



May 8, 2008

Scott Miller
Remedial Project Manager
Superfund Division
Superfund Remedial Branch
Section C
U.S. EPA Region 4
61 Forsyth Street, SW
Atlanta, GA 30303

Re: Revised Work Plan
Cabot Carbon Site, Gainesville Florida

Dear Scott:

In December 2007, Cabot submitted a Supplemental Groundwater Quality Characterization Work Plan for the eastern portion of Cabot Carbon/Koppers Superfund Site ("Site") in response to the Five Year Review Report (USACE, 2006). The United States Environmental Protection Agency (USEPA) provided comments on this work plan in a letter dated February 29, 2008. The letter, which included issues identified by other stakeholders including the FDER, ACEPD and GRU, identified three main Cabot-related issues, which were subsequently discussed in a meeting with USEPA on March 25, 2008. The attached report presents a revised work plan, based on the discussions with USEPA during the March Meeting.

Soil and groundwater quality data collected at the Northeast Lagoon, which was never owned, operated, or used by Cabot, has a chemical signature (naphthalene, benzene, PAHs) that is distinct from the pine tar processing compounds found on the former Cabot property. An investigation of the Hawthorn Group formation downgradient of the Northeast Lagoon should be conducted by former owners/operators of the lagoon, not by Cabot. Additionally, it would be appropriate to install a Hawthorn Group monitoring well downgradient of the Northeast Lagoon until Beazer has delineated the extent of their plume in the Hawthorn Group formation. Therefore, USEPA acknowledged that the investigation of the Hawthorn Group formation downgradient of the Northeast Lagoon should be discussed after the issue of ownership and liability of the lagoon has been resolved.

Sincerely,

A handwritten signature in black ink, appearing to read "Wayne M. Reiber".

Wayne M. Reiber
Manager, Environmental Assessment and Remediation

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**Revised Supplemental Groundwater Quality
Characterization Work Plan**

**Cabot Carbon/Koppers
Superfund Site
Gainesville, Florida**

Prepared for
Cabot Corporation
Two Seaport Lane
Suite 1300
Boston, MA 02210

Prepared by
Gradient Corporation
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May 8, 2008

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1 Introduction

In December 2007, Cabot submitted a Supplemental Groundwater Quality Characterization Work Plan for the eastern portion of Cabot Carbon/Koppers Superfund Site (“Site”) in response to the Five Year Review Report (USACE, 2006)¹. The United States Environmental Protection Agency (USEPA) provided comments on this work plan in a letter dated February 29, 2008 (USEPA, 2008)². The letter identified three main Cabot-related issues, which were subsequently discussed in a meeting with USEPA on March 25, 2008 (“March Meeting”). This report presents a revised work plan, based on the discussions with USEPA during the March Meeting.

¹ U.S. Army Corps of Engineers (USACE). 2006. Second Five-Year Review Report for Cabot Carbon/Koppers Superfund Site, Gainesville, Florida. April.

² United States Environmental Protection Agency. 2008. Letter to Wayne M. Reiber (Cabot Corporation) re: December 4, 2007, Cabot Carbon/Koppers Supplemental Groundwater Quality Characterization Work Plan. February 29.

2 Scope of Work

2.1 Potential for Contamination in Hawthorn Group deposits at the Cabot Site

Issue: USEPA raised concern regarding the potential for surficial aquifer contamination attributable to Cabot to migrate vertically into the Hawthorn Group formation, and requested in the February 29, 2008 letter that two Upper Hawthorn Group monitoring wells be installed downgradient of: 1) the former Cabot lagoons and 2) the Northeast Lagoon.

Discussion and Proposed Action: Based on the comprehensive soil and groundwater quality data set available for the Site and the fate and transport characteristics of pine tar, impacts from former Cabot operations are not anticipated to affect the Hawthorn Group deposits. Groundwater quality data recently collected by Beazer in Hawthorn Group monitoring wells (HG-26S, HG-26D, HG-20S and HG-20D) located east and immediately downgradient of the Koppers property indicated significant concentrations of creosote related contamination (*e.g.*, naphthalene, benzene). Therefore, groundwater quality in the Hawthorn Group on the former Cabot property and the eastern portion of the Superfund Site downgradient of Koppers source areas will need to be defined as part of plume delineation that Beazers will be undertaking. Since the recently installed Beazers' Hawthorn Group wells were not sampled for pine tar indicator compounds (terpenes and terpenoids) during their recent sampling event, Cabot is prepared to split groundwater samples with Beazer during the next phase of the Hawthorn Group investigation and analyze these samples for pine tar indicator compounds (terpenes and terpenoids).

