)	Turbidity (ntu)	temp (°F)	pH (S.U.)	Spec. cond. (mS/cm)	Dissolved Oxygen (mg/L)	Iron (Fe+2) (mg/L)	ORP (mV)	Notes

3. SAMPLING INFORMATION

Date Sampled: _____ Time Sampled: _____ Sampling Method: _____

Containers Filled: _____

Notes: _____

_____

FIGURE 3.

APPENDIX A.

GAS STRIPPING CELL INSTRUCTIONS

Gas Stripping Cell Use Instructions
(for collection of hydrogen, carbon dioxide, methane, ethane and ethane)

1. To prepare the well for sampling, the well must first be purged at a low, steady flow rate using a flow through cell equipped with four probes (dissolved oxygen, ORP, temperature and pH). Once these parameters have stabilized (i.e., ±10%), the well can be sampled.
2. Remove the cell assembly from the packing carton.
3. Connect the inlet tube (1/4 inch OD) of the cell to the outlet of the pump. Secure connection with cable ties.
4. Insert the drain tube of the cell into a waste container, keeping the end of the tube at the bottom of the container (to prevent outside air from being drawn into the cell).
5. Secure the cell assembly to a ring stand and clamp, so the cell is in the upright position (stopper is above the glass housing).
6. Turn the pump on and check for leaks. Seal if necessary.
7. Determine flow rate of pump. Using this value, determine the equilibrium time needed to bubble strip at this flow rate. (See Table 1).
8. While pump is running, unclamp cell and invert on ring stand. Check that the drain tube is still in the bottom of the container.
9. Connect stopcock to the syringe and the needle to the stopcock. Place stopcock in the open position. Draw the plunger back on the syringe to the 20 mL mark pulling in ambient air into the syringe.
10. Keeping the cell in the inverted position, insert the needle into the needle guide. Pierce the septum and inject the air into the cell creating the bubble. Withdraw the needle (do not discard).
11. Start timing and allow ground water to be pumped through the cell for the required time period.
12. When the equilibrium time is up, stop the pump, unclamp the cell and re-clamp into the upright position.
13. Insert the needle (plunger pushed in and stopcock in open position) into the guide and pierce the septum. Withdraw 1 ml gas from the cell. Remove the syringe and expel sample.
14. Immediately reinsert the needle and pierce the septum. Withdraw a 15 mL sample of gas (being careful not to remove any water). With the needle still in the cell, close the stopcock and withdraw the needle.
15. Insert the needle into the septum on a sample vial. Open stopcock and inject the sample into the vial.
16. Quickly remove vial from the needle. Prepare vial for shipping (do not ice).
17. To decontaminate, pump 1 liter of potable water through cell. The sampling septum can be used for up to 5 samples. If bubbles are seen rising when cell is inverted, the septum must be replaced as per instructions.

Table 1.

Flow Rate (mL/min)	Sampling Time (min)
100-120	30
130-150	25
160-200	20
210-300	15
>300	10

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