SHALLOW AUGER BORING STUDY

SUBTASK 2D - SUBSUREACE SOIL SAMPLING

SOUTH CAVALCADE SITE

FOR

KOPPERS COMPANY, INC.

PITTSBURGH, PENNSYLVANIA

PREPARED BY

MCBRIDE-RATCLIFF AND ASSOCIATES, INC.

HOUSTON, TEXAS

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McBride-Ratcliff and Associates, Inc.

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SHALLOW AUGER BORING STUDY

SUBTASK 2D - SUBSURFACE SOIL SAMPLING

SOUTH CAVALCADE SITE

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FOR

KOPPERS COMPANY, INC.

PITTSBURGH, PENNSYLVANIA

PREPARED BY

MCBRIDE-RATCLIFF AND ASSOCIATES, INC.

HOUSTON, TEXAS

McBride-Ratcliff
and Associates, Inc.
Geotechnical Consultants
7220 Langtry Houston, Texas 77040 713-460-3766

May 30, 1986
MRA Project No. 85-317

Koppers Company, Inc.
1940 Koppers Building
436 Seventh Avenue
Pittsburgh, Pennsylvania 15219

ATTENTION: Dr. James R. Campbell
Previously Operated Properties

SUBJECT: Shallow Auger Boring Study
Subtask 2D - Subsurface Soil Sampling
South Cavalcade Site
Houston, Texas

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Presented here is the report of our shallow auger boring study at the South Cavalcade Site in Houston, Texas. This report is submitted in response to Subtask 2D of the EPA South Cavalcade Site Work Plan and was conducted in general accordance with Section 4.2 of the Koppers Field Sampling and Analytical Plan dated October 1985. A draft report was submitted on May 19, 1986 for Koppers review.

A total of 139 shallow auger borings were drilled to an average depth of 8 ft. Evaluation of the shallow auger boring data and the soil surrogate test results did not indicate the presence of potential significant soil contaminant source areas at the locations drilled for this study.

We appreciate this opportunity to be of service to Koppers Company.

Sincerely,

McBRIDE-RATCLIFF AND ASSOCIATES, INC.

William R. Tobin

William R. Tobin, P.E.
Project Manager

J. L. Ireland

J. L. Ireland, C.P.G.
Vice President

WRT:JLI:kc
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SUMMARY

A shallow auger boring study was conducted at the South Cavalcade Site to evaluate potential on-site soil contaminant source locations and to assist in the location of future deep soil borings. A total of 139 auger borings were completed to an average depth of about 8 ft. The shallow auger borings were located in the 15 designated areas believed to be associated with previous wood treating and coal tar distillation facilities and operations areas as outlined in the EPA Work Plan. In addition, the shallow auger borings were also located in areas of general subsurface electromagnetic anomalies based on our electromagnetic geophysical survey (MRA Report No. 85-317, dated December 27, 1985).

At least one soil sample was obtained at each shallow auger boring location for soil surrogate testing. Soil surrogate testing included metals screening with an X-ray fluorescence analyzer and headspace measurements for total organic vapors with a photoionization analyzer.

Evaluation of the shallow auger boring data and the soil surrogate test results did not indicate the presence of potential significant soil contaminant source areas at the locations drilled for this study.

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INTRODUCTION

A shallow auger boring study was conducted at the Koppers South Cavalcade Site in Houston, Texas as part of Subtask 2D of the remedial investigation. A site vicinity map is shown on Figure 1. The objectives of the shallow auger boring program were: (1) to evaluate potential on-site soil contaminant source locations; and (2) to assist in location of future deep soil borings.

The scope of work for the shallow auger boring study included the following elements:

1. Drilling 139 shallow auger borings to an average depth of about 8 ft.

2. Obtaining at least one soil sample from each shallow auger boring location and conducting soil surrogate tests.

3. Reviewing the field and analytical data to evaluate potential on-site soil contaminant source locations.

FIELD EXPLORATION

The shallow auger boring program began on January 15, 1986 and was completed on February 14, 1986. A total of 139 auger borings were drilled at an average production rate of 7.3 borings per day.

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The shallow auger borings were located in the 15 designated areas specified in the EPA Work Plan. These areas were delineated from historic aerial photographs and generally correspond to previous wood treating and coal tar distillation facilities and operations areas. In addition, several shallow auger borings were located in areas of general subsurface electromagnetic anomalies based on our electromagnetic geophysical survey (MRA Report No. 85-317, dated December 27, 1985). The shallow auger boring locations are presented on Figures 2 and 3. Also referenced on Figures 2 and 3 are the interpreted boundaries of the 15 designated Work Plan areas, and the approximate locations of the general subsurface electromagnetic anomalies. The shallow auger boring identification numbers are cross-referenced to the 28 areas shown on Figures 2 and 3.

Drilling and sampling procedures were conducted in general accordance with SOP-HWF-01, Soil Auger Boring and Sampling Procedures, included in Appendix A. Preliminary field notes recorded by our field geologist are included in Appendix B. The information in the field notes is considered preliminary and may be subject to change.

Drilling Procedures

The shallow auger borings were drilled using solid-stem dry auger methods with an all-terrain Geospace B-250 auger rig to an average depth of 8 ft. The auger boring depth was generally limited to 8 ft because of limitations of classification from soil cuttings and to avoid penetration into the shallow sand unit and to reduce the potential for cross contamination. At the request of Koppers and the EPA, 13 shallow auger borings were advanced to depths of 10 to 14 ft to penetrate the shallow sand unit. The augers were advanced in 2-ft increments and visual classification of

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soil type was made by our field geologist based on the soil cuttings obtained from the auger flights. Notations were also made where visually contaminated soils and noticeable, distinct soil odors were encountered. Soil boring logs were prepared based on visual soils classification and are presented subsequent to this report.

Soil Sampling

One soil sample was generally collected from each shallow auger boring that did not encounter an underground obstruction. At several auger boring locations, additional soil samples were obtained generally where changes in soil type or visual soils contamination were encountered.

The soil samples were obtained by our field geologist directly from the auger flights by using a disposable wooden tongue depressor. The soil samples were placed into detergent-washed, 16 oz. glass jars, with Teflon-lined lids. Each jar was labeled with a sample identification number, sample depth, date, and time. Field headspace measurements of total organic vapors were obtained by using an HNU photoionization analyzer equipped with a 10.2 eV probe.

Decontamination

The boreholes were generally backfilled with dry bentonite. Auger flights were cleaned between each borehole by using a high-pressure, hot water spray. In addition, the auger drilling rig was also cleaned with a high-pressure, hot water spray at the end of each work day. Soil cuttings, decontamination wash water, and disposable items were collected and temporarily stored onsite in a secure area.

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LABORATORY TESTING

Soil surrogate testing was conducted for each shallow auger boring soil sample. Soil sample headspace measurements of total organic vapors were obtained with a photoionization detector under relatively controlled conditions in the laboratory approximately 12 to 18 hours after sampling. Qualitative metals screening was conducted using an X-ray fluorescence analyzer. Results of the soil surrogate testing are considered qualitative and serve only as a relative indication of potential soils contamination. Quantitative determinations and compound identification will require more detailed analytical procedures.

Headspace Measurements

Headspace measurements of the shallow auger boring soil samples were measured in the laboratory using a HNU Model PI 101 photoionization analyzer equipped with a 10.2 eV probe. Notations of visual soils contamination and noticeable, distinct soil odors were also made in the laboratory.

The photoionization detector was calibrated on a daily basis prior to field or laboratory headspace measurements. The calibrations are based on obtaining a span potentiometer setting which provides direct measurement relative to low concentrations (10 to 50 ppm) of isobutylene. The calibrations were conducted in general accordance with SOP-HWCL-02, Calibration of the HNU PI 101 Photoionization Analyzer, included in Appendix C. The reported field and laboratory headspace measurements shown on the boring logs have been converted by a 0.92 response factor for equivalent naphthalene concentrations.

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The headspace results are reported as total organic vapors. These values are to be considered as relative indications of the presence of potential contaminants for the purpose of sample screening only. Precise quantitative analysis of volatile organic compounds is not applicable to photoionization detection methods and depends on compound sensitivity, temperature, vapor pressure, ionization potential, headspace volume, etc. The photoionizer will also detect some trace inorganic gases that may not be suitable as contaminant indicators.

Soil Surrogate Metals Screening

Qualitative surrogate metals screening for the shallow auger boring soil samples was conducted using a Columbia Scientific Industries Corporation (CSI) X-Met 840 portable X-ray analyzer. In general accordance with the EPA Work Plan, the following metals were included in the sample screening: arsenic, chromium, copper, lead, and zinc. The X-ray analyzer was calibrated by CSI based on comparisons with metals concentrations measured by atomic absorption techniques. Laboratory quality assurance/quality control (QA/QC) methods and machine detection limits were evaluated by McBride-Ratcliff and Associates (MRA). Documentation of the X-ray fluorescence calibration data has been submitted in MRA Report No. 85-317, dated May 14, 1986.

Sample preparation for soil surrogate metals screening typically consisted of the following general steps:

1. Manual homogenization
2. Oven drying
3. Grinding
4. Sieving

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The prepared samples were then subjected to a 100 mCi Cm-244 source for 200 seconds. X-ray intensities were recorded for: arsenic, chromium, copper, lead, zinc, and backscattered radiation. A standard deviation of counting statistics was also recorded for each measurement. Details of the procedures used for sample preparation and machine operation are given in SOP-HWCL-03, Method of X-Ray Fluorescence Analysis of Metals in Soil, included in Appendix D.

Appendix E presents a computerized summary of the soil surrogate metals test results. The surrogate metals test results are organized by sample area designations. Also included in the summary are the calculated machine detection limits and the standard deviation for each measurement. The standard deviation is reported as the greater of the standard deviation from the calibration model and the standard deviation of counting statistics.

The reported soil surrogate metals data are considered as qualitative indicators of selected metals relative to a known metal standard in a soil matrix, and may not be directly comparable to metals analysis by atomic absorption techniques. Potential interfering compounds (i.e., calcium, iron, and rubidium) and the relatively low range in metals concentrations result in a generally high detection limits and large values for standard deviation. Qualitative evaluation of the surrogate data should be based on a statistical approach.

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diesel odor

CONCLUSIONS

Evaluation of the shallow auger boring data and the soil surrogate test results did not indicate the presence of potential significant soil contaminant source areas (i.e., creosote saturated soils, sludges, free hydrocarbons) at the locations drilled for this investigation. However, creosote odors were noted at 80 shallow auger boring locations. Visual tar materials and oily residues were noted at 15 shallow auger boring locations. These 15 borings were confined to area _____.

A review of the headspace measurements indicates that abnormally high readings (greater than 100 ppm naphthalene equivalents) were obtained at 15 shallow auger boring locations at the north portion of the site in Areas A01, A02, and A25. In most cases, creosote odors were not reported for samples with high headspace measurements. Similar observations were documented at five boring locations from the provious Cavalcade Contaminant Survey by Camp, Dresser & McKee dated July 11, 1983. The cause for the abnormally high headspace measurements is unknown at this time.

An initial comparison of the headspace measurements indicates that the laboratory responses were typically greater than the field responses. This trend may indicate that the relatively more controlled laboratory conditions and the longer hold times may provide a more accurate sample headspace measurements than compared to field measurements.

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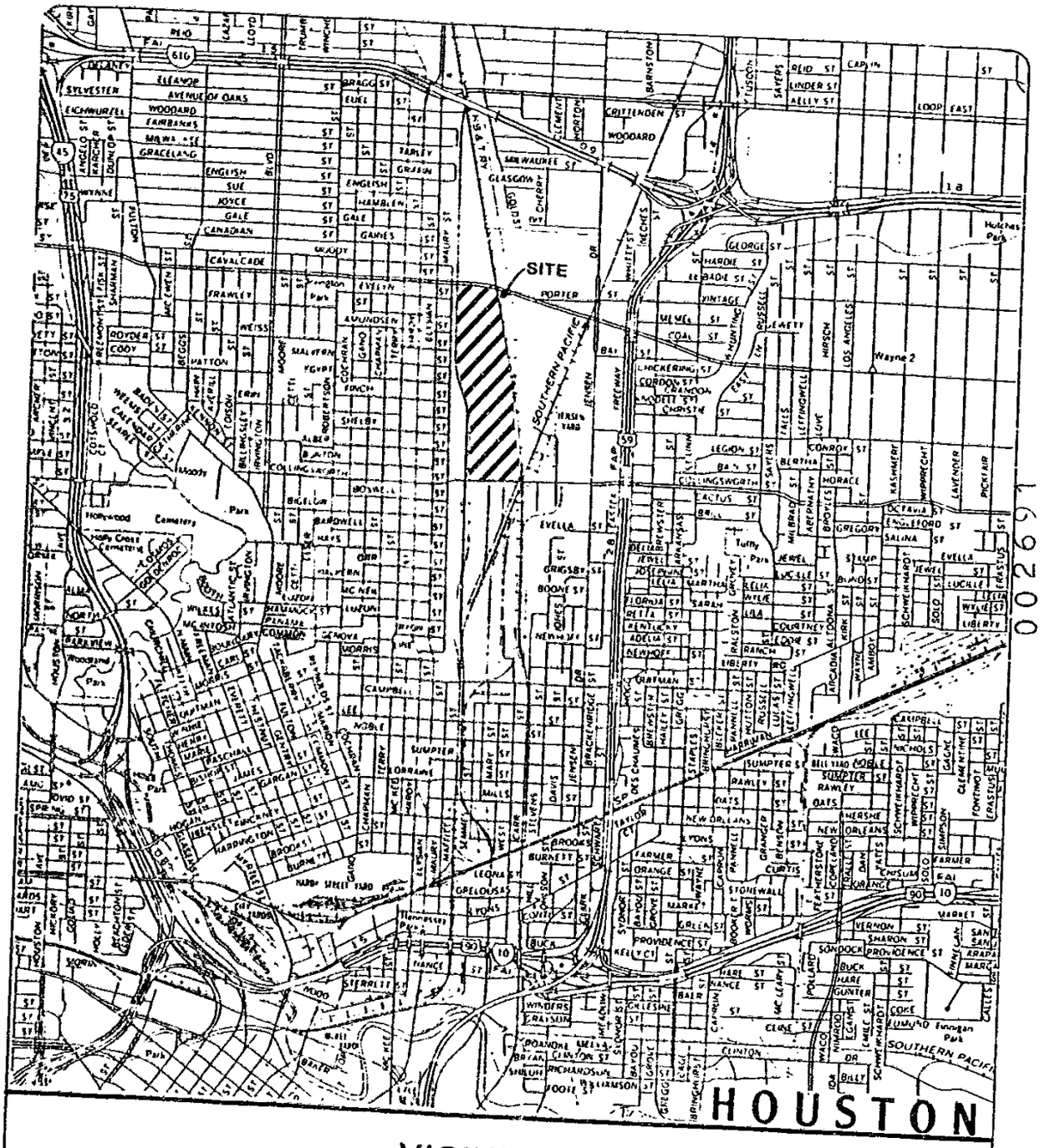

VICINITY MAP
KOPPERS SOUTH CAVALCADE SITE
HOUSTON, TEXAS

N

SCALE-MI.

0 0.25 0.5 1

FIGURE 1
FILE: 85-317

McBride-Ratcliff and Associates, Inc.