In summary, Cabot does not need to install the two Hawthorn Group wells requested in the February 29, 2008 letter.

2.2 Former Cabot Lagoons

Issue: Following the five-year review of the Site, USEPA had requested that groundwater quality be characterized at all monitoring wells, located east of the Koppers property and in the vicinity of the former Cabot lagoons, to determine if the lagoons are a continuing source of contamination. In the February 29, 2008 letter, USEPA also requested that wells ESE-005 and ESE-006 be added to Cabot's proposed list of monitoring wells and that surficial aquifer wells showing significant Cabot-related contamination be analyzed for pine tar indicator compounds.

Discussion and Proposed Action: Data collected in the surficial aquifer near the former Cabot lagoons show low soil concentrations that declined with depth and groundwater concentrations that have declined over time and have not exceeded the groundwater cleanup goal for phenol in over 10 years (Cabot, 2006)³. Therefore, a review of available data strongly indicate that the lagoons are not a continuing source of contamination. However, per EPA's request, Cabot will perform a one-time expanded groundwater monitoring event, similar to that performed in March 2005. This sampling round will characterize current groundwater quality in the surficial aquifer in the vicinity of the Cabot lagoons and downgradient areas. Per EPA's request, Cabot will also include monitoring wells ESE-005 and ESE-006 to the sampling event. Therefore, the quarterly sampling event will be expanded to include a total of 20 monitoring wells located east of the Koppers property (9 routinely sampled and 11 additional wells; see Figure 1 and Table 1).

All groundwater samples will be analyzed for the complete quarterly monitoring program list, which includes all compounds of concern identified in the Record of Decision (ROD) and a few additional analytes (see Table 1). As done in the March 2005 sampling event, groundwater samples collected from wells ITW-8, ITW-9, ITW-11 and ITW-4 will be analyzed for terpenes and terpenoids. Wells ITW-8, ITW-9 and ITW-11 will provide data at locations immediately downgradient of the Cabot lagoons that have historically shown elevated levels of Cabot-related contamination and ITW-4 will provide background/upgradient data. All monitoring wells will be redeveloped before they are sampled to ensure that the samples are representative of aquifer conditions.

2.3 Interceptor trench effectiveness

Issue: USEPA raised concern regarding the effectiveness of the Cabot interceptor trench to capture contaminated groundwater at the base of the surficial aquifer and requested that Cabot perform depth-discrete profiling of water quality to demonstrate trench effectiveness.

Discussion and Proposed Action: Although a review of the following pre- and post-trench installation groundwater quality data and other analyses discussed below strongly indicates that the interceptor trench is effectively controlling migration of affected groundwater within the surficial aquifer, Cabot will undertake vertical profiling east of the trench to further evaluate its effectiveness:

³ Cabot Corporation (Cabot). 2006. Letter to Amy L. McLaughlin (United States Environmental Protection Agency) re: Five Year Review- Cabot/Koppers Superfund Site, Gainesville, Florida. July 25.

- A review of pre-remedy groundwater quality data collected on the former Cabot property and at the adjacent Steadham property (located east and downgradient of North Main Street) indicated that the pre-remedy lateral extent of the groundwater plume was limited and clearly defined (see Figure 2). The highest pre-remedy groundwater concentrations, east of North Main Street, were detected at ITW-17, which was located immediately downgradient of the Northeast Lagoon. Although low concentrations were detected at SW-2, located on the Steadham Property and to the northeast of ITW-17, it is not clear whether these were associated with the former Cabot property. No site-related contaminants were detected at any other monitoring wells east of North Main Street, including ITW-18. This may be attributed to the historical drainage ditch along North Main Street that intercepted a vast majority of shallow groundwater and prevented off-Site migration (Figure 2). Therefore, even prior to trench installation, the groundwater plume was localized to the ITW-17 area.
- Following the installation of the trench, Site-related compounds have not been detected at wells WMW-17E and WMW-18E, which replaced wells ITW-17 and ITW-18 (see Figure 3)⁴. The absence of site-related compounds in these wells, which are screened across the surficial aquifer, is clear indication that the trench is effectively capturing groundwater from the entire thickness of the surficial aquifer. Additionally, given that WMW-17E is located in the area where historically (pre-remedy) elevated groundwater concentrations were detected, (*i.e.*, WMW-17E is ideally located to evaluate trench effectiveness) additional monitoring wells should not be required.
- Finally, the post-remedy groundwater quality data discussed above are consistent with groundwater flux calculations that were performed to evaluate whether the trench was capturing the entire thickness of the surficial aquifer. Calculations indicate that the vertical extent of the trench capture zone ranges from 37 to 40 feet, which is greater than the thickness of the surficial aquifer (Attachment A). Note, these calculations utilized an average groundwater extraction rate at the trench of 47 gpm and a (WHI-defined) hydraulic conductivity of 21 ft/day for the surficial aquifer, and a range of values for hydraulic gradient (6.95×10^{-3} to 8.95×10^{-3} ft/ft) and capture zone widths (1,325 to 1,554 feet) (see Attachment A).

Cabot will perform vertical groundwater profiling at two locations on the automobile dealership property located downgradient of the interceptor trench (see Figure 1). The two locations were selected so that they are hydraulically downgradient of the former Cabot lagoons, but not in the vicinity of the Northeast Lagoon, which was not associated with former Cabot operations⁵. To avoid the stagnation zone expected in the immediate vicinity of the trench and demonstrate that the trench is effectively protecting downgradient receptors, groundwater profiling will be done at locations approximately 200 to 300 feet east of the trench. Also, sampling will not be performed along the southern portion of the trench (south of the Northeast Lagoon), since no Cabot-related contamination was detected upgradient of this area on the former Cabot property.

⁴ Note, phenol has never been detected at well WMW-18E in almost 15 years of quarterly monitoring.

⁵ Note, the two proposed locations will be finalized after an access agreement is obtained from the automobile dealership that occupies the property.

A direct-push drilling rig with a 1.5-inch diameter drill rod will be used to advance a sampling device with a small screen (1 to 2 feet) to the desired depth intervals. Since the purpose of this investigation is to specifically evaluate the potential for surficial aquifer contamination to migrate beneath the interceptor trench, groundwater samples will be collected with a peristaltic pump at four depth intervals between the bottom of the trench (~12 feet below grade) and the base of the surficial aquifer (~25 feet below grade). At both locations, a sample will also be collected at the water table to characterize potential impacts from "local" (automobile dealership) contributions. Given the low yield expected from the small-diameter boreholes, the groundwater samples will be analyzed only for VOCs (including naphthalene), phenol, and terpenes and terpenoids.

3 Proposed Schedule

The expanded groundwater monitoring event and the vertical groundwater profiling will be implemented in conjunction with the next routine quarterly sampling event performed by Cabot. It should be noted that the schedule of the vertical profiling is contingent on gaining access to the property, located east of Main Street, that is occupied by an automobile dealership. Cabot may require USEPA's assistance in obtaining the access agreement.

Results of the expanded sampling event and vertical groundwater profiling will be presented in a report to USEPA. This report will be submitted in addition to the routine quarterly monitoring report, which is a Consent Decree requirement.

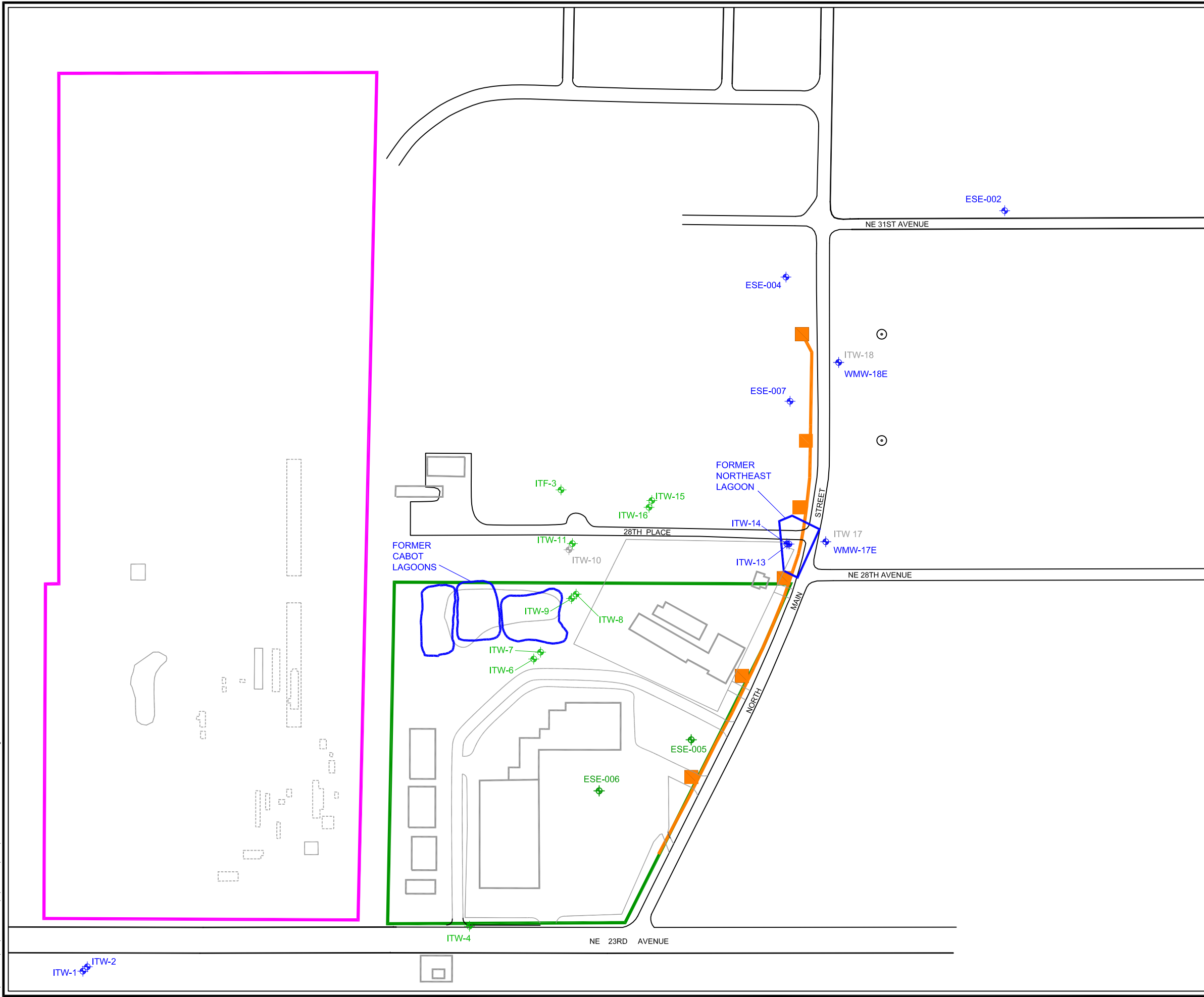
Table 1
Proposed Amended Expanded Groundwater Monitoring Program - 2008
Cabot Carbon/Koppers Superfund Site
Gainesville, Florida

Routinely Sampled Wells	Additional Proposed Wells	Parameters ¹	Analytical Method
ITW-1	ITF-3	Anthracene	8310
ITW-2	ITW-4	Phenanthrene	
ITW-13	ITW-6	Acenaphthylene	
ITW-14	ITW-7	Fluorene	
WMW-17E	ITW-8	Fluoranthene*	
WMW-18E	ITW-9	Pyrene	
ESE-002	ITW-11	Naphthalene	
ESE-004	ITW-15	Benzo(a)pyrene	
ESE-007	ITW-16	Benzo(a)anthracene	
	ESE-005	Benzo(b)fluoranthene	
	ESE-006	Benzo(k)fluoranthene	
		Dibenzo(a,h)anthracene	
		Indeno(1,2,3-c,d)pyrene	
		Chrysene	
		Phenol	8270
		Pentachlorophenol (PCP)	
		Arsenic	6010
		Chromium	
		Benzene	8021
		Ethylbenzene*	
		Toluene*	
		Xylene*	
		Methyl tert-butyl ether (MTBE)*	
	ITW-4	Terpenes and terpenoids	8270
	ITW-8		
	ITW-9		
	ITW-11		

Notes:

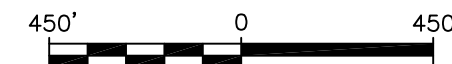
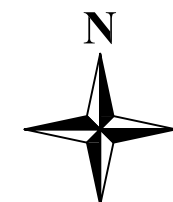
1. Parameters include Compounds of Concern identified in the Record of Decision (ROD) and additional compounds identified by an asterix (*).

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LEGEND

- FORMER CABOT PROPERTY BOUNDARY
- KOPPERS PROPERTY BOUNDARY
- CURRENT SITE FEATURES
- + ITW-2 WELLS ROUTINELY MONITORED
- + ITW-6 ADDITIONAL WELLS TO BE SAMPLED IN EXPANDED MONITORING EVENT
- + ITW-10 ABANDONED WELLS
- GROUNDWATER INTERCEPTOR TRENCH
- PROPOSED LOCATIONS FOR VERTICAL GROUNDWATER PROFILING



MAP SOURCE: ALACHUA COUNTY LAND SURVEYORS, INC. (1992) AND WWL:
 GRADIENT, SOILBASE.DWG 9/9/96 PROJECT# 9204950 KJA

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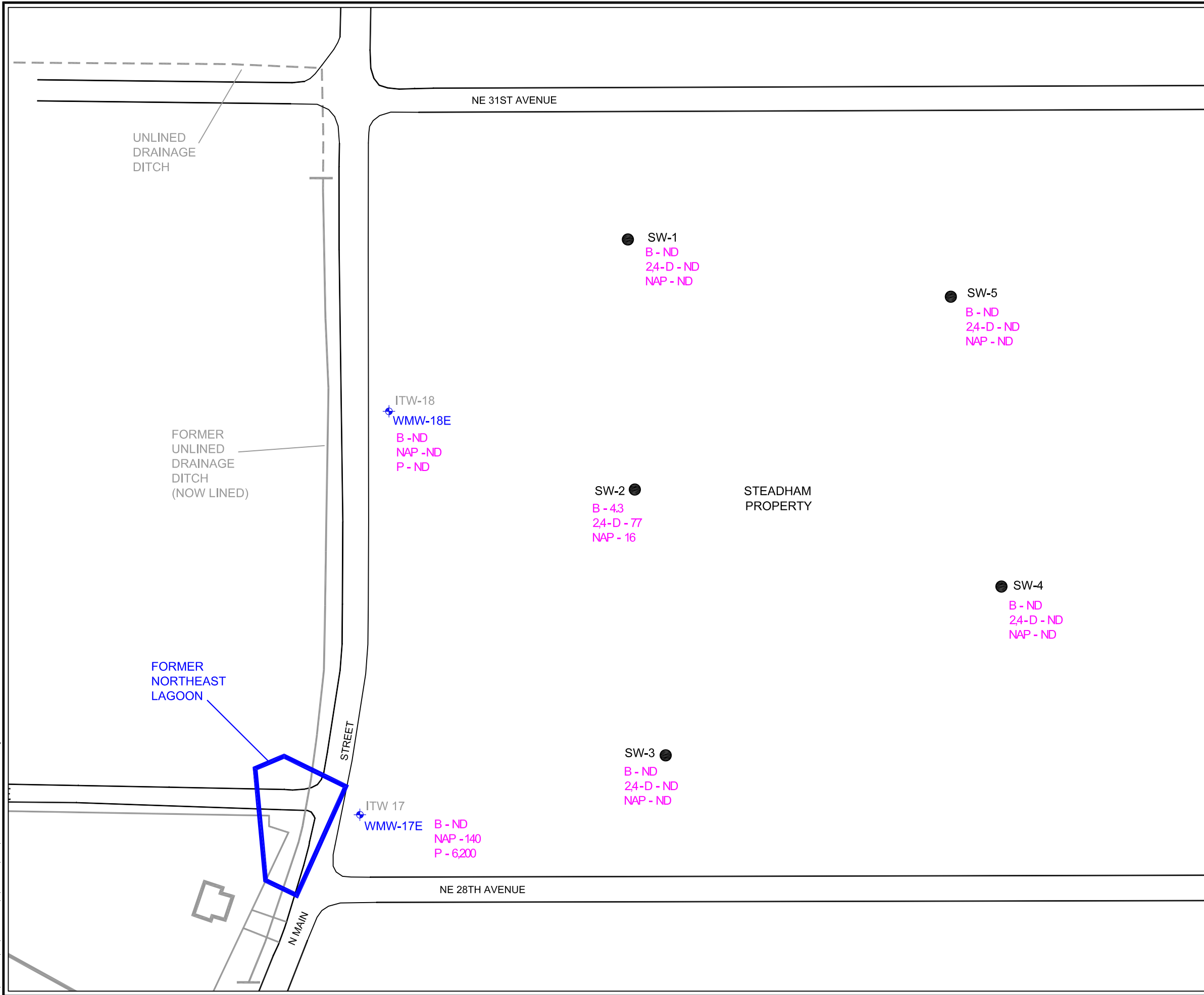
FIGURE 1

Groundwater Sampling Locations

Cabot Carbon/Koppers Superfund Site
 Gainesville, FL

Drawing By:	MMK	Checked By:	MHS	Project No.:	204079
Date:	04/08/08	Date:	04/08/08	File:	204079_100-03

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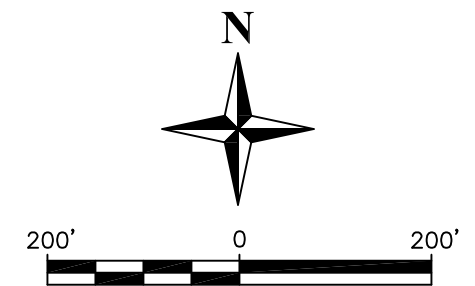
LEGEND

WMW-18E INTERCEPTOR TRENCH MONITORING WELLS

ITW-10 ABANDONED WELLS

SW-1 STEADHAM PROPERTY MONITORING WELLS: 1989 STUDY

B= BENZENE (µg/L)
 2,4-D= 2,4 DIMETHYLPHENOL (µg/L)
 NAP= NAPHTHALENE (µg/L)
 P = PHENOL (µg/L)
 ND = NOT DETECTED



MAP SOURCES:
 1) ALACHUA COUNTY LAND SURVEYORS, INC. (1992) AND WWL:
 GRADIENT, SOILBASE.DWG 9/9/96 PROJECT# 9204950 KJA
 2) CONTAMINATION ASSESSMENT REPORT FOR STEADHAM PROPERTY
 MARCH 8, 1989

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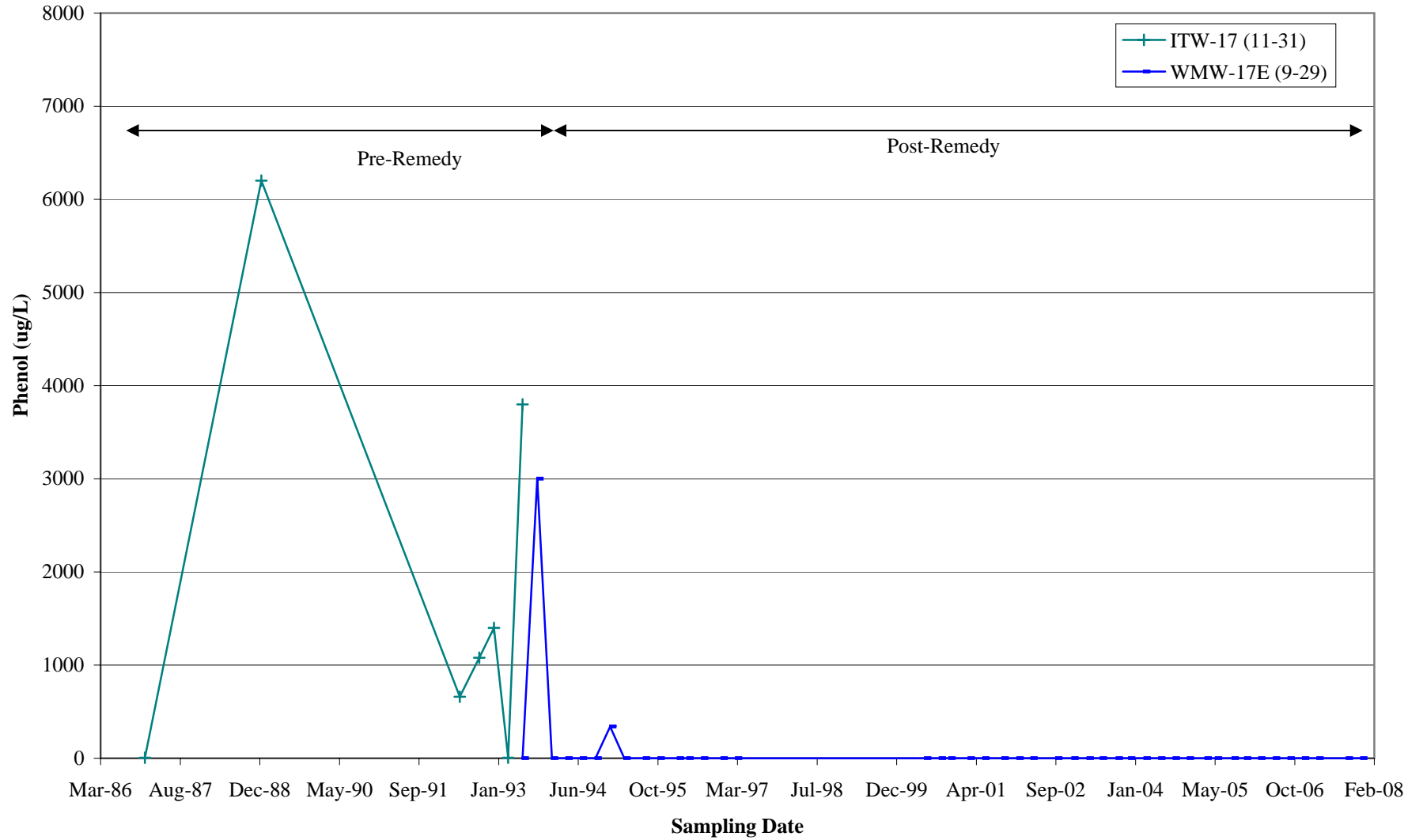
FIGURE 2

Pre-Remedy Groundwater Data - 1989

Cabot Carbon/Koppers Superfund Site
Gainesville, FL

Drawing By:	MMK	Checked By:	MHS	Project No.:	204079
Date:	04/17/08	Date:	04/17/08	File:	204079_100-02

**Figure 3: Pre- and Post-Remedy Concentrations of Phenol at ITW-17/WMW-17E
Cabot Carbon/Koppers Superfund Site, Gainesville, Florida**



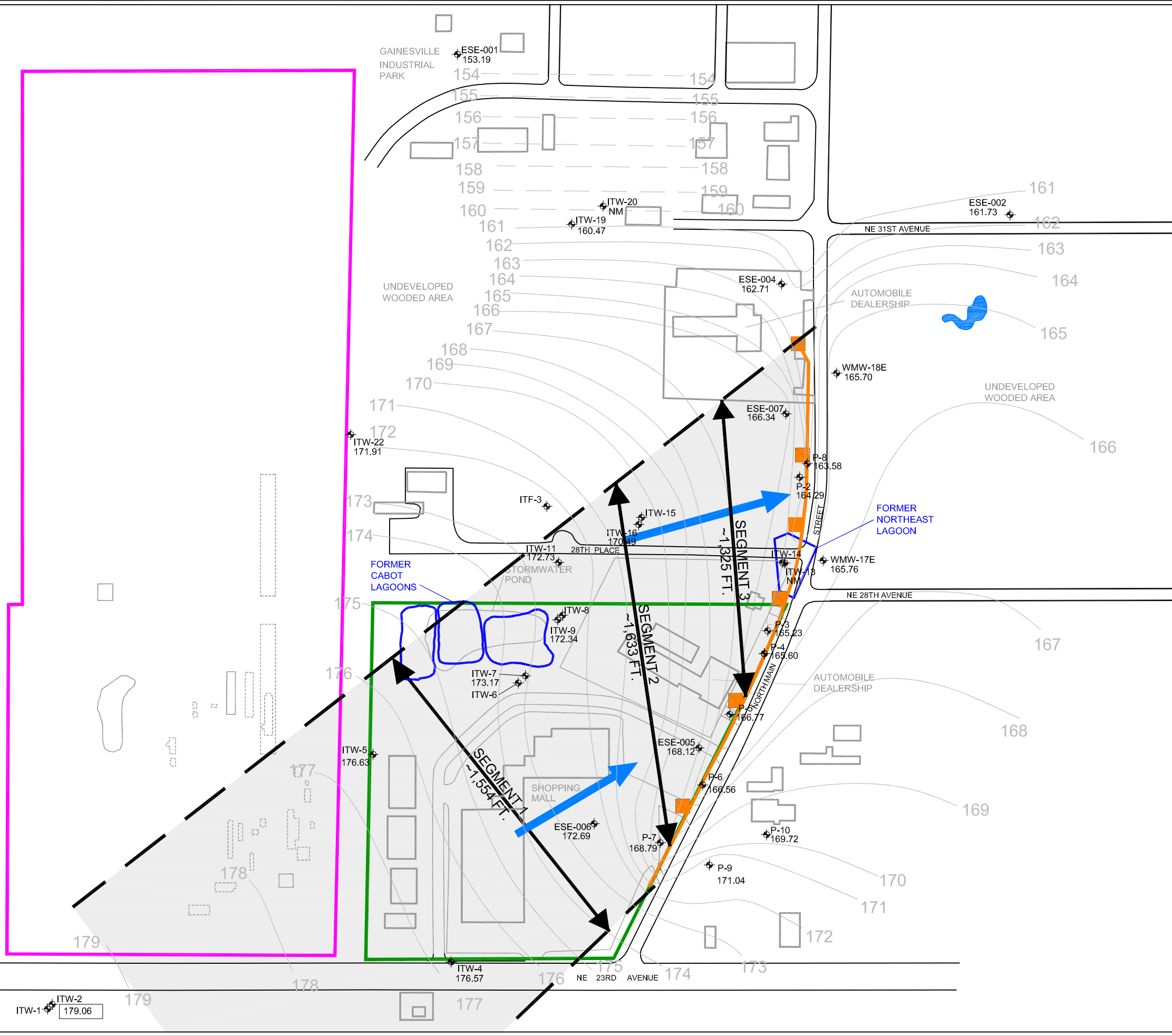
Attachment A

Table A-1
Depth of Vertical Capture Zone of
Groundwater Interceptor Trench

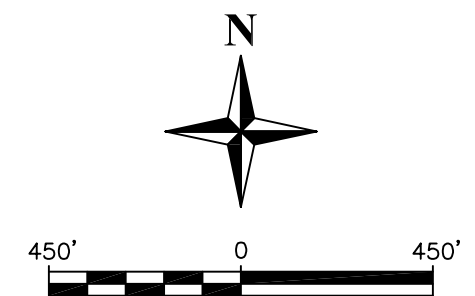
Parameter		Value	Units	Source
Average extraction rate of groundwater interceptor trench (approx. half a billion gallons of water extracted in 20 years)	Q	9156	ft ³ /d	Gradient, 2005
Surficial aquifer hydraulic conductivity	K	21	ft./d	Waterloo Hydrogeologic, Inc., June 2005
Surficial aquifer hydraulic gradient	i	1.10E-02		Weston, November 2005
Width of surficial aquifer intercepted by trench	L	1000	ft.	Figure A-1

$$\begin{aligned}
 \text{Thickness of surficial aquifer intercepted by trench} &= \mathbf{Q/(K*i*L)} \\
 &= \mathbf{40 \quad ft.}
 \end{aligned}$$

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- LEGEND
- FORMER CABOT PROPERTY BOUNDARY
 - KOPPERS PROPERTY BOUNDARY
 - CURRENT SITE FEATURES
 - FORMER KOPPERS SITE FEATURES
 - ■ GROUNDWATER INTERCEPTOR TRENCH
 - ← PRIMARY DIRECTION OF GROUNDWATER FLOW
 - SURFICIAL AQUIFER POTENTIOMETRIC HEAD CONTOUR LINE (MEASURED MARCH, 2006)
 - ◆ MONITORING WELL
GROUNDWATER ELEVATION (FT.MSL)
 - GROUNDWATER INTERCEPTOR TRENCH CAPTURE ZONE



MAP SOURCE: ALACHUA COUNTY LAND SURVEYORS, INC. (1992) AND WWL: GRADIENT, SOILBASE.DWG 9/9/96 PROJECT# 9204950 KJA; TRC, 2003

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FIGURE A-1
Lateral Extent of Capture Zone of Groundwater Interceptor Trench in Surficial Aquifer (Weston, 2006)

Cabot Carbon/Koppers Superfund Site
Gainesville, FL

Drawing By:	MMK	Checked By:	MHS	Project No.:	204079
Date:	11/27/07	Date:	11/27/07	File:	204079_100-01