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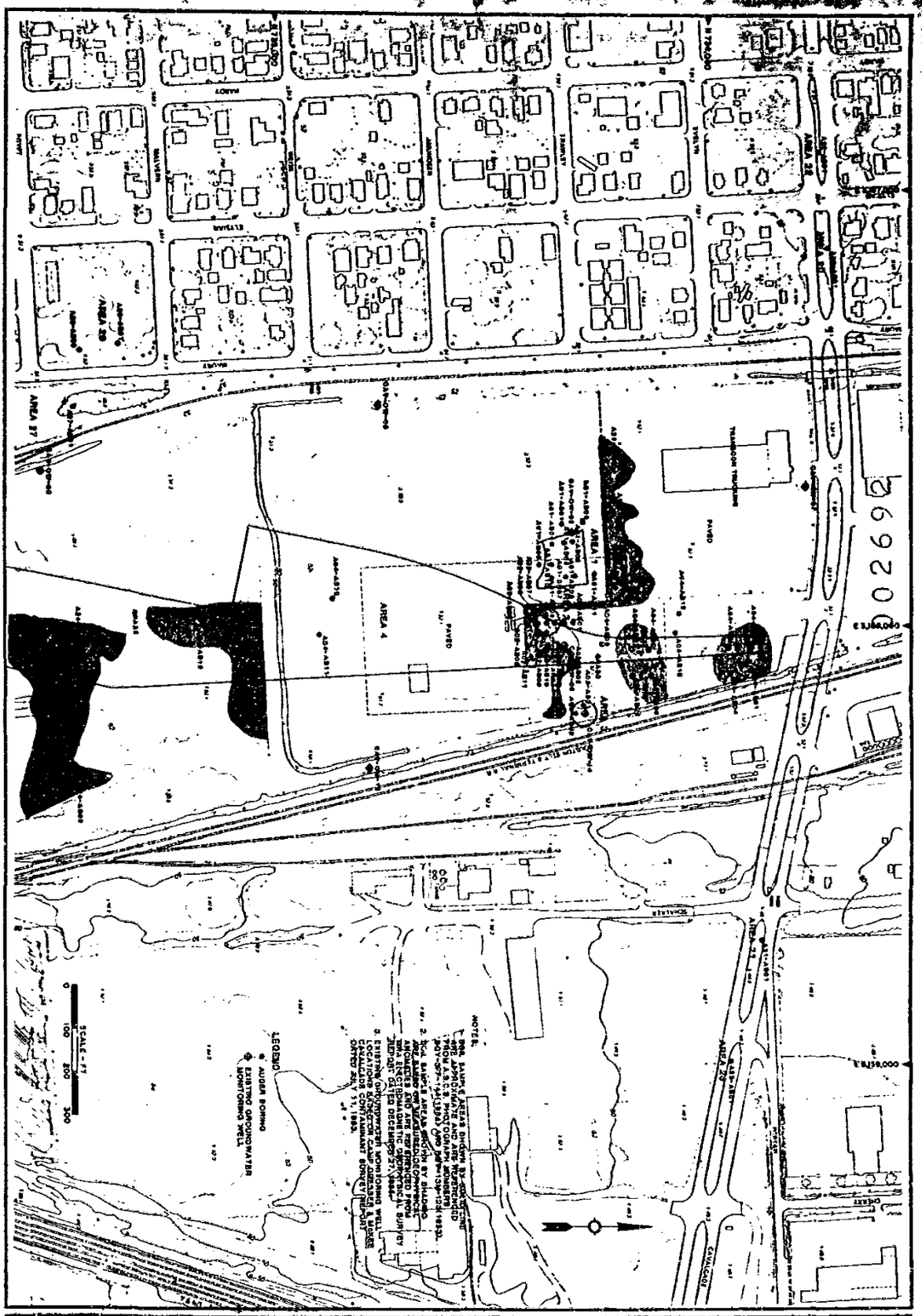

FIGURE NO.:	PROJECT NO.: 88-317	AUGER BORING LOCATION MAP	McBride-Ratcliff and Associates, Inc.
2	DATE: 1/23/90	SUBTASK 2D	Geotechnical Consultants
	ENGINEER: WRT	SOUTH CAVALCADE SITE	Houston, Texas
	DRAWN BY: DLO	HOUSTON, TEXAS	
		KOPPERS COMPANY, INC.	

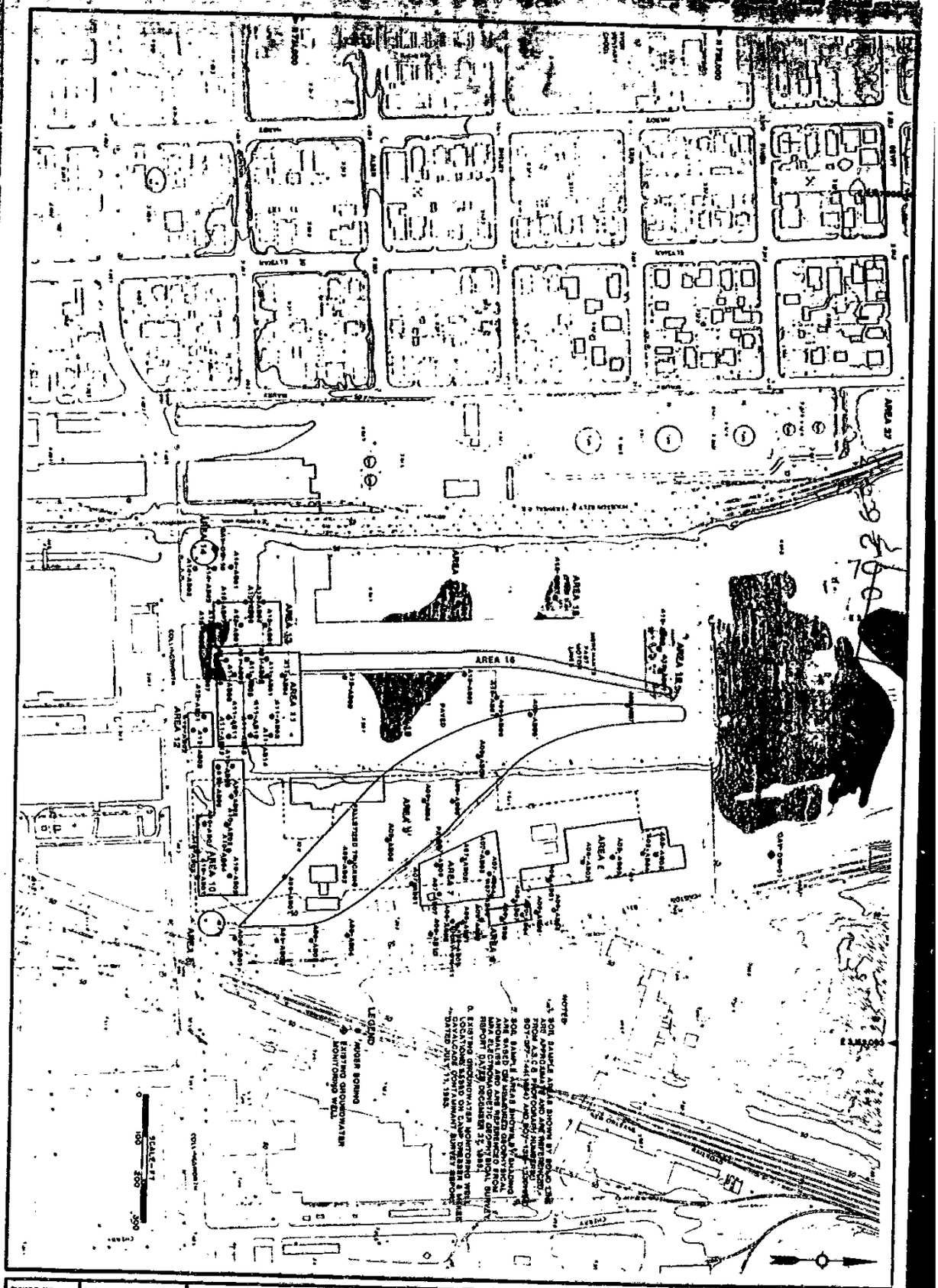

FIGURE NO.:	PROJECT NO.: 85-317	AUGER BORING LOCATION MAP	McBride-Ratcliff and Associates, Inc.
3	DATE: 1/28/86	SUBTASK 2D	Geotechnical Consultants
	ENGINEER: WRT	SOUTH CAVALCADE SITE	Houston, Texas
	DRAWN BY: WDT	HOUSTON, TEXAS	
		KOPPERS COMPANY, INC.	

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A01-AB01
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Gray VERY SANDY SILT (ML) w/roots								
2					Light gray VERY SANDY CLAY (CL) w/sand pockets								
4					-wet sand pockets @ 4.5'								
6		01A	7			BDL	BDL	BDL	125	BDL		111	4
8					Bottom @ 8'								
10													
12													

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA			
DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
2-3-86	0900	7.4	7.5

DATE STARTED: 2-3-86
DATE COMPLETED: 2-3-86
DATE GROUTED: 2-3-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

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LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A01-AB02
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Dark brown SANDY SILT (ML) w/roots								
2													
					Light gray SANDY CLAY (CL) w/sand pockets & creosote odor								
4		01A	4			BDL	BDL	BDL	112	196		98	35
					-wet sand pockets @ 5'								
6													
8													
					Bottom @ 8'								
10													
12													

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SAMPLE IDENTIFICATION	WATER LEVEL DATA			
T - 3 in. THIN-WALLED TUBE	DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
S - 2 in. SPLIT-BARREL	2-3-86	0943	Dry	7.8
A - AUGER				

DATE STARTED: 2-3-86
DATE COMPLETED: 2-3-86
DATE GROUTED: 2-3-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A01-AB03
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Dark brown SANDY SILT (ML) "FILL"								
					-w/solid tars @ 1'								
2					-w/clay pockets & creosote odor @ 2'								
4					Light gray & tan SANDY CLAY (CL) w/creosote odor								
		01A	5			BDL	BDL	BDL	120	304		17	8
6													
8					Bottom @ 8'								
10													
12													

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SAMPLE IDENTIFICATION

T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA

DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
2-3-86	1013	Dry	7.7

DATE STARTED: 2-3-86
DATE COMPLETED: 2-3-86
DATE GROUTED: 2-3-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A01-AB04
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Brown CLAYEY SAND (SC) "FILL"								
2					Light gray SANDY CLAY (CL) w/creosote odor								
4					-w/sand pockets below 4'								
6					- light gray & tan w/plant debris and oil spots @ 6'								
8		01A	8			BDL	BDL	BDL	166	141		15	3
					Bottom @ 8'								
10													
12													

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SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA

DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
2-3-86	1045	7.5	8

DATE STARTED: 2-3-86
DATE COMPLETED: 2-3-86
DATE GROUTED: 2-3-86
DRILLER: MRA
TECHNICIAN: R. Moore

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A01-AB05
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					0.25' Asphalt paving 1.25' Cement stabilized shell "FILL"								
2					Light brownish gray SANDY CLAY (CL) w/creosote odor								
4					- w/sand pockets below 4'								
		01A	5			BDL	BDL	BDL	138	247		100	3
6					-light brownish gray & tan @ 6'								
8					Bottom @ 8'								
10													
12													

SAMPLE IDENTIFICATION	WATER LEVEL DATA				
T - 3 in. THIN-WALLED TUBE	DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT	DATE STARTED: 2-3-86
S - 2 in. SPLIT-BARREL	2-3-86	1125	Dry	7.5	DATE COMPLETED: 2-3-86
A - AUGER					DATE GROUTED: 2-3-86
					DRILLER: MRA
					TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

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LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A01-AB06
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					0.25' Asphaltic paving 0.75' Cement stabilized shell "FILL"								
					Brown SILTY SAND (SM) "FILL"								
2					Light gray SANDY CLAY (CL) w/creosote odor								
4					-w/sand pockets below 4'								
6		01A	6			BDL	BDL	BDL	127	BDL		141	4
8					Bottom @ 8'								
10													
12													

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SAMPLE IDENTIFICATION
T - 2 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA			
DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
2-3-86	1310	Dry	7.6

DATE STARTED: 2-3-86
DATE COMPLETED: 2-3-86
DATE GROUTED: 2-3-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A01-AB07
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					0.25' Asphaltic paving 0.75' Cement stabilized shell "FILL"								
					Brown CLAYEY SAND (SC) "FILL" w/creosote odor								
2					Light grayish brown SANDY CLAY (CL) w/sand pockets & creosote odor								
4		01A	4		-wet @ 4'	BDL	BDL	BDL	222	35		200+	5
6					-light gray & very sandy @ 6'								
8					Bottom @ 8'								
10													
12													

002700

SAMPLE IDENTIFICATION	WATER LEVEL DATA				
T - 3 in. THIN-WALLED TUBE	DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT	DATE STARTED: 2-3-86
S - 2 in. SPLIT-BARREL	2-3-86	1354	Dry	7.0	DATE COMPLETED: 2-3-86
A - AUGER					DATE GROUTED: 2-3-86
					DRILLER: MRA
					TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A01-AB08
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					0.25' Asphaltic paving 0.75' Cement stabilized shell "FILL"								
					Brown SILTY SAND (SM) "FILL" w/clay pockets								
2					Light gray SANDY CLAY (CL) w/sand pockets, creosote odor								
4													
6					- light gray and tan @ 6'								
8		01A	8			BDL	BDL	BDL	BDL	47		200+	1
					Bottom @ 8'								
10													
12													

002701

SAMPLE IDENTIFICATION	WATER LEVEL DATA			
	DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
T - 3 in. THIN-WALLED TUBE S - 2 in. SPLIT-BARREL A - AUGER	2-3-86	1435	Dry	7

DATE STARTED: 2-3-86
DATE COMPLETED: 2-3-86
DATE GROUTED: 2-3-86
DRILLER. MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A01-AB09
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Brownish gray VERY SILTY SAND (SM) w/roots								
2					Light gray VERY SANDY CLAY (CL)								
4		01A	4		w/wet sand pockets below 4'	BDL	BDL	BDL	210	BDL		1	0
6													
8					Bottom @ 8'								
10													
12													

002702

SAMPLE IDENTIFICATION	WATER LEVEL DATA				
T - 3 in. THIN-WALLED TUBE	DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT	DATE STARTED: 2-4-86
S - 2 in. SPLIT-BARREL	2-4-86	1103	7.4	7.6	DATE COMPLETED: 2-4-86
A - AUGER					DATE GROUTED: 2-4-86
					DRILLER: MRA
					TECHNICIAN: P. Moore

LOG OF SOIL BORING

REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A01-AB10
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					0.25' Asphaltic paving 0.75' Cement stabilized shell "FILL"								
					Brown SANDY SILT (ML) w/creosote odor								
2					Brownish gray SANDY CLAY (CL) w/creosote odor								
4					-w/sand pockets below 4'								
6					-light brownish gray & wet @ 6'								
8													
10					Gray SILTY SAND (SM) w/oil spots & creosote odor								
12		01A	12			BDL	BDL	BDL	BDL	81		4	3
					Bottom @ 12'								

002703

SAMPLE IDENTIFICATION	WATER LEVEL DATA				
T - 3 in. THIN-WALLED TUBE	DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT	DATE STARTED: 2-5-86
S - 2 in. SPLIT-BARREL	2-5-86	1125	5.5	10	DATE COMPLETED: 2-5-86
A - AUGER					DATE GROUTED: 2-5-86
					DRILLER: MRA
					TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING

REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A01-AB11
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					0.25' Asphaltic paving 0.75' Cement stabilized shell "FILL"								
					Gray SANDY SILT (ML) "FILL"								
2					Light gray SANDY CLAY (CL)								
4					-light gray & tan w/sand pockets below 4'								
		01A	5			BDL	BDL	BDL	165	BDL		0	0
6					-w/wet sand pockets @ 6'								
8					Bottom @ 8'								
10													
12													

002704

SAMPLE IDENTIFICATION	WATER LEVEL DATA				
T - 3 in. THIN-WALLED TUBE	DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT	DATE STARTED: 2-5-86
S - 2 in. SPLIT-BARREL	2-5-86	1255	7.3	7.5	DATE COMPLETED: 2-5-86
A - AUGER					DATE GROUTED: 2-5-86
					DRILLER: MRA
					TECHNICIAN: P. Moore

McBride, Patrillo and A...

LOG OF SOIL BORING

REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A02-AB01
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Gray and dark gray very SANDY SILT (ML) w/roots								
2					Light gray SANDY CLAY (CL) w/sand pockets								
4		01A	5			BDL	BDL	BDL	140	BDL		20	0
6					-light gray and tan @ 6'								
8					-wet @ 8'								
					Bottom @ 8'								
10													
12													

002705

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA			
DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
1-31-86	0925	7.8	8

DATE STARTED: 1-31-86
DATE COMPLETED: 1-31-86
DATE GROUTED: 1-31-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING

REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A02-AB02
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Gray and dark gray very SANDY SILT (ML) w/roots								
2					Light gray and tan SANDY CLAY (CL) w/sand pockets								
		01A	3			BDL	BDL	BDL	249	BDL		70	0
4													
6													
8					Bottom @ 8'								
10													
12													

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA			
DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
1-31-86	0955	Dry	7

DATE STARTED: 1-31-86
DATE COMPLETED: 1-31-86
DATE GROUTED: 1-31-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

002706

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A02-AB03
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Gray and dark gray very SILTY SAND (SM) w/roots "FILL" to 0.5'								
2					Brownish gray SANDY CLAY (CL) w/sand pockets								
4					-light gray and tan @ 4'								
					-wet sand pockets below 5'								
6													
		01A	7			BDL	BDL	BDL	152	BDL		1	0
8					Bottom @ 8'								
10													
12													

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA			
DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
1-31-86	1023	Dry	7.6
1-31-86	1027	7	7.6

DATE STARTED: 1-31-86
DATE COMPLETED: 1-31-86
DATE GROUTED: 1-31-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

002707

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A02-AB04
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Dark gray very SILTY SAND (SM) "FILL"								
					Gray very SILTY SAND (SM) w/roots								
2					Brownish gray SANDY CLAY (CL) w/sand pockets								
					-w/wet sand pockets below 3.5'								
4					-brownish gray and tan @ 4'								
6		01A	6			BDL	BDL	BDL	1/1	BDL		200+	0
8					Bottom @ 8'								
10													
12													

002708

SAMPLE IDENTIFICATION	WATER LEVEL DATA				
T - 3 in. THIN-WALLED TUBE	DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT	DATE STARTED: 1-31-86
S - 2 in. SPLIT-BARREL	1-31-86	1057	7.5	7.7	DATE COMPLETED: 1-31-86
A - AUGER					DATE GROUTED: 1-31-86
					DRILLER: MRA
					TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A02-AB05
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Dark gray SILTY SAND (SM) "FILL" w/rubble								
2					Light gray very SANDY CLAY (CL) w/sand pockets								
4		01A	4		-brownish gray and tan below 4'	BDL	BDL	29	242	BDL		200+	11
6													
8					Bottom @ 8'								
10													
12													

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA			
DATE	TIME	WATER DEPTH, FT	CAVED DEPTH FT
1-31-86	1129	Dry	7.4

DATE STARTED: 1-31-86
DATE COMPLETED: 1-31-86
DATE GROUTED: 1-31-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

002709

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A02-AB06
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Gray and white SAND (SP) "FILL" w/shells								
2					Gray SANDY CLAY (CL) w/sand pockets								
4					-light brownish gray and tan @ 4'								
6		01A	6		-tan and light gray @ 6'	BDL	BDL	BDL	BDL	BDL		109	0
8					-wet @ 8'								
					Bottom @ 8'								
10													
12													

002710

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA			
DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
1-31-86	1306	7.4	7.8

DATE STARTED: 1-31-86
DATE COMPLETED: 1-31-86
DATE GROUTED: 1-31-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING

REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A02-AB07
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Dark gray VERY SANDY SILT (ML) "FILL"								
					Light gray slightly SILTY SAND (SM)								
2					Light gray and tan SANDY CLAY (CL) w/sand pockets								
4		01A	4			BDL	BDL	BDL	162	BDL		114	86
					-w/wet sand pockets below 5'								
6													
8					Bottom @ 8'								
10													
12													

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA			
DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
1-31-86	1338	7.1	7.2

DATE STARTED: 1-31-86
DATE COMPLETED: 1-31-86
DATE GROUTED: 1-31-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

002711

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A02-AB08
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Dark gray and brown SILTY SAND (SM) "FILL" w/solidified tar								
					Gray and light gray SANDY CLAY (CL)								
2					-w/sand pockets below 2'								
4					-light gray and tan @ 4' w/creosote odor								
6					-w/creosote odor @ 6'								
		01A	7		-w/creosote odor @ 7'	BDL	BDL	BDL	148	BDL		46	2
8					Bottom @ 8'								
10													
12													

002712

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA

DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
1-31-86	1419	7.4	7.6

DATE STARTED: 1-31-86
DATE COMPLETED: 1-31-86
DATE GROUTED: 1-31-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A02-AB09
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Dark gray SILTY SAND (SM) "FILL" w/rubble								
					Grayish brown slightly SILTY SAND (SM) w/roots								
2					Brownish gray and tan SANDY CLAY (CL) w/sand pockets								
4		01A	4		-light gray and tan below 4'	BDL	BDL	BDL	158	BDL		12	8
6					-wet sand pockets @ 6'								
8					Bottom @ 8'								
10													
12													

002713

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA

DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
1-31-86	1445	7.6	7.7

DATE STARTED: 1-31-86
DATE COMPLETED: 1-31-86
DATE GROUTED: 1-31-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A02-AB10
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Brownish gray SILTY SAND (SM) "FILL" w/rubber								
2					Brownish gray SANDY CLAY (CL) w/sand pockets -brownish gray and tan @ 2'								
4		01A	5			BDL	BDL	BDL	129	BDL		181	2
6					-wet sand pockets @ 7'								
8					Bottom @ 8'								
10													
12													

SAMPLE IDENTIFICATION	WATER LEVEL DATA				
T - 3 in. THIN-WALLED TUBE	DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT	DATE STARTED: 1-31-86
S - 2 in. SPLIT-BARREL	1-31-86	1314	6.6	7.4	DATE COMPLETED: 1-31-86
A - AUGER					DATE GROUTED: 1-31-86
					DRILLER: MRA
					TECHNICIAN: P. Moore

002714

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A02-AB11
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Dark gray CLAYEY SAND (SC) "FILL" w/rubble								
2					Gray SANDY CLAY (CL) w/sand pockets								
4					-light gray and tan below 4'								
					-wet sand pockets @ 5'								
6		01A	7			BDL	BDL	BDL	226	BDL		200+	5
8					Bottom @ 8'								
10													
12													

002715

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA			
DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
1-31-86	1544	7.4	7.6

DATE STARTED: 1-31-86
DATE COMPLETED: 1-31-86
DATE GROUTED: 1-31-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A03-AB01
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Dark gray SANDY SILT (ML)								
					Brown very SANDY CLAY (CL)								
2					-w/sand pockets & creosote odor below 2'								
4					-brown & light gray w/wet sand pockets below 4'								
6					-light gray & tan below 6'								
8													
10		01A	10		Light gray & tan SILTY SAND (SM) w/oil spots & creosote odor	BDL	BDL	BDL	147	BDL		9	
12					Light gray & tan CLAYEY SAND (SC) w/oil spots & creosote odor								
					Bottom @ 12'								

002716

SAMPLE IDENTIFICATION

T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA

DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
2-6-86	1147	4.1	8

DATE STARTED: 2-6-86
DATE COMPLETED: 2-6-86
DATE GROUTED: 2-6-86
DRILLER: MRA
TECHNICIAN: R. Moore

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A03-AB02
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Brown SANDY SILT (ML) w/roots								
2													
					Light gray & tan SANDY CLAY (CL) w/sand pockets								
4					-w/oil stains & creosote odor below 4'								
		01A	5		-wet @ 5'	BDL	BDL	BDL	BDL	BDL		3	
6					-gray & tan @ 6'								
8					Bottom @ 8'								
10													
12													

002717

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA			
DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
2-6-86	1228	6	7.5

DATE STARTED: 2-6-86
DATE COMPLETED: 2-6-86
DATE GROUTED: 2-6-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A04-AB01
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					0.25' Asphaltic paving 1.25' Cement stabilized shell "FILL"								
2					Brown SILTY SAND (SM) "FILL"								
					Grayish brown SANDY CLAY (CL)								
4					-tan & light gray w/sand pockets below 4'								
6													
		01A	7			BDL	BDL	BDL	171	BDL		0	0
8					Bottom @ 8'								
10													
12													

002718

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA

DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
2-4-86	1234	Dry	7.2

DATE STARTED: 2-4-86
DATE COMPLETED: 2-4-86
DATE GROUTED: 2-4-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING

REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A04-AB02
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					0.25' Asphaltic paving 1.0' Cement stabilized shell "FILL"								
					Brown CLAYEY SAND (SC) "FILL"								
2					Brownish gray SANDY CLAY (CL) w/sand pockets								
4		01A	5			BDL	BDL	BDL	190	BDL		1	0
6					-light gray & tan @ 6'								
8					Bottom @ 8'								
10													
12													

002719

SAMPLE IDENTIFICATION	WATER LEVEL DATA				
T - 3 in. THIN-WALLED TUBE	DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT	DATE STARTED: 2-4-86
S - 2 in. SPLIT-BARREL	2-4-86	1325	6.5	6.7	DATE COMPLETED: 2-4-86
A - AUGER					DATE GROUTED: 2-4-86
					DRILLER: MRA
					TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A04-AB03
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					0.25' Asphaltic paving 0.75' Cement stabilized shell "FILL"								
					Brown SILTY SAND (SM) "FILL"								
2					Light gray & tan SANDY CLAY (CL) w/sand pockets								
4					-w/wet sand pockets below 4'								
6													
8		01A	8			BDL	BDL	BDL	106	BDL		0	0
					Bottom @ 8'								
10													
12													

002720

SAMPLE IDENTIFICATION	WATER LEVEL DATA				
T - 3 in. THIN-WALLED TUBE	DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT	DATE STARTED: 2-4-86
S - 2 in. SPLIT-BARREL	2-4-86	1404	5.5	7.5	DATE COMPLETED: 2-4-86
A - AUGER					DATE GROUTED: 2-4-86
					DRILLER: MRA
					TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A04-AB04
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					0.25' Asphaltic paving 1.25' Cement stabilized shell "FILL"								
2					Brown CLAYEY SAND (SC) "FILL"								
4		01A	4		Gray SANDY CLAY (CL) -light gray & tan w/sand pockets below 4'	BDL	BDL	BDL	183	BDL		0	0
6					-wet @ 6'								
8					Bottom @ 8'								
10													
12													

002721

SAMPLE IDENTIFICATION	WATER LEVEL DATA				
T - 3 in. THIN-WALLED TUBE	DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT	DATE STARTED: 2-4-86
S - 2 in. SPLIT-BARREL	2-4-86	1447	6.9	7.3	DATE COMPLETED: 2-4-86
A - AUGER					DATE GROUTED: 2-4-86
					DRILLER: MRA TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A04-AB05
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Gray very SANDY SILT (ML) w/roots								
2					Gray VERY SANDY CLAY (CL) w/sand pockets								
					-light gray @ 2.5'								
		01A	3		-wet @ 3.5'	BDL	BDL	BDL	146	BDL		0	0
4					-light gray & tan below 4'								
6													
8					Bottom @ 8'								
10													
12													

002722

SAMPLE IDENTIFICATION	WATER LEVEL DATA				
T - 3 in. THIN-WALLED TUBE	DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT	DATE STARTED: 2-4-86
S - 2 in. SPLIT-BARREL	2-4-86	1530	6.8	7.5	DATE COMPLETED: 2-4-86
A - AUGER					DATE GROUTED: 2-4-86
					DRILLER: MRA
					TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SGK-A04-AB06
PROJECT NO.: 65-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Dark brown CLAYEY SILT (ML) w/roots								
2					Light gray SANDY CLAY (CL) w/sand pockets								
4					-light gray & tan below 4'								
6					-wet @ 6'								
8		01A	8			BDL	BDL	42	149	BDL		0	0
					Bottom @ 8'								
10													
12													

002723

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA

DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
2-5-86	1312	5	5.8

DATE STARTED: 2-5-86
DATE COMPLETED: 2-5-86
DATE GROUTED: 2-5-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A04-AB07
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Tan & light gray crushed limestone "FILL"								
					Gray SANDY SILT (ML) w/roots								
2					Gray & tan SANDY CLAY (CL) w/wet sand pockets								
4					-w/creosote odor below 4'								
6					-light gray & tan below 6'								
8													
					Light gray CLAYEY SAND (SC) w/creosote odor								
10		01A	10			BDL	BDL	BDL	175	BDL		9	7
					Bottom @ 10'								
12													

SAMPLE IDENTIFICATION	WATER LEVEL DATA			
T - 3 in. THIN-WALLED TUBE	DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
S - 2 in. SPLIT-BARREL	2-5-86	1410	5.0	9.0
A - AUGER				

DATE STARTED: 2-5-86
DATE COMPLETED: 2-5-86
DATE GROUTED: 2-5-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

002724

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A04-AB08
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Black & tan SANDY CLAY (CL) "FILL" w/roots & creosote odor								
2					Gray VERY SANDY CLAY (CL) w/sand pockets, creosote odor,								
4					-brown w/oil spots @ 4'								
		01A	5			BDL	BDL	BDL	165	BDL		8	4
6					-gray & tan w/oil spots @ 6'								
8					Bottom @ 8'								
10													
12													

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA

DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
2-5-86	1445	Dry	7.2

DATE STARTED: 2-5-86
DATE COMPLETED: 2-5-86
DATE GROUTED: 2-5-86
DRILLER: HRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

002725

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A04-AB09
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Dark brown SANDY SILT (ML) w/creosote odor								
2													
					Light gray SANDY CLAY (CL) w/sand pockets & creosote odor								
4													
6					-very sandy @ 6'								
8													
10					Light gray CLAYEY SAND (SC) w/creosote odor								
					Light gray SILTY SAND (SM) w/creosote odor, wet								
		01A	11			BDL	BDL	BDL	160	BDL		2	
12													
					Bottom @ 12'								

002726

SAMPLE IDENTIFICATION

T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA

DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
2-6-86	1038	4	9

DATE STARTED: 2-6-86
DATE COMPLETED: 2-6-86
DATE GROUTED: 2-6-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING

REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A04-AB10
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Light gray SILTY SAND (SM) "FILL" w/concrete rubble								
2					Light gray SANDY CLAY (CL) w/sand pockets -w/calcareous nodules @ 2'								
4					-w/wet sand pockets below 4'								
6		01A	6			BDL	BDL	BDL	255	BDL		0	
8					Bottom @ 8'								
10													
12													

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA			
DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
2-6-86	1454	6.4	7.7

DATE STARTED: 2-6-86
DATE COMPLETED: 2-6-86
DATE GROUTED: 2-6-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

002727

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A04-AB11
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Gray SILTY SAND (SM) & SANDY CLAY (CL) "FILL" w/shells								
2					Tan & light gray SANDY CLAY (CL) w/sand pockets								
4					-w/wet sand pockets below 4'								
6													
8		Q1A	8			BDL	BDL	BDL	123	BDL		0	
					Bottom @ 8'								
10													
12													

002728

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA			
DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
2-6-86	1538	5.8	7.3

DATE STARTED: 2-6-86
DATE COMPLETED: 2-6-86
DATE GROUTED: 2-6-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A04-AB12
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					0.25' Asphaltic paving 0.75' Cement stabilized shell "FILL"								
					Brown SILTY SAND (SM) "FILL"								
2					Gray SANDY CLAY (CL)								
4					-light gray & tan w/sand pockets below 4'								
6		01A	7			BDL	BDL	BDL	114	BDL		0	
8					Bottom @ 8'								
10													
12													

002729

SAMPLE IDENTIFICATION	WATER LEVEL DATA				
T - 3 in. THIN-WALLED TUBE	DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT	DATE STARTED: 2-6-86
S - 2 in. SPLIT-BARREL	2-6-86	1616	7.3	7.6	DATE COMPLETED: 2-6-86
A - AUGER					DATE GROUTED: 2-6-86
					DRILLER: MRA
					TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A04-AB13
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					0.25' Asphaltic paving 1.25' Cement stabilized shell "FILL"								
2					Dark CLAYEY SILT (ML)								
					Gray SANDY CLAY (CL) w/sand pockets								
4					-light gray & tan below 4'								
6		01A	6		-wet @ 6'	BDL	BDL	BDL	144	BDL		0	0
8					-very sandy @ 8'								
					Light gray & tan VERY CLAYEY SAND (SC)								
10													
12		02A	12		-w/creosote odors @ 12'	BDL	BDL	BDL	122	BDL		0	0
					Bottom @ 12'								

002730

SAMPLE IDENTIFICATION	WATER LEVEL DATA				
T - 3 in. THIN-WALLED TUBE	DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT	DATE STARTED: 2-7-86
S - 2 in. SPLIT-BARREL	2-7-86	1009	4.5	10.5	DATE COMPLETED: 2-7-86
A - AUGER					DATE GROUTED: 2-7-86
					DRILLER: MRA
					TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A04-AB14
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Gray SILTY SAND (SM) & SANDY CLAY (CL) "FILL"								
2													
					Light gray SANDY CLAY (CL) w/sand pockets								
4													
		01A	5			BDL	BDL	BDL	104	BDL		0	0
6					-light gray & tan w/wet sand pockets @ 6'								
8					Bottom @ 8'								
10													
12													

002731

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA

DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
2-7-86	1044	5.9	6.9

DATE STARTED: 2-7-86
DATE COMPLETED: 2-7-86
DATE GROUTED: 2-7-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A04-AB15
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Gray SANDY CLAY (CL) & SILTY SAND (SM) w/rubble "FILL"								
2					Light gray very SANDY CLAY (CL) w/sand pockets								
4					-light gray & tan below 4'								
6					-wet @ 7'								
8					-w/ferrous nodules @ 8'								
10		Q1A	10		-very sandy @ 10'	BDL	134	BDL	BDL	BDL		0	0
					Light gray & tan CLAYEY SAND (SC) wet								
12					Bottom @ 12'								

002732

SAMPLE IDENTIFICATION	WATER LEVEL DATA				
T - 3 in. THIN-WALLED TUBE	DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT	DATE STARTED: 2-7-86
S - 2 in. SPLIT-BARREL	2-7-86	1150	4.5	6.5	DATE COMPLETED: 2-7-86
A - AUGER					DATE GROUTED: 2-7-86
					DRILLER: MRA
					TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A05-AB01
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					0.6' concrete paving								
					Cement stabilized shell "FILL" w/creosote odor and oily sheen -wet @ 1.5'								
2					Brownish gray VERY SANDY CLAY (CL) w/sand pockets								
4		01A	4		-creosote odors @ 4' -light gray and tan w/calcareous nodules below 4'	BDL	BDL	BDL	158	BDL		1	2
6													
8					Bottom @ 8'								
10													
12													

002733

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA

DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
1-16-86	1523	1.2	7.5

DATE STARTED: 1-16-86
DATE COMPLETED: 1-16-86
DATE GROUTED: 1-16-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A05-AB02
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					0.6' concrete paving								
					Cement stabilized shell "FILL"								
2					Dark brown VERY CLAYEY SAND (SC) w/creosote odor								
4		01A	4		-w/diesel odor @ 4'	BDL	BDL	BDL	208	BDL		2	
6					Light gray SANDY CLAY (CL) w/roots -light gray and tan w/ferrous nodules and sand pockets @ 6' -wet @ 7'								
8					Bottom @ 8'								
10													
12													

SAMPLE IDENTIFICATION	WATER LEVEL DATA				
T - 3 in. THIN-WALLED TUBE	DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT	DATE STARTED: 1-17-86
S - 2 in. SPLIT-BARREL	1-17-86	1032	6.0	7.5	DATE COMPLETED: 1-17-86
A - AUGER					DATE GROUTED: 1-17-86
					DRILLER: MRA
					TECHNICIAN: P.Moore

McBride-Ratcliff and Associates, Inc.

002734

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A05-AB03
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					0.6' concrete paving								
2					Brown SAND (SP) w/clay pockets								
4					Gray SANDY CLAY (CL) w/sand pockets -wet @ 4'								
		01A	5			BDL	BDL	BDL	BDL	BDL		0	
6					-gray and tan w/calcareous nodules @ 6'								
8					Bottom @ 8'								

002735

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA			
DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
1-17-86	1115	3.6	8.0

DATE STARTED: 1-17-86
DATE COMPLETED: 1-17-86
DATE GROUTED: 1-17-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A05-AB04
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					0.6' concrete paving								
2					Gray slightly CLAYEY SAND (SC) "FILL"								
		01A	3		Dark gray SANDY CLAY (CL) w/sand pockets -w/creosote odors @ 2.5' -w/diesel odors @ 3'	BDL	BDL	BDL	BDL	BDL		2	
4					-light gray & tan @ 4.5'								
6					-wet @ 6'								
8					Bottom @ 8'								
10													
12													

002736

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA

DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
1-17-86	1204	5.0	6.7

DATE STARTED: 1-17-86
DATE COMPLETED: 1-17-86
DATE GROUTED: 1-17-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A05-AB05
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					0.3' concrete paving								
					Tan SAND (SP) "FILL" - wet								
2					Gray SANDY CLAY (CL) w/sand pockets								
4		01A	4		-w/chemical odor @ 4'	BDL	BDL	BDL	235	BDL		1	
6					-w/ferrous and calcareous nodules @ 6' - wet								
8					Bottom @ 8'								
10													
12													

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA

DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
1-17-86	1242	4.8	7.7

DATE STARTED: 1-17-86
DATE COMPLETED: 1-17-86
DATE GROUTED: 1-17-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

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LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A06-AB01
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Dark gray very SANDY CLAY (CL) w/diesel odors								
2					-gray w/roots @ 2'								
4		01A	4		-w/calcareous nodules @ 4'	BDL	BDL	BDL	BDL	180		7	9
6					-light gray & tan w/calcareous nodules @ 6'								
8					Bottom @ 8'								
10													
12													

002738

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA			
DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
1-20-86	1425	Dry	7.8

DATE STARTED: 1-20-86
DATE COMPLETED: 1-20-86
DATE GROUTED: 1-20-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A06-AB02
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Gray SANDY CLAY (CL) "FILL"								
					Gray SANDY CLAY (CL) -w/diesel odors below 2'								
2					-w/roots @ 2'								
4					-w/sand pockets @ 4'								
6		01A	6		-light gray and tan @ 6'	BDL	BDL	BDL	227	BDL		6	9
8					Bottom @ 8'								
10													
12													

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SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA			
DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
1-20-86	1458	7.9	8

DATE STARTED: 1-20-86
DATE COMPLETED: 1-20-86
DATE GROUTED: 1-20-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A06-AB03
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Gray and dark gray SANDY CLAY (CL) "FILL"								
2													
4					-gray, dark gray, and black @ 4' - wet								
6		01A	6		-w/organic odors @ 6'	BDL	BDL	59	109	277		0	0
					Bottom @ 6'								
					(Borehole terminated due to subsurface obstruction)								
8													
10													
12													

SAMPLE IDENTIFICATION	WATER LEVEL DATA				
T - 3 in. THIN-WALLED TUBE	DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT	DATE STARTED: 1-20-86
S - 2 in. SPLIT-BARREL	1-20-86	1525	4.7		DATE COMPLETED: 1-20-86
A - AUGER					DATE GROUTED: 1-20-86
					DRILLER: MRA
					TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

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LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A06-AB04
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Gray SANDY CLAY (CL) "FILL" w/shells and gravel								
2		01A	3		Dark gray CLAY (CH) "FILL" -intermixed w/silt, wet and black @ 2' -w/organic odors at 3'	365	BDL	222	363	1034		0	0
4					Bottom @ 4' (Borehole terminated due to underground obstruction)								
6													
8													
10													
12													

002741

SAMPLE IDENTIFICATION	WATER LEVEL DATA			
T - 3 in. THIN-WALLED TUBE	DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
S - 2 in. SPLIT-BARREL	1-20-86	1559	2	4
A - AUGER				

DATE STARTED: 1-20-86
DATE COMPLETED: 1-20-86
DATE GROUTED: 1-20-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A06-AB05
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Black SAND (SP) "FILL" w/solidified tar and creosote odors								
2		01A	2			BDL	BDL	BDL	BDL	2062		6	6
					Gray SANDY CLAY (CL) w/sand pockets and diesel odors								
4													
		02A	5			BDL	BDL	BDL	BDL	BDL		16	9
6					-light gray and tan @ 6'								
8					Bottom @ 8'								
10													
12													

002742

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA			
DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
1-20-86	1138	Dry	7.5

DATE STARTED: 1-20-86
DATE COMPLETED: 1-20-86
DATE GROUTED: 1-20-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A06-AB06
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Black SAND (SP) "FILL" w/solidified tar and creosote odors								
2		01A	2		Gray SANDY CLAY (CL) w/diesel odors	2790	BDL	BDL	BDL	198		1	0
4					-light gray w/calcareous nodules below 4'								
		02A	5			BDL	BDL	BDL	BDL	BDL		7	7
6													
8		03A	8		-wet @ 8' w/oily residues	BDL	BDL	BDL	146	BDL		4	4
					Bottom @ 8'								
10													
12													

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA

DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
1-21-86	1128	7.5	8

DATE STARTED: 1-21-86
DATE COMPLETED: 1-21-86
DATE GROUTED: 1-21-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

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LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A06-AB07
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Brown CLAY SAND (SC) "FILL" w/solidified tar and creosote odors								
2													
					Gray very SANDY CLAY (CL) w/diesel odors								
4					-light gray w/sand pockets below 4'								
		01A	5			BDL	BDL	BDL	104	BDL		6	4
6					-wet @ 7'								
8					Bottom @ 8'								
10													
12													

002744

SAMPLE IDENTIFICATION	WATER LEVEL DATA				
T - 3 in. THIN-WALLED TUBE	DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT	DATE STARTED: 1-21-86
S - 2 in. SPLIT-BARREL	1-21-86	1157	7	8	DATE COMPLETED: 1-21-86
A - AUGER					DATE GROUTED: 1-21-86
					DRILLER: MRA
					TECHNICIAN: P. Moore

McBride-Ratcliff and Associates

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A06-AB08
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Dark gray SANDY CLAY (CL) "FILL" w/gravel w/solidfied tar and creosote odors								
2		01A	2		Black gravel (GP) "FILL" w/intermixed with clay w/oily residues and creosote odors -wet @ 2'	BDL	BDL	81	123	BDL		3	3
4					Gray SANDY CLAY (CL) w/creosote odors -w/sand pockets @ 4'								
6					-light gray w/calcareous nodules @ 6'								
8					Bottom @ 8'								
10													
12													

SAMPLE IDENTIFICATION	WATER LEVEL DATA				
T - 3 in. THIN-WALLED TUBE	DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT	DATE STARTED: 1-21-86
S - 2 in. SPLIT-BARREL	1-21-86	1231	1.8		DATE COMPLETED: 1-21-86
A - AUGER					DATE GROUTED: 1-21-97
					DRILLER: MRA
					TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

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LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A06-AB09
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Gray and brown very CLAYEY SAND (SC)"FILL" w/gravel, shells, and creosote odors								
2					Gray very SANDY CLAY (CL) w/creosote odors								
4					-light gray w/calcareous nodules below 4'								
6		01A	6			BDL	BDL	BDL	153	BDL		21	11
8					Bottom @ 8'								
10													
12													

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA			
DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
1-21-86	1304	Dry	8

DATE STARTED: 1-21-86
DATE COMPLETED: 1-21-86
DATE GROUTED: 1-21-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

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LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A06-AB10
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Gray SANDY SILT (ML) w/roots								
2					Gray very SANDY CLAY (CL) w/sand pockets w/diesel odors -wet @ 2'								
4		01A	4		-light gray w/calcareous nodules @ 4'	BDL	BDL	BDL	171	BDL		6	5
6													
8					Bottom @ 8'								
10													
12													

002747

SAMPLE IDENTIFICATION	WATER LEVEL DATA				
T - 3 in. THIN-WALLED TUBE	DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT	DATE STARTED: 1-21-86
S - 2 in. SPLIT-BARREL	1-21-86	1337	Dry		DATE COMPLETED: 1-21-86
A - AUGER					DATE GROUTED: 1-21-86
					DRILLER: MRA
					TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A07-AB01
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					0.6' concrete paving								
					Brownish gray CLAYEY SAND (SC) "FILL" w/gravel, shells, and concrete rubble								
2					Dark gray very SANDY CLAY (CL)								
4					-gray w/sand pockets @ 4'								
6					-gray and light gray w/sand pockets and calcareous nodules @ 6'								
8		01A	7		-w/creosote odors @ 8'	BDL	BDL	BDL	112	BDL		6	6
					Bottom @ 8'								
10													
12													

002748

SAMPLE IDENTIFICATION	WATER LEVEL DATA				
T - 3 in. THIN-WALLED TUBE	DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT	DATE STARTED: 1-16-86
S - 2 in. SPLIT-BARREL	1-16-86	1020	Dry		DATE COMPLETED: 1-16-86
A - AUGER					DATE GROUTED: 1-16-86
					DRILLER: MRA
					TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A07-AB02
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					0.6' concrete paving								
2					Dark gray very SANDY CLAY (CL) "FILL" w/sand pockets								
4		01A	4		-w/gravel, shells, and creosote odors and solidified tar @ 4'	BDL	BDL	BDL	147	524		4	5
					-wet @ 5'								
6					Gray SANDY CLAY (CL) w/sand pockets & creosote odors								
8					Bottom @ 8'								
10													
12													

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA			
DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
1-16-86	1100	4.5	7.8

DATE STARTED: 1-16-86
DATE COMPLETED: 1-16-86
DATE GROUTED: 1-16-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

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LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A07-AB03
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					0.6' concrete paving								
					Brownish gray SAND (SP) & CLAY (CH)"FILL" w/shells and gravel								
2					Gray SANDY CLAY (CL) w/sand pockets								
4													
6		01A	6		w/chemical odor @ 6'	BDL	BDL	44	120	43		1	0
					-gray and tan w/oily residue in sand pockets and creosote odors @ 7'-wet								
8		02A	8		-w/creosote odors @ 8'	BDL	BDL	BDL	176	BDL		4	5
					Bottom @ 8'								
10													
12													

002750

SAMPLE IDENTIFICATION	WATER LEVEL DATA			
T - 3 in. THIN-WALLED TUBE	DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
S - 2 in. SPLIT-BARREL	1-16-86	1230	7.0	7.5
A - AUGER				

DATE STARTED: 1-16-86
DATE COMPLETED: 1-16-86
DATE GROUTED: 1-16-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A07-AB04
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					0.6' concrete paving								
					Dark brown SILTY SAND (SM) "FILL" w/shells intermixed w/clay								
2					Gray SANDY CLAY (CL) "FILL" intermixed w/sand and organic matter w/oily residue and creosote odors -wet @ 2.5'								
4		01A	4			106	BDL	BDL	BDL	33		12	12
					Gray SANDY CLAY (CL) w/sand pockets								
6													
8					Bottom @ 8'								
10													
12													

SAMPLE IDENTIFICATION	WATER LEVEL DATA				
T - 3 in. THIN-WALLED TUBE	DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT	DATE STARTED: 1-16-86
S - 2 in. SPLIT-BARREL	1-16-86	1333	2.5	7	DATE COMPLETED: 1-16-86
A - AUGER					DATE GROUTED: 1-16-86
					DRILLER: MRA
					TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

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LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A07-AB05
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					0.6' concrete paving								
					Dark gray SANDY CLAY (CL) "FILL" w/creosote odors								
2		01A	2			BDL	BDL	BDL	400	314		25	
4					~w/sand pockets @ 4'								
					Bottom @ 5'								
6					(Borehole terminated due to underground obstruction)								
8													
10													
12													

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SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA

DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
1-17-86	1320	Dry	

DATE STARTED: 1-17-86
DATE COMPLETED: 1-17-86
DATE GROUTED: 1-17-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING

REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A07-AB06
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Dark gray CLAYEY SAND (SC) "FILL" w/shells and creosote odors								
2		01A	2			151	109	BDL	BDL	557		19	11
					Gray SANDY CLAY (CL) -w/oily residues and creosote odors @ 2' -wet @ 3'								
4		02A	4		-w/calcareous nodules below 4' -w/oily residue and creosote odors @ 4'	206	BDL	BDL	BDL	BDL		20	16
6													
8					Bottom @ 8'								
10													
12													

002753

SAMPLE IDENTIFICATION	WATER LEVEL DATA				
T - 3 in. THIN-WALLED TUBE	DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT	DATE STARTED: 1-20-86
S - 2 in. SPLIT-BARREL	1-20-86	1358	2.3	8	DATE COMPLETED: 1-20-86
A - AUGER					DATE GROUTED: 1-20-86
					DRILLER: MRA
					TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING

REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A07-AB07
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Gray very SANDY CLAY (CL) "FILL" w/shells and gravel, creosote odors								
2		01A	2			BDL	BDL	BDL	232	72		10	12
					Gray SANDY CLAY (CL) w/creosote odors								
4					-very sandy clay w/oily residues - wet @ 4'								
6		02A	6		-light gray and tan w/calcareous nodules @ 6'	BDL	BDL	BDL	155	BDL		4	4
8					Bottom @ 8'								
10													
12													

SAMPLE IDENTIFICATION	WATER LEVEL DATA				
T - 3 in. THIN-WALLED TUBE	DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT	DATE STARTED: 1-20-86
S - 2 in. SPLIT-BARREL	1-20-86	1141	7.9	8	DATE COMPLETED: 1-20-86
A - AUGER					DATE GROUTED: 1-20-86
					DRILLER: HRA
					TECHNICIAN: P. Moore

Wallace, Patcliff and Associates

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LOG OF SOIL BORING

REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A08-AB01
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Brown SANDY CLAY (CL) "FILL"								
2		01A	2		-w/organic odors @ 2'	BDL	BDL	126	163	BDL		0	0
					Brown SANDY CLAY (CL) -w/sand pockets @ 2'								
					-light gray, 3 to 6'								
4					-w/calcareous nodules below 4'								
6					-light gray and tan - wet @ 6'								
8					Bottom @ 8'								
10													
12													

002755

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA			
DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
1-20-86	0945	7.9	8

DATE STARTED: 1-20-86
DATE COMPLETED: 1-20-86
DATE GROUTED: 1-20-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A08-AB02
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Brown CLAYEY SAND (SC) "FILL" w/gravel								
2					Light gray SANDY CLAY (CL) w/sand pockets and creosote odors								
4		01A	4			BDL	BDL	BDL	201	BDL		5	4
6													
8					Bottom @ 8'								
10													
12													

SAMPLE IDENTIFICATION	WATER LEVEL DATA				
T - 3 in. THIN-WALLED TUBE	DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT	DATE STARTED: 1-20-86
S - 2 in. SPLIT-BARREL	1-20-86	1015	Dry	7.5	DATE COMPLETED: 1-20-86
A - AUGER					DATE GROUTED: 1-20-86
					DRILLER: MRA
					TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

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LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A08-AB03
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Dark gray and gray SANDY CLAY (CL) "FILL" intermixed w/sand w/creosote odors								
2		01A	2			BDL	BDL	BDL	.77	BDL		26	9
					Gray SANDY CLAY (CL) w/creosote odors -w/ferrous nodules @ 2'								
4					-light gray and tan w/sand pockets and calcareous noduels below 4'								
6													
8					Bottom @ 8'								
10													
12													

002757

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA

DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
1-20-86	1040	Dry	7.5

DATE STARTED: 1-20-86
DATE COMPLETED: 1-20-86
DATE GROUTED: 1-20-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A08-AB04
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Brown CLAYEY SAND (SC) "FILL"								
2					Gray SANDY CLAY (CL) w/creosote & diesel odors -w/calcareous nodules @ 2'								
4		01A	4		-light gray and tan @ 4'	BDL	BDL	BDL	113	BDL		9	5
6					-tan and light gray w/calcareous nodules @ 6'								
8					Bottom @ 8'								
10													
12													

002758

SAMPLE IDENTIFICATION	WATER LEVEL DATA				
T - 3 in. THIN-WALLED TUBE	DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT	DATE STARTED: 1-21-86
S - 2 in. SPLIT-BARREL	1-21-86	1410	Dry	8	DATE COMPLETED: 1-21-86
A - AUGER					DATE GROUTED: 1-21-86
					DRILLER: MRA
					TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A09-AB01
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					0.6' concrete paving								
					Gray very CLAYEY SAND (SC) "FILL" w/rubble								
2		01A	2			353	BDL	486	197	1228		1	1
					Bottom @ 2'								
					(Borehole terminated due to underground obstruction)								

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SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA			
DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
1-15-86	1520	Dry	

DATE STARTED: 1-15-86
DATE COMPLETED: 1-15-86
DATE GROUTED: 1-15-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A09-AB02
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					0.6' concrete paving								
2		01A	2		Gray CLAYEY SAND (SC) "FILL" w/gravel and shells -w/creosote odors	170	BDL	47	BDL	153		1	1
					Bottom @ 2.5 (terminated borehole due to underground obstruction)								
4													
6													
8													
10													
12													

SAMPLE IDENTIFICATION	WATER LEVEL DATA			
T - 3 in. THIN-WALLED TUBE	DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
S - 2 in. SPLIT-BARREL	1-15-86	1600	Dry	
A - AUGER				

DATE STARTED: 1-15-86
DATE COMPLETED: 1-15-86
DATE GROUTED: 1-15-86
DRILLER: MRA
TECHNICIAN: P. Moore

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LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A09-AB03
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					0.6' concrete paving								
					Brownish gray SANDY CLAY (CL) "FILL" w/roots and gravel								
2					Gray intermixed SILTY SAND (SM) AND CLAYEY SAND (SC) "FILL" w/clay pockets and gravel								
4					Gray SANDY CLAY (CL) w/sand pockets @ 4'								
6					-gray & tan w/calcareous nodules @ 6'								
8		01A	8			BDL	BDL	BDL	162	BDL		2	
					Bottom @ 8'								
10													
12													

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA			
DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
1-17-86	1506	Dry	

DATE STARTED: 1-17-86
DATE COMPLETED: 1-17-86
DATE GROUTED: 1-17-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

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LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A09-AB04
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					0.6' concrete paving								
					Dark gray SANDY CLAY (CL) "FILL"								
2					Gray SANDY CLAY (CL) w/sand pockets @ 2'								
		01A	3			BDL	BDL	BDL	244	40		0	
4					-light gray @ 4'								
6													
8					Bottom @ 8'								
10													
12													

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SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA

DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
1-17-86	1354	Dry	

DATE STARTED: 1-17-86
DATE COMPLETED: 1-17-86
DATE GROUTED: 1-17-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A09-AB05
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					0.6' concrete paving								
					Dark gray SANDY CLAY (CL) "FILL" w/creosote odors								
2					Light gray very SANDY CLAY (CL) w/calcareous nodules								
4					-w/sand pockets and creosote odors below 4'								
		01A	5			BDL	BDL	BDL	287	BDL		1	
6					-w/calcareous nodules @ 6'								
8					Bottom @ 8'								
10													
12													

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA			
DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
1-18-86	0953	8	8

DATE STARTED: 1-18-86
DATE COMPLETED: 1-18-86
DATE GROUTED: 1-18-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

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LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A09-AB06
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					0.8' cement stabilized shell "FILL" w/diesel odors w/0.1' asphalt paving								
2					Dark gray SANDY CLAY (CL) "FILL" w/diesel odors -wet @ 1' -w/shell @ 2'								
4		01A	4		Dark gray and SANDY CLAY (CL) w/sand pockets and diesel odors	BDL	BDL	BDL	126	BDL		11	13
6					-light gray and tan @ 6'								
8					Bottom @ 8'								
10													
12													

002764

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA			
DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
1-24-86	1440	Dry	

DATE STARTED: 1-24-86
DATE COMPLETED: 1-24-86
DATE GROUTED: 1-24-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A09-AB07
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					1' concrete paving								
					Gray SAND (SP) "FILL" w/shells - wet								
2					Light gray and tan SANDY CLAY (CL)								
4		01A	4		-w/sand pockets and creosote odors @ 4'	BDL	BDL	BDL	190	BDL		1	0
6					-very sandy clay w/sand pockets @ 6'								
8					Bottom @ 8'								
10													
12													

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SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA

DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
1-24-86	1615	6.5	7.5

DATE STARTED: 1-24-86
DATE COMPLETED: 1-24-86
DATE GROUTED: 1-24-86
DRILLER: MRA
TECHNICIAN: P. Moore

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A09-AB08
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					1.5' cement stabilized shell "FILL" w/0.1' asphalt paving								
2					Brown SAND (SP) "FILL"								
4		01A	4		-gray @ 4'	164	BDL	BDL	BDL	BDL		0	0
					-wet @ 5'								
6					Bottom @ 6' (Boring terminated due to underground obstruction)								
8													
10													
12													

002766

SAMPLE IDENTIFICATION	WATER LEVEL DATA			
T - 3 in. THIN-WALLED TUBE	DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
S - 2 in. SPLIT-BARREL	1-25-86	1512	DRY	4.8
A - AUGER				

DATE STARTED: 1-25-86
DATE COMPLETED: 1-25-86
DATE GROUTED: 1-25-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A09-AB09
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					1.5' cement stabilized shell w/0.1' asphalt paving "FILL"								
					Dark gray SANDY CLAY (CL) "FILL"								
2					Gray SANDY CLAY (CL)								
4					-gray and tan w/sand pockets below 4'								
6		01A	6		-tan @ 6.5'	BDL	BDL	32	BDL	BDL		0	0
8					Bottom @ 8'								
10													
12													

SAMPLE IDENTIFICATION	WATER LEVEL DATA				
T - 3 in. THIN-WALLED TUBE	DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT	DATE STARTED: 1-27-86
S - 2 in. SPLIT-BARREL	1-27-86	1108	Dry	7.5	DATE COMPLETED: 1-27-86
A - AUGER					DATE GROUTED: 1-27-86
					DRILLER: MRA
					TECHNICIAN: P. Moore

McBride-Ratcliff and Associates

002767

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LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A10-AB01
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					0.6' concrete paving								
					Light brown SANDY CLAY (CL) w/sandy pockets								
2					-light brown and light gray								
4													
6													
8		01A	8		-wet @ 8'	BDL	BDL	BDL	106	BDL		0	0
10					Bottom @ 10'								
12													

002768

SAMPLE IDENTIFICATION
T - 3 in. THW-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA			
DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
1-15-86	1316	8	

DATE STARTED: 1-15-86
DATE COMPLETED: 1-15-86
DATE GROUTED: 1-15-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING

REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A10-AB02
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					0.6' concrete paving								
					Gray very CLAYEY SAND (SC) "FILL" w/creosote odors								
2					Light gray and tan SANDY CLAY (CL) -w/sand pockets								
4													
6		01A	6		w/calcareous nodules w/gasoline odor @ 6'	BDL	BDL	BDL	123	BDL		11	27
8					Bottom @ 8'								
10													
12													

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA			
DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
1-15-86	1438	Dry	

DATE STARTED: 1-15-86
DATE COMPLETED: 1-15-86
DATE GROUTED: 1-15-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

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LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUS''ON, TEXAS

FIGURE NO.

BORING NO.: SCK-A10-AB03
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					0.6' concrete paving								
					Dark gray SANDY CLAY (CL) "FILL"								
2		01A	3		Light gray SANDY CLAY (CL) w/sand pockets and ''.sote odors	BDL	BDL	27	195	BDL		16	
4													
6													
8					Bottom @ 8'								
10													
12													

002770

SAMPLE IDENTIFICATION	WATER LEVEL DATA				
T - 3 in. THIN-WALLED TUBE	DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT	DATE STARTED: 1-18-86
S - 2 in. SPLIT-BARREL	1-18-86	1028	Dry	7	DATE COMPLETED: 1-18-86
A - AUGER					DATE GROUTED: 1-18-86
					DRILLER: MRA
					TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A10-AB04
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					0.6' concrete paving								
					Gray very CLAYEY SAND (SC) "FILL"								
2					Light gray SANDY CLAY (CL)								
4					-light gray and tan slightly sandy @ 4'								
6		01A	6			BDL	BDL	39	BDL	BDL		0	
8					Bottom @ 8'								
10													
12													

002771

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA			
DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
1-18-86	1113	Dry	7.3

DATE STARTED: 1-18-86
DATE COMPLETED: 1-18-86
DATE GROUTED: 1-18-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A10-AB05
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					0.6' concrete paving								
					Dark gray very SANDY CLAY (CL) "FILL" w/creosote odors								
2					Light gray SANDY CLAY (CL) w/creosote odors								
4		01A	4		w/sand pockets	BDL	BDL	BDL	132	226		30	
6					-light gray and tan @ 8'								
8					Bottom @ 8'								
10													
12													

002772

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA			
DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
1-18-86	1157	Dry	8

DATE STARTED: 1-18-86
DATE COMPLETED: 1-18-86
DATE GROUTED: 1-18-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A10-AB06
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					0.6' concrete paving								
					Brown CLAYEY SILT (ML) w/creosote odors								
2					Gray SANDY CLAY (CL) w/creosote odors -w/sand pockets @ 2'								
4					-light gray and tan below 4'								
		01A	5			BDL	BDL	BDL	BDL	BDL		22	
6													
8					Bottom @ 8'								
10													
12													

002773

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA			
DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
1-18-86	1237	Dry	7.5

DATE STARTED: 1-18-86
DATE COMPLETED: 1-18-86
DATE GROUTED: 1-18-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A10-AB07
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					0.6' concrete paving								
					Light gray SANDY CLAY (CL) w/sand pockets								
2					-w/creosote odors below 2'								
4		01A	4		-light gray and tan below 4'	BDL	BDL	BDL	151	267		15	7
6													
8					Bottom @ 8'								
10													
12													

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA			
DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
1-20-86	0910	Dry	7.5

DATE STARTED: 1-20-86
DATE COMPLETED: 1-20-86
DATE GROUTED: 1-20-86
DRILLER: HRA
TECHNICIAN: P. Moore

002774

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A10-AB08
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					0.7' cement stabilized shell "FILL" w/0.2' asphalt paving								
					Gray SANDY CLAY (CL) w/creosote odors								
2					-light gray w/sand pockets below 2'								
4					-w/calcareous nodules @ 4'								
		01A	5			BDL	BDL	BDL	164	BDL		8	
6					-light gray and tan w/wet sand pockets @ 6'								
8					Bottom @ 8'								
10													
12													

002775

SAMPLE IDENTIFICATION	WATER LEVEL DATA				
T - 3 in. THIN-WALLED TUBE	DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT	DATE STARTED: 1-29-86
S - 2 in. SPLIT-BARREL	1-29-86	1414	7.8	7.8	DATE COMPLETED: 1-29-86
A - AUGER					DATE GROUTED: 1-29-86
					DRILLER: MRA
					TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A10-AB09
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					1.2' cement stabilized shell "FILL" w/0.1' asphalt paving								
					Brown CLAYEY SAND (SC) w/creosote odors								
2					Brown SANDY CLAY (CL) w/creosote odors								
4					-lig . gray and tan w/calcareous nodules and sand pockets @ 4'								
6					-w/ferrous and calcareous nodules and sand pockets @ 6'								
8	01A	8			Bottom @ 8'	BDL	BDL	BDL	BDL	BDL		13	

002776

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA			
DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
1-29-86	1450	Dry	7.3

DATE STARTED: 1-29-86
DATE COMPLETED: 1-29-86
DATE GROUTED: 1-29-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A11-AB01
PROJECT NO.: 85-317
CLIENT: Koppers company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					0.6' cement stabilized shell "FILL" w/0.1' asphalt paving								
					Brown very CLAYEY SAND (SC) "FILL" w/gravel and creosote odors								
2					Light brown and light gray SANDY CLAY (CL) w/calcareous nodules and creosote odors								
4					-gray and light brown @ 4'								
6		01A	6		-w/sand pockets @ 6'	BDL	BDL	BDL	BDL	2680		12	13
8					Bottom @ 8'								
10													
12													

002777

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA

DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
1-23-86	1020	Dry	7.6

DATE STARTED: 1-23-86
DATE COMPLETED: 1-23-86
DATE GROUTED: 1-23-86
DRILLER: MRA
TECHNICIAN: F. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A11-AB02
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					0.9' cement stabilized shell "FILL" w/0.1' asphalt paving								
					Dark gray very SANDY CLAY (CL) "FILL" w/gravel, wood, solidified tar, and creosote odors								
2		01A	2		Light brown SILTY CLAY (CL) w/creosote odors	BDL	BDL	BDL	BDL	4122		9	12
4													
6					-sandy clay @ 6'								
8					Bottom @ 8'								
10													
12													

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA

DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
1-23-86	1056	Dry	

DATE STARTED: 1-23-86
DATE COMPLETED: 1-23-86
DATE GROUTED: 1-23-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

002778

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A11-AB03
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					0.8' cement stabilized shell "FILL" w/0.1 asphalt paving								
2					Gray SANDY CLAY (CL) "FILL" w/creosote odors -w/shell, and diesel odors @ 1' -w/shell @ 2'								
4		01A	4			BDL	BDL	53	BDL	2442		9	1
6					Gray SANDY CLAY (CL) w/sand pockets -light gray and tan @ 6'								
8					Bottom @ 8'								
10													
12													

SAMPLE IDENTIFICATION	WATER LEVEL DATA				
T - 3 in. THIN-WALLED TUBE	DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT	DATE STARTED: 1-28-86
S - 2 in. SPLIT-BARREL	1-28-86	1040	Dry	7.6	DATE COMPLETED: 1-28-86
A - AUGER					DATE GROUTED: 1-28-86
					DRILLER: MRA
					TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

002779

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A11-AB04
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Cement stabilized shell "FILL" w/0.1' asphalt paving								
					Bottom @ 1' (Borehole terminated due to underground obstruction)								
2													
4													
6													
8													
10													
12													

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA			
DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT

DATE STARTED: 1-23-86
DATE COMPLETED: 1-23-86
DATE GROUTED: 1-23-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

002780

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A11-AB05
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Light brown very SANDY CLAY (CL) "FILL" w/roots								
2					Dark gray SANDY CLAY (CL) "FILL" w/gravel, solidified tar, and creosote odors								
		01A	3			118	166	81	BDL	1274		2	1
					Bottom @ 3'								
4					(Boring terminated due to underground obstruction)								
6													
8													
10													
12													

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA			
DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
1-23-86	1330	Dry	3

DATE STARTED: 1-23-86
DATE COMPLETED: 1-23-86
DATE GROUTED: 1-23-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

002781

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A11-AB06
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
	FILL				Brown and gray SANDY CLAY (CL) "FILL" w/roots, and gravel - wet								
2					Bottom @ 2' (Boring teminated due to underground obstruction)								
4													
6													
8													
10													
12													

SAMPLE IDENTIFICATION	WATER LEVEL DATA			
T - 3 in. THIN-WALLED TUBE	DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
S - 2 in. SPLIT-BARREL				
A - AUGER				

DATE STARTED: 1-23-86
DATE COMPLETED: 1-23-86
DATE GROUTED: 1-23-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

002782

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A11-AB07
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Brown and gray SANDY CLAY (CL) "FILL"								
2					Light gray SANDY CLAY (CL)								
4					-light gray and tan below 4'								
6		01A	6			BDL	BDL	BDL	BDL	BDL		0	0
8					Bottom @ 8'								
10													
12													

002783

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA			
DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
1-23-86	1523	Dry	7.5

DATE STARTED: 1-23-86
DATE COMPLETED: 1-23-86
DATE GROUTED: 1-23-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A11-AB08
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Grayish brown SANDY CLAY (CL) "FILL" w/gravel								
2		01A	2.5		-black w/shell, solidified, and creosote odors @ 2'	BDL	BDL	BDL	BDL	2918		7	8
4					Light brown slightly CLAYEY SAND (SC) "FILL" w/creosote odors								
6													
8					Bottom @ 8'								
10													
12													

002784

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA

DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
1-23-86	1600	Dry	7.5

DATE STARTED: 1-23-86
DATE COMPLETED: 1-23-86
DATE GROUTED: 1-23-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A11-AB09
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Gray SANDY CLAY (CL) "FILL" w/roots and gravel								
2					-black w/creosote odors below 2.5'								
4					Light brown SILTY SAND (SM) "FILL" w/creosote odors								
		01A	5			BDL	BDL	BDL	BDL	4048		8	11
6													
8					Bottom @ 8'								
10													
12													

SAMPLE IDENTIFICATION	WATER LEVEL DATA				
T - 3 in. THIN-WALLED TUBE	DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT	DATE STARTED: 1-24-86
S - 2 in. SPLIT-BARREL	1-24-86	1015	Dry	7.5	DATE COMPLETED: 1-24-86
A - AUGER					DATE GROUTED: 1-24-86
					DRILLER: MRA
					TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

002785

LOG OF SOIL BORING

REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A11-AB10
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Cement stabilized shell "FILL" w/0.1' asphalt paving								
					Gray SANDY CLAY (CL) "FILL" w/shells and creosote odors								
					Light gray SANDY CLAY (CL) w/creosote odors								
4					-w/sand pockets below 4'								
6		01A	6		-light gray and tan @ 6'	BDL	BDL	BDL	106	435		11	1
8					Bottom @ 8'								
10													
12													

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA			
DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
1-28-86	1135	Dry	8

DATE STARTED: 1-28-86
DATE COMPLETED: 1-28-86
DATE GROUTED: 1-28-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

002786

002786

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A11-AB11
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM LAB	HEADSPACE READING, PPM FIELD
					Cement stabilized shell "FILL" w/0.1' asphalt paving								
					Gray and light gray CLAYEY SAND (SC) "FILL"								
2					Light gray very SANDY CLAY (CL) w/sand pockets -w/creosote odors to 4'								
4					-light gray and tan below @ 4'								
6													
8		01A	8			BDL	BDL	BDL	BDL	BDL		1	0
					Bottom @ 8'								
10													
12													

SURROGATE ANALYSES — METALS, PPM

002787

SAMPLE IDENTIFICATION

T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA

DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
1-28-86	1219	Dry	7.8
1-28-86	1228	7.7	7.8

DATE STARTED: 1-28-86
DATE COMPLETED: 1-28-86
DATE GROUTED: 1-28-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A11-AB12
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Cement stabilized shell "FILL w/0.1' asphalt paving								
					Dark gray SANDY CLAY (CL) "FILL" w/creosote odors								
2					Light gray SANDY CLAY (CL) w/creosote odors								
4					-w/calcareous nodules below 4'								
		01A	5			BDL	BDL	BDL	BDL	252		17	15
6					-light gray and tan @ 6'								
8					Bottom @ 8'								
10													
12													

002788

SAMPLE IDENTIFICATION

T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA

DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
1-28-86	1536	Dry	7.5

DATE STARTED: 1-28-86
DATE COMPLETED: 1-28-86
DATE GROUTED: 1-28-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A11-AB13
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Cement stabilized shell "FILL" w/0.1' asphalt paving								
					Dark gray SANDY CLAY (CL) "FILL" w/creosote odors								
2					Gray SANDY CLAY (CL) w/sand pockets and creosote odors -w/calcareous nodules @ 2'								
4					-light gray and tan w/calcareous nodules and wet sand pockets @ 4'								
		01A	5			BDL	BDL	BDL	118	BDL		25	7
6													
8					Bottom @ 8'								
10													
12													

SAMPLE IDENTIFICATION	WATER LEVEL DATA				
T - 3 in. THIN-WALLED TUBE	DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT	DATE STARTED: 1-28-86
S - 2 in. SPLIT-BARREL	1-28-86	1616	Dry	8	DATE COMPLETED: 1-28-86
A - AUGER					DATE GROUTED: 1-28-86
					DRILLER: MRA
					TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

002789

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A11-AB14
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Cement stabilized shell "FILL" w/0.1' asphalt paving								
2					Light brown CLAYEY SAND (SC) "FILL" w/creosote odors -brown @ 2'								
4		01A	4		Gray SANDY CLAY (CL) w/sand pockets and creosote odors -gray and tan w/calcareous nodules @ 4'	BDL	BDL	BDL	BDL	3230		9	5
6					-tan and light gray w/wet sand pockets @ 5' -w/calcareous nodules @ 6'								
8					Bottom @ 8'								
10													
12													

002790

SAMPLE IDENTIFICATION	WATER LEVEL DATA				
T - 3 in. THIN-WALLED TUBE	DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT	DATE STARTED: 1-28-86
S - 2 in. SPLIT-BARREL	1-28-86	1654	Dry	7.5	DATE COMPLETED: 1-28-86
A - AUGER					DATE GROUTED: 1-28-86
					DRILLER: MRA
					TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A12-AB01
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Cement stabilized shell "FILL" w/0.1' asphalt paving								
					Dark brown SANDY CLAY (CL) "FILL" w/shells and creosote odors								
2		01A	2.5		Reddish brown very SANDY CLAY (CL) "FILL" w/creosote odors	BDL	BDL	BDL	145	298		16	19
					Bottom @ 2.5' (Borehole terminated due to underground obstruction)								
4													
6													
8													
10													
12													

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA

DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
1-28-86	1320	Dry	2.5

DATE STARTED: 1-28-86
DATE COMPLETED: 1-28-86
DATE GROUTED: 1-28-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

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LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A12-AB02
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Cement stabilized shell "FILL" w/0.1' asphalt paving								
					Brownish gray SANDY CLAY (CL) "FILL" w/shell and creosote odors								
2		01A	2.5		Light brown SILTY SAND (SM) "FILL" w/creosote odors	BDL	BDL	BDL	226	223		19	20
					Bottom @ 2.5' (Borehole terminated due to underground obstruction)								
4													
6													
8													
10													
12													

002792

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA			
DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
1-28-86	1407	Dry	2

DATE STARTED: 1-28-86
DATE COMPLETED: 1-28-86
DATE GROUTED: 1-28-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A12-AB03
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Cement stabilized shell "FILL"								
					Gray and tan SANDY CLAY (CL) "FILL" w/creosote odors								
2					Light brown SILTY SAND (SM) "FILL" w/creosote odors								
		01A	3			BDL	BDL	BDL	236	228		19	14
					Bottom @ 3' (Borehole terminated due to underground obstruction)								
4													
6													
8													
10													
12													

002793

SAMPLE IDENTIFICATION	WATER LEVEL DATA				
T - 3 in. THIN-WALLED TUBE	DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT	DATE STARTED: 1-28-86
S - 2 in. SPLIT-BARREL	1-28-86	1448	Dry	3	DATE COMPLETED: 1-28-86
A - AUGER					DATE GROUTED: 1-28-86
					DRILLER: MRA
					TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A13-AB01
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Gray and tan SANDY CLAY (CL) "FILL"								
2					-wet, dark gray and black w/oily residue and creosote odors below 2'								
4		01A	4			497	208	420	1131	5213		17	18
					Black SILT (ML) w/oily residue and creosote odors, wet								
6		02A	6			BDL	91	436	BDL	15856		30	32
					Bottom @ 6'								
					(Borehole terminated due to underground obstruction)								
8													
10													
12													

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA

DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
1-24-86	1100	4.8	

DATE STARTED: 1-24-86
DATE COMPLETED: 1-24-86
DATE GROUTED: 1-24-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

002794

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A13-AB02
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Brown SANDY CLAY (CL) "FILL"								
					-w/creosote odors below 1'								
2					-gray and brown-wet below 2'								
4					-brown w/plant debris								
		01A	5		-w/oily residue @ 5'	BDL	BDL	BDL	BDL	2482		19	13
6					-black w/oily appearance @ 6'								
					Tan and light gray very SANDY CLAY (CL) w/sand pockets and creosote odors								
8					Bottom @ 8'								
10													
12													

002795

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA			
DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
1-24-86	1150	4.2	

DATE STARTED: 1-24-86
DATE COMPLETED: 1-24-86
DATE GROUTED: 1-24-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A13-AB03
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Light brown SANDY CLAY (CL) "FILL" w/shells								
2					~light grown and light gray @ 2'								
					Light brown and light gray SANDY CLAY (CL) w/sand pockets								
4		01A	5			BDL	BDL	BDL	BDL	BDL		1	0
6													
8					Bottom @ 8'								
10													
12													

SAMPLE IDENTIFICATION	WATER LEVEL DATA				
T - 3 in. THIN-WALLED TUBE	DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT	DATE STARTED: 1-24-86
S - 2 in. SPLIT-BARREL	1-24-86	1355	Dry	8	DATE COMPLETED: 1-24-86
A - AUGER					DATE GROUTED: 1-24-86
					DRILLER: MRA
					TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

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LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A13-A804
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Concrete paving								
					Gray SAND (SP) "FILL" w/shell and creosote odors								
2					Light gray and tan SANDY CLAY (CL) "FILL" w/creosote odors								
4		01A	5		Light gray SILTY SAND (SM) "FILL" w/clay pockets	93	BDL	BDL	245	70		1	0
6					-gray @ 6'								
8					Bottom @ 8'								
10													
12													

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA			
DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
1-25-86	1157	Dry	7.8

DATE STARTED: 1-25-86
DATE COMPLETED: 1-25-86
DATE GROUTED: 1-25-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

002797

LOG OF SOIL BORING

REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A13-AB05
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Cement stabilized shell "FILL" w/0.1' asphalt paving								
					Brownish gray SANDY CLAY (CL)								
2					-gray and tan below 2'								
4					-w/sand pockets below 4'								
6													
8		01A	8		-w/creosote odors @ 8'	BDL	BDL	BDL	BDL	BDL		3	3
					Bottom @ 8'								
10													
12													

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA			
DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
1-23-86	1135	Dry	8

DATE STARTED: 1-23-86
DATE COMPLETED: 1-23-86
DATE GROUTED: 1-23-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

002798

LOG OF SOIL BORING

REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A13-AB06
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Concrete paving								
					Gray CLAYEY SAND (SC) "FILL" w/creosote odors								
2					Brownish gray SANDY CLAY (CL) w/creosote odors								
4					-brownish gray and light gray @ 4'								
		01A	5			BDL.	BDL.	BDL.	136	BDL		16	10
6					-tan and light gray @ 6'								
8					Bottom @ 8'								
10													
12													

002799

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA			
DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
1-27-86	1615	Dry	7.5

DATE STARTED: 1-27-86
DATE COMPLETED: 1-27-86
DATE GROUTED: 1-27-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A13-AB07
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Concrete paving								
					Brownish gray CLAYEY SAND (SC) "FILL" w/creosote odors								
2					Brownish gray SANDY CLAY (CL) w/creosote odors								
4					-light brown below 4'								
6													
8		01A	8			BDL	BDL	BDL	155	BDL		22	16
					Bottom @ 8'								
10													
12													

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA			
DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
1-27-86	1630	Dry	7.6

DATE STARTED: 1-27-86
DATE COMPLETED: 1-27-86
DATE GROUTED: 1-27-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

002800

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A14-AB01
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Cement stabilized shell "FILL" w/0.1' asphalt paving								
					Light gray SANDY CLAY (CL) w/sand pockets and creosote odors								
2					-light brown @ 2'								
4													
6		01A	6		-tan and light gray @ 6' w/calcareous nodules	BDL	BDL	BDL	BDL	BDL		36	
8													
10					-very sandy @ 10'								
					Tan and light gray CLAYEY SAND (SC) w/creosote odors and brown oily residue wet @ 11'								
12		02A	12		Bottom @ 12'	BDL	BDL	BDL	BDL	154		36	

002801

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA

DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
1-29-86	1122	9.6	11.5

DATE STARTED: 1-29-86
DATE COMPLETED: 1-29-86
DATE GROUTED: 1-29-86
DRILLER: NRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A14-AB02
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Cement stabilized shell "FILL" w/0.1' asphalt paving								
					Light gray SANDY CLAY (CL) w/calcareous nodules								
2													
4		01A	4		-light gray and tan w/sand pockets and creosote odor below 4'	BDL	BDL	BDL	130	BDL		0	
6													
8													
10		02A	10		-very sandy @ 10'	BDL	BDL	BDL	BDL	BDL		21	
					Light gray, tan and gray CLAYEY SAND (SC) w/creosote odors, wet @ 11'								
12		03A	12		Bottom @ 12'	BDL	BDL	BDL	106	BDL		24	

002802

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA

DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
1-29-86	1228	11.0	11.7

DATE STARTED: 1-29-86
DATE COMPLETED: 1-29-86
DATE GROUTED: 1-29-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A14-AB03
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Cement stabilized shell "FILL" w/0.1' asphalt paving								
2					Brown SANDY CLAY (CL) w/sand pockets -light gray and tan below 2'								
4													
6													
8		01A	8			BDL	BDL	BDL	BDL	BDL		2	
10													
12		02A	12		Light gray very SILTY SAND (SM) w/clay pockets, and creosote odors, wet @ 11'	BDL	BDL	BDL	207	BDL		16	
					Bottom @ 12'								

002803

SAMPLE IDENTIFICATION	WATER LEVEL DATA				
T - 3 in. THIN-WALLED TUBE	DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT	DATE STARTED: 1-29-86
S - 2 in. SPLIT-BARREL	1-29-86	1333	11.3	11.7	DATE COMPLETED: 1-29-86
A - AUGER					DATE GROUTED: 1-29-86
					DRILLER: MRA
					TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A15-AB01
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Cement stabilized shell "FILL" w/0.1' asphalt paving								
					Dark gray SAND (SP) "FILL" w/shell fragments & diesel odors								
2					Dark gray SANDY CLAY (CL) w/sand pockets & diesel odors								
4					-light gray & tan below 4'								
6													
8		C1A	8			BDL	BDL	BDL	192	BDL		10	3
					Bottom @ 8'								
10													
12													

002804

SAMPLE IDENTIFICATION	WATER LEVEL DATA				
T - 3 in. THIN-WALLED TUBE	DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT	DATE STARTED: 1-24-86
S - 2 in. SPLIT-BARREL	1-24-86	1532	Dry	8	DATE COMPLETED: 1-24-86
A - AUGER					DATE GROUTED: 1-24-86
					DRILLER: MRA
					TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A15-AB02
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Cement stabilized shell "FILL" w/0.1' asphalt paving								
					Dark gray SANDY CLAY (CL) "FILL" w/creosote odors								
2					Gray SANDY CLAY (CL) w/creosote odors								
4		01A	4		-light gray w/sand pockets @ 4'	BDL	BDL	BDL	240	BDL		10	7
6					-light gray & tan w/sand pockets @ 6'								
8					Bottom @ 8'								
10													
12													

002805

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA

DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
1-25-86	1153	Dry	8

DATE STARTED: 1-25-86
DATE COMPLETED: 1-25-86
DATE GROUTED: 1-25-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A15-AB03
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Cement stabilized shell "FILL"								
					Gray SANDY CLAY (CL) "FILL" w/shell fragments & creosote odors								
2													
					Grayish brown SANDY CLAY (CL) w/creosote odors								
4													
		OiA	5			BDL	BDL	BDL	149	BDL		10	4
6					-gray & tan w/sand pockets @ 6'								
8													
					Bottom @ 8'								
10													
12													

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA

DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
1-25-86	1423	Dry	7.3

DATE STARTED: 1-25-86
DATE COMPLETED: 1-25-86
DATE GROUTED: 1-25-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

002806

002806

LOG OF SOIL BORING

REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A16-AB01
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Cement stabilized shell "FILL" w/0.1' asphalt paving								
2					Dark gray SANDY CLAY (CL) "FILL"								
4					Light gray & tan SANDY CLAY (CL) w/sand pockets								
6		01A	6		-creosote odor @ 6'	BDL	BDL	BDL	114	BDL		0	0
8					Bottom @ 8'								
10													
12													

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA

DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
1-25-86	1247	Dry	7.5

DATE STARTED: 1-25-86
DATE COMPLETED: 1-25-86
DATE GROUTED: 1-25-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

002807

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A16-AB02
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Cement stabilized shell "FILL" w/0.1' asphalt paving								
2					Dark brown & gray SANDY CLAY (CL) "FILL" w/shells & creosote odors -brownish gray w/plant debris @ 2'								
4		01A	4			BDL	BDL	BDL	208	BDL		9	3
					Brownish gray SANDY CLAY (CL) w/creosote odors								
6					-gray & tan w/sand pockets @ 6'								
8					Bottom @ 8'								
10													
12													

002808

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA

DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
1-25-86	1336	Dry	7.5

DATE STARTED: 1-25-86
DATE COMPLETED: 1-25-86
DATE GROUTED: 1-25-86
DRILLER: HRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A17-A301
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Cement stabilized shell "FILL" w/0.1' asphalt paving								
					Dark gray SANDY CLAY (CL) "FILL"								
2					Gray SANDY CLAY (CL) w/sand pockets								
4					-light gray & tan below 4'								
6		01A	6			BDL	BDL	BDL	133	BDL		0	0
8					Bottom @ 8'								
10													
12													

002809

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA			
DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
1-27-86	1420	Dry	7.5
1-27-86	1431	7.2	

DATE STARTED: 1-27-86
DATE COMPLETED: 1-27-86
DATE GROUTED: 1-27-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING

REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A17-AB02
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Cement stabilized shell "FILL" w/0.1' asphalt paving								
2					Gray SANDY CLAY (CL) "FILL" -w/creosote odors @ 2'								
4		CA	5		Gray SANDY CLAY (CL) -w/creosote odors to 5' -light gray w/sand pockets @ 4'	BDL	BDL	BDL	BDL	942		1	1
6					-tan & light gray w/sand pockets @ 6'								
8					Bottom @ 8'								
10													
12													

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA			
DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
1-27-86	1529	7.6	7.8

DATE STARTED: 1-27-86
DATE COMPLETED: 1-27-86
DATE GROUTED: 1-27-86
DRILLER: MRA
TECHNICIAN: P.Moore

McBride-Ratcliff and Associates, Inc.

002810

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A18-AB01
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Cement stabilized shell "FILL" w/0.1' asphalt paving								
2					Brown CLAYEY SAND (SC) "FILL"								
4					Gray SANDY CLAY (CL) -light gray & tan w/sand pockets @ 4'								
6		01A	7			BDL	BDL	BDL	BDL	BDL		0	0
8					Bottom @ 8'								
10													
12													

002811

SAMPLE IDENTIFICATION	WATER LEVEL DATA				
T - 3 in. THIN-WALLED TUBE	DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT	DATE STARTED: 1-27-86
S - 2 in. SPLIT-BARREL	1-27-86	1344	Dry	7.6	DATE COMPLETED: 1-27-86
A - AUGER					DATE GROUTED: 1-27-86
					DRILLER: MRA
					TECHNICIAN: Paul Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING

REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A19-AB01
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Cement stabilized shell "FILL" w/0.1' asphalt paving								
					Grayish brown CLAYEY SAND (SC) "FILL"								
2					Gray & tan SANDY CLAY (CL)								
4					-light gray & tan w/sand pockets @ 6' -wet								
6		01A	6			BDL	BDL	BDL	152	BDL		0	0
8													
					Bottom @ 8'								
10													
12													

002812

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA			
DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
1-27-86	1148	5	7.5

DATE STARTED: 1-27-86
DATE COMPLETED: 1-27-86
DATE GROUTED: 1-27-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING

REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A19-AB02
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Cement stabilized shell "FILL" w/0.1' asphalt paving								
2					Gray CLAYEY SAND (SC) "FILL" w/shell								
					Gray SANDY CLAY (CL)								
4		01A	4		-light gray and tan @ 4'	BDL	BDL	BDL	153	BDL		0	0
6					-w/sand pockets @ 6'								
					-wet @ 7'								
8					Bottom @ 8'								
10													
12													

SAMPLE IDENTIFICATION	WATER LEVEL DATA				
T - 3 in. THIN-WALLED TUBE	DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT	DATE STARTED: 1-27-86
S - 2 in. SPLIT-BARREL	1-27-86	1228	7.5	7.8	DATE COMPLETED: 1-27-86
A - AUGER					DATE GROUTED: 1-27-86
					DRILLER: MRA
					TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

002813

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LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A20-AB01
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT	STRATIGRAPHY	SAMPLES	PENETRATION RESISTANCE (N)	UNDRAINED SHEAR STRENGTH (KSF)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Light gray CLAYEY SAND (SC) "FILL" w/shell fragments								
					Gray SANDY CLAY (CL)								
2		01A	2			113	BDL	BDL	173	BDL		0	0
4		02A	4			BDL	BDL	BDL	267	BDL		0	0
					Bottom @ 4'								
6													
8													
10													
12													

002814

SAMPLE IDENTIFICATION

T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA

DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
1-21-86	950	Dry	4

DATE STARTED: 1-21-86
DATE COMPLETED: 1-21-86
DATE GROUTED:
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A21-AB01
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Gray SANDY CLAY (CL) "FILL"								
2		01A	2			BDL	BDL	BDL	197	BDL		0	0
4		02A	4			BDL	BDL	25	184	BDL		0	0
					Bottom @ 4'								
6													
8													
10													
12													

002815

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA

DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
1-21-86	1003	Dry	4

DATE STARTED: 1-21-86
DATE COMPLETED: 1-21-86
DATE GROUTED:
DRILLER: MKA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A22-AB01
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Brown SILTY SAND (SM) "FILL"								
		01A	1		Brown CLAYEY SAND (SC)	BDL	BDL	BDL	183	BDL		0	
2					Gray SANDY CLAY (CL)								
4		02A	4			BDL	BDL	BDL	241	184		0	
					Bottom @ 4'								
6													
8													
10													
12													

002816

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA			
DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
1-29-86	1620	Dry	3.8

DATE STARTED: 1-29-86
DATE COMPLETED: 1-29-86
DATE GROUTED:
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A23-AB01
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Brown SANDY CLAY (CL) "FILL"								
		01A	1		Gray SANDY CLAY (CL)	BDL	BDL	BDL	170	BDL		0	
2													
4		02A	4			BDL	BDL	BDL	BDL	BDL		0	
					Bottom @ 4'								
6													
8													
10													
12													

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA

DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
1-29-86	1640	Dry	4

DATE STARTED: 1-29-86
DATE COMPLETED: 1-29-86
DATE GROUTED:
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

002817

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LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A24-AB01
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Gray CLAYEY SAND (SC) and SANDY CLAY (CL) w/shell fragments "FILL"								
2					-wet @ 2'								
					Gray SANDY CLAY (CL) w/sand pockets								
4					-light gray & tan w/sand interbeds @ 4'								
6													
8		01A	7.5			BDL	BDL	BDL	BDL	BDL		0	0
					Bottom @ 8'								
10													
12													

002818

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA

DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
2-7-86	1257	3.4	7.5

DATE STARTED: 2-7-86
DATE COMPLETED: 2-7-86
DATE GROUTED: 2-7-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A24-AB02
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Gray & light gray SANDY CLAY (CL) "FILL" w/shell fragments								
2					Gray SANDY CLAY (CL) w/sand pockets								
4		01A	5			BDL	BDL	BDL	164	BDL		0	0
6					-light gray & tan w/wet sand pockets @ 6'								
8					Bottom @ 8'								
10													
12													

002819

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA			
DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
2-7-86	1343	7.5	7.7

DATE STARTED: 2-7-86
DATE COMPLETED: 2-7-86
DATE GROUTED: 2-7-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A24-AB03
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Gray & light gray SANDY CLAY (CL) "FILL" & SILTY SAND (SM) w/shell fragments								
2					Light gray & tan SANDY CLAY (CL) w/sand pockets								
4					-w/wet sand pockets @ 4'								
6					-w/sand interbeds @ 6'								
8													
10					Light gray & tan very CLAYEY SAND (SC) wet								
12		01A	12		Bottom @ 12'	BDL	BDL	BDL	BDL	BDL		0	0

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA

DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
2-7-86	1438	3.9	9.5

DATE STARTED: 2-7-86
DATE COMPLETED: 2-7-86
DATE GROUTED: 2-7-86
DRILLER: MRA
TECHNICIAN: P.Moore

McBride Ratcliff and Associates

002820

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LOG OF SOIL BORING

REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A24-AB04
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Gray SANDY CLAY (CL) "FILL" w/rubble								
2													
					light gray SANDY CLAY (CL)								
4					-w/sand pockets @ 4'								
					-wet @ 5.5'								
6		01A	6		-light gray & tan w/sand pockets @ 6'	BDL	BDL	BDL	242	BDL		0	0
8					Bottom @ 8'								
10													
12													

SAMPLE IDENTIFICATION	WATER LEVEL DATA			
T - 3 in. THIN-WALLED TUBE	DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
S - 2 in. SPLIT-BARREL	2-11-86	0919	5.5	7.5
A - AUGER				

DATE STARTED: 2-11-86
DATE COMPLETED: 2-11-86
DATE GROUTED: 2-11-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

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LOG OF SOIL BORING

REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A24-AB05
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Brownish gray SANDY CLAY (CL) "FILL" w/rubble								
					Light gray shell "FILL" wet								
2					Light gray SANDY CLAY (CL)								
4					-light gray & tan w/sand pockets @ 4'								
					-very sandy & wet @ 5'								
6					-tan & light gray below 6'								
8					-w/calcareous nodules @ 8'								
10					-very sandy w/calcareous nodules @ 10'								
					Light gray & tan SILTY SAND (SM) w/clay pockets - wet								
12		01A	12			BDL	295	BDL	159	BDL		0	0
					Bottom @ 12'								

002822

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA			
DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
2-11-86	1023	0.2	8

DATE STARTED: 2-11-86
DATE COMPLETED: 2-11-86
DATE GROUTED: 2-11-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A25-AB01
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Cement stabilized shell "FILL" w/0.2' asphalt paving								
					Brown very SILTY SAND (SM) "FILL"								
2					Light gray SANDY CLAY (CL)								
4					-w/sand pockets below 4'								
		01A	5			BDL	BDL	BDL	144	BDL		200+	0
6					-w/wet sand pockets @ 6'								
8					Bottom @ 8'								
10													
12													

002823

SAMPLE IDENTIFICATION	WATER LEVEL DATA				
T - 3 in. THIN-WALLED TUBE	DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT	DATE STARTED: 2-3-86
S - 2 in. SPLIT-BARREL	2-3-86	1516	7.2	7.3	DATE COMPLETED: 2-3-86
A - AUGER					DATE GROUTED: 2-3-86
					DRILLER: MRA
					TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A25-AB02
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Cement stabilized shell "FILL" w/0.2' asphalt paving								
					Dark gray CLAYEY SAND (SC) "FILL"								
2					Light gray SANDY CLAY (CL) w/sand pockets								
4					-w/wet sand pockets @ 4'								
6													
8		01A	8			BDL	BDL	BDL	153	BDL		200+	1
					Bottom @ 8'								
10													
12													

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA			
DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
2-3-86	1550	7.4	7.5

DATE STARTED: 2-3-86
DATE COMPLETED: 2-3-86
DATE GROUTED: 2-3-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

002824

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A25-AB03
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Cement stabilized shell "FILL" w/0.2' asphalt paving								
					Dark gray SANDY CLAY (CL) "FILL"								
2					Light gray SANDY CLAY (CL)								
4					-w/sand pockets below 4'								
6		01A	7			BDL	BDL	BDL	BDL	BDL		200+	0
8					Bottom @ 8'								
10													
12													

002825

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA

DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
2-4-86	1144	7.0	7.2

DATE STARTED: 2-4-86
DATE COMPLETED: 2-4-86
DATE GROUTED: 2-4-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A26-AB01
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
2					Gray SANDY CLAY (CL) "FILL" w/rubble								
4					Gray SANDY CLAY (CL) -tan & light gray w/sand pockets @ 4'								
		01A	5			BDL	BDL	BDL	116	BDL		0	0
6													
8					Bottom @ 8'								
10													
12													

002826

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA			
DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
2-11-86	1117	6.7	7.5

DATE STARTED: 2-11-86
DATE COMPLETED: 2-11-86
DATE GROUTED: 2-11-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A26-AB02
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Gray SANDY CLAY (CL) "FILL" w/shell fragments								
					Gray SANDY CLAY (CL)								
2					-w/sand pockets below 2'								
4													
6					-light gray & tan below 6'								
8													
10					-w/diesel odors @ 10'								
12					-brown oily residue @ 12'								
		01A	13		Light gray SILTY SAND (SM) wet w/diesel odors	116	BDL	BDL	BDL	42		2	0
					Bottom @ 14'								

002827

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA			
DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
2-11-86	1240	0.4	10

DATE STARTED: 2-11-86
DATE COMPLETED: 2-11-86
DATE GROUTED: 2-11-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A26-AB03
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Gray SANDY CLAY (CL) "FILL" w/rubble								
2					Gray SANDY CLAY (CL)								
4					-light gray & tan, w/sand pockets & calcareous nodules @ 4'								
		01A	5			BDL	BDL	BDL	BDL	BDL		0	0
6					-w/wet sand pockets @ 6'								
8					Bottom @ 8'								
10													
12													

002828

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA			
DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
2-11-86	1337	Dry	7.6

DATE STARTED: 2-11-86
DATE COMPLETED: 2-11-86
DATE GROUTED: 2-11-86
DRILLER: MRA
TECHNICIAN: P. Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A26-AB04
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Gray SANDY CLAY (CL) "FILL"								
2					Gray, brown, & tan SANDY CLAY (CL) -w/sand pockets below 2'								
4					-w/ferrous nodules @ 4'								
6					-very sandy w/wet sand pockets below 6'								
8													
10		01A	10		Light gray CLAYEY SAND (SC) -wet	BDL	BDL	BDL	BDL	BDL		0	0
12					Tan SILTY SAND (SM) -wet w/clay interbeds								
					Bottom @ 12'								

002829

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA			
DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
2-11-86	1437	2.9	9.2

DATE STARTED: 2-11-86
DATE COMPLETED: 2-11-86
DATE GROUTED: 2-11-86
DRILLER: MRA
TECHNICIAN: P.Moore

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A27-AB01
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Brown SANDY CLAY (CL)								
2		01A	2			BDL	BDL	BDL	310	BDL		0	
4		02A	4		-light gray & tan @ 4'	BDL	BDL	BDL	110	BDL		0	
					Bottom @ 4'								
6													
8													
10													
12													

002830

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA

DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
2-14-86	1013	Dry	3.8

DATE STARTED: 2-14-86
DATE COMPLETED: 2-14-86
DATE GROUTED:
DRILLER: MRA
TECHNICIAN: G. Hassett

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A28-AB01
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Brown SANDY CLAY (CL)								
2		01A	2			BDL	BDL	BDL	215	BDL		0	
4		02A	4		-brown & tan @ 4'	BDL	BDL	BDL	186	BDL		0	
					Bottom @ 4'								
6													
8													
10													
12													

002831

SAMPLE IDENTIFICATION	WATER LEVEL DATA				
T - 3 in. THIN-WALLED TUBE	DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT	DATE STARTED: 2-14-86
S - 2 in. SPLIT-BARREL	2-14-86	1047	Dry	4.0	DATE COMPLETED: 2-14-86
A - AUGER					DATE GROUTED:
					DRILLER: MRA
					TECHNICIAN: G. Hassett

McBride-Ratcliff and Associates, Inc.

LOG OF SOIL BORING
REMEDIAL INVESTIGATION
SOUTH CAVALCADE SITE
HOUSTON, TEXAS

FIGURE NO.

BORING NO.: SCK-A28-AB02
PROJECT NO.: 85-317
CLIENT: Koppers Company, Inc.
LOCATION:
GROUND ELEVATION:

DEPTH, FT.	STRATIGRAPHY	SAMPLES	SAMPLE DEPTH	SPLIT (S) DUPLICATE (D)	SOIL CLASSIFICATION	SURROGATE ANALYSES: METALS, PPM: ARSENIC (As)	CHROMIUM (Cr)	COPPER (Cu)	LEAD (Pb)	ZINC (Zn)	TOTAL AROMATIC HYDROCARBONS, PPM	HEADSPACE READING, PPM: LAB	FIELD
					Brown SANDY CLAY (CL)								
2		01A	2			BDL	BDL	BDL	320	BDL		0	
4		02A	4		-brown & tan @ 4'	BDL	BDL	BDL	293	BDL		0	
					Bottom @ 4'								
6													
8													
10													
12													

SAMPLE IDENTIFICATION
T - 3 in. THIN-WALLED TUBE
S - 2 in. SPLIT-BARREL
A - AUGER

WATER LEVEL DATA			
DATE	TIME	WATER DEPTH, FT	CAVED DEPTH, FT
2-14-86	1106	Dry	4.1

DATE STARTED: 2-14-86
DATE COMPLETED: 2-14-86
DATE GROUTED:
DRILLER: MRA
TECHNICIAN: G. Hassett

McBride-Ratcliff and Associates, Inc.

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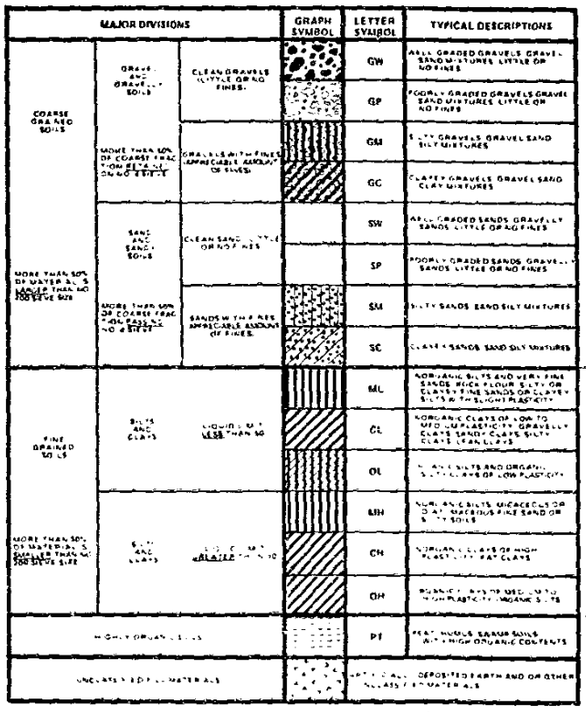
SYMBOLS AND TERMS USED ON BORING LOGS



MAJOR DIVISIONS			GRAPH SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL GRADED GRAVELS, GRAVEL SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY GRADED GRAVELS, GRAVEL SAND MIXTURES, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL SAND SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL SAND CLAY MIXTURES
	SAND AND SANDY SOILS	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	MORE THAN 50% OF COARSE FRACTION PASSES NO. 4 SIEVE	SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND SILT MIXTURES
				SC	CLAYEY SANDS, SAND CLAY MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, MUCK, SWAMP SOILS WITH HIGH ORGANIC CONTENTS
UNCLASSIFIED MATERIALS					OTHER ALL DEPOSITED EARTH AND OR OTHER MATERIALS

NOTE: DUAL SYMBOLS ARE USED FOR BORDERLINE SOIL CLASSIFICATIONS

SOIL CLASSIFICATION CHART

SAMPLE TYPES

INDICATES DEPTH OF UNDISTURBED SAMPLE

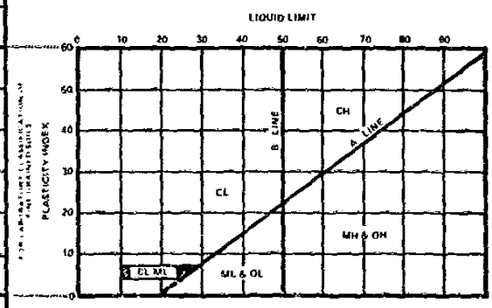
INDICATES DEPTH OF STANDARD PENETRATION TEST

INDICATES DEPTH OF DISTURBED OR AUGER SAMPLE

INDICATES DEPTH OF SAMPLING ATTEMPT WITH NO RECOVERY

KEY TO SAMPLES

(SHOWN IN SAMPLES COLUMN)



PLASTICITY CHART

UNIFIED SOIL CLASSIFICATION SYSTEM

RELATIVE DENSITY OF COHESIONLESS SOILS

COARSE GRAINED SOILS (major portion retained on No. 200 sieve): Includes (1) clean gravels and sands, and (2) silty or clayey gravels and sands. Conditions rated according to standard penetration test (SPT) as performed in the field.

Descriptive Term	Blows Per Foot*
Very Loose	0 - 4
Loose	5 - 10
Firm	11 - 30
Dense	31 - 50
Very Dense	over 50

*140 pound weight having a free fall of 30 inches.

CONSISTENCY OF COHESIVE SOILS

FINE GRAINED SOILS (major portion passing No. 200 sieve): Includes (1) inorganic and organic silts and clays, (2) gravelly, sandy, or silty clays, and (3) clayey silts. Consistency is rated according to shearing strength as indicated by penetrometer readings or by unconfined compression tests.

Descriptive Term	Unconfined Compressive Strength Ton/Sq. Ft.
Very Soft	Less than 0.25
Soft	0.25 to 0.50
Medium	0.50 to 1.00
Stiff	1.00 to 2.00
Very Stiff	2.00 to 4.00
Hard	4.00 and higher

NOTE: Slickensided and fissured clays may have lower unconfined compressive strengths than shown above, because of weakness or cracks in the soil. The consistency ratings of such soils are based on penetrometer readings.

TERMS CHARACTERIZING SOIL STRUCTURE

Slickensided	— having inclined planes of weakness that are slick and glossy in appearance.
Fissured	— containing shrinkage cracks, frequently filled with fine sand or silt; usually more or less vertical.
Laminated	— composed of thin layers of varying color and texture.
Interbedded	— composed of alternate layers of different soil types.
Calcareous	— containing appreciable quantities of calcium carbonate.
Well graded	— having wide range in grain sizes and substantial amounts of all intermediate particle sizes.
Poorly graded	— predominantly of one grain size, or having a range of sizes with some intermediate size missing.

McBride-Ratcliff and Associates, Inc.

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APPENDIX A

SOP-HWF-01

SOIL AUGER BORING AND SAMPLING PROCEDURES

002834

STANDARD OPERATING PROCEDURE

Number: SOP-HWF-01
Originated By: WRT
Approved By: JLI

Page: 1 of 6
Date: Jan. 1986
Status: Final
Rev.: 2 (Feb. 1986)

****

SUBTASK 2D
SOIL AUGER BORING AND SAMPLING PROCEDURES
KOPPERS SOUTH CAVALCADE SITE

002835

1.0 Drilling and Sampling

1.1 Locate auger boring on auger boring location map. Make any location offset changes directly on map. Set up barricades and traffic cones to delineate work area.

1.2 Label each boring location using following designation:

SCK - AXX - AB01
AB02
"
"

XX refers to EPA/CDM area number referenced from Work Plan. Mark auger boring number on boring location map.

****

****

1.3 Obtain background air measurement near boring location with photoionization detector equipped with 10.2 eV probe. Note span potentiometer setting. Verify that the photoionization detector has been calibrated before daily use.

1.4 Spread disposable plastic sheet over boring location to contain soil cuttings.

1.5 Drill borehole with solid-stem drill auger to a minimum depth of 8 ft. Advance auger in 2-ft increments or at stratigraphic changes. Do not penetrate into upper sand unit unless requested by Project Manager. Note depth of moist soils. Note depth where obstructions are encountered.

1.6 Log each auger boring based on visual classification of soil cuttings. Make careful notations for observable contaminants and depth of fill soils. Note strong or persistent creosote or diesel odors, not slight odors.

002836

002836

****

1.7 Obtain representative soil sample at least 0.5 ft deep, or greater. Select sample to correlate with areas of greatest visual contamination. Obtain sample from bottom or tip of auger.

Obtain a minimum of one soil sample per auger boring. Additional soil samples should be obtained if significant variations in contaminant distribution are found.

1.8 Place soil sample into a single 16 oz. detergent washed, glass jar with Teflon-lined lid. Appropriate jars will be marked with a yellow or orange dot on top of lid. Use disposable, wooden tongue depressor to obtain each soil sample. Fill sample jar from two-thirds to three-quarters full to permit headspace readings.

1.9 Label each soil sample consistent with corresponding boring designation:

002837

****

SCK - AXX - AB01 - 01
02
03
"
"

Complete jar labels and indicate a single, discrete sample depth. Also mark sample number on top of lid for quick identification.

1.10 Conduct sample field headspace reading at the completion of each boring using photoionization detector equipped with 10.2 eV probe. Record reading directly on field boring log. Note span potentiometer setting.

1.11 Upon completion of each auger boring, obtain a water level measurement and caved depth. If no free water is encountered, note dry conditions on boring log.

1.12 Completely backfill each borehole with dry bentonite powder. Check for settlement after at least 1 day and add additional bentonite if

needed. Patch or repair paving if appropriate. Spray paint borehole with enamel paint for future location reference.

1.13 At end of each day, complete chain-of-custody documentation and transport samples to MRA lab. No sample cooling provisions are required. All soil samples must be relinquished to MRA lab representative at end of each day.

002839

2.0 Decontamination

2.1 Decontaminate augers between each soil boring using high pressure, hot water spray until visually clean. Decontaminate drilling equipment at end of each day. Use methanol for drilling equipment between boring locations if drill rig becomes visually contaminated with oily residues or free hydrocarbons.

2.2 Collect wash water in sump or metal drums for onsite waste storage.

****

2.3 Collect all soil cuttings, plastic sheet, and disposable items and temporarily place into metal drum for transport to onsite waste storage area.

3.0 Documentation (all documents recorded in ink)

3.1 Chain-of-custody forms.

3.2 Daily field activity log.

3.3 Soil boring field log.

3.4 Field record notebook.

a. prevailing wind direction
b. equipment serial numbers
c. background air monitoring
d. work area air monitoring
e. unusual conditions/observations
f. photoionization detector span setting
g. OSHA safety level
h. general weather conditions
i. EPA/CDM communications.

002840

SOIL BORING FIELD LOG

PROJECT:
PROJECT NO.:
TECHNICIAN:

BORING NO.:
BORING METHOD:
DRILLER:

DATE STARTED:
DATE COMPLETED:
DATE GROUTED:

WATER LEVEL DATA

DATE	TIME	WATER	CAVE

MATERIALS

CEMENT —
BENTONITE —

BACKGROUND AIR MEASUREMENT:
SPAN POTENTIOMETER SETTING:

DEPTH, FT.	ATTEMPT	RECOVERY	SAMPLES	DEPTH	SPLIT (S) DUPLICATE (D)	HEADSPACE READING, PPM	SURROGATE TEST	MATERIAL DESCRIPTION	SOIL CONTAMINANTS

002841

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APPENDIX B

PRELIMINARY FIELD NOTES

002842

002843

1/15/85

Bill Tobin
B. Urban } MRA 1100 hr
P. Moore

Washing down augers and rig, loading equipment

HNU 41416 MPI 101
Rig MAD-10-A
Ser. No 102481
Span sitting 4.3

1238 0.5 ppm HNU background
@ SCK-A10-AB001
Wind from SE

Time 1338 0.5 ppm SCK-A10-AB001
background

PRELIMINARY

1355 1 ppm @ AB-02
breathing zone, background
1 ppm ~20' south

1415 hrs 3 ppm background
@ SCK-A10-002, train on tracks

1448 1 ppm background
@ SCK-A09-AB001

PRELIMINARY

PROFILE	STATION
PA-B	87
	88
	88+3
	90.
	90+
	91
	91+3
	92
	93
	94
	95
	95+
	95+
	96
	96+
	96+
BC-D	12[illegible]
	121+
	121
	120
	119
	118
	117
	11[illegible]
	11[illegible]
	114
	11[illegible]
	11[illegible]

SCK-A09-AB001
Hit something hard that auger could not pass. only to 2' penetration

Time 1513 hrs 1.5 ppm @ SCK-A09-AB001 background

Time 1530 hrs 1.0 ppm @ SCK-A09-AB002 background

Time 1550 hrs background @ SCK-A09-AB002 1 ppm Could not penetrate past 2.5'

Time ~~1450~~ 1650 hrs leave site field report 001

1/16/86
weather cloudy & cool
Bruce Urban } MRA
Paul C. Moore } 8:15 hrs
Sarah Landfiser 10:20
Wind from ~~East~~ Southeast

Sam SD HNU Ser # 41416 Mod PI 101
Rig: Ser # 102481 Mod AD-10-A

Having trouble starting rig.

Time 855 hrs rig starts

Time 9:00 hrs setting up on SCK-A07-AB001 ? Bill Tobin @ site

Time 910 hrs site background 0.5 ppm ? SCK-A07-001

Time 9:50 hrs 0.5 @ SCK-A07-001

Time 9:55 hrs sample from 7-8'

Time 1020 grouted SCK-A07-001

Time 1029 background @ SCK-A07-AB002 0.5 ppm

Time 1045 sample

Time 1047 background @ SCK-A07-AB002 0.5 ppm

Time 1105 6 ppm HNU

~~Leave space on SCK-A07-AB002~~ -01

002844

PRELIMINARY

Time	1155 SCK-A07-003 background 0.5 ppm
Time	1300 0.5 ppm SCK-A07-AB004 background
Time	1315 0.5 ppm ~~back~~ @ SCK-A07-AB004
Time	1350 Rain
Time	1405 decon equipment
Time	1459 background @ SCKA05-AB001 0.5 ppm
Time	15:40 grout ~~brigded~~ brigded in hole
Time	1645 leave site
Time	1640 Sarah leaves site

1/17/86

Paul C. Moore MRA 7:30
Bruce Urban "

	Weather: dizzally 3' cool
Time	~~Tom~~ 7:48 Tom Hillendal ~~And~~ Ardco to bak @ rig
Time	9:35 Lu Sarah Landfisch on site
	Wind is from the ~~SE~~ south to south SW
Time	9:25 Clouds move to the east. Weather is clearing
Time	9:55 Ardco finished we to work.
Time	1005 on SCK-A05-AB002
Time	10:10 Wind from E
	Boring SCK-A05-AB003 moved 3.5' South
Time	1135 on SCK-A05-AB004 Wind from SE
Time	1212 on SCK-A05-AB005

002845

002845

PRELIMINARY

Quadrant	Station
PA-B	87
	88
	88+30
	90
	90+18
	91
	91+32
	92
	93
	94
	95
	95
	95
	96
	96
	9
BC-D	1
	1

Time 1305 hit something hard @ SCK-A07-AB005 utility? Got to 5'

Time 1330 Decon

Time 1440 on SCK-A09-AB003

Time 1520 on SCK-A05-AB004

~~Time 1540 Sarah left site~~

~~Time 1630 Leave site~~

Time 1540 Sarah left site

Time 1630 Leave site

1/18/86

on site { Paul C. Moore MRA } 830
Bruce Urban MRA }
Sarah Landtiser CDM 908
Weather: Foggy and overcast.
Wind is from the SW.
Time 940 Bill Tobin on site
Time 943 on SCK-A09-AB005
Weather Clearing late morning

Time 1006 on SCK-A10-AB00

~~Time 1047 on SCK-A10-AB005~~

Time 1047 Bill Tobin leaves

Time 1123 on SCK-A10-AB005

Time 11:25 Wind from SW

Time 12:17 ~~To Decon~~ on SCK-A10-AB005

Time 12:41 To decon

Time 1320 Leave

1/20/86

HNU span setting 0.67
HNU Ser No. 41416 Mod. No. [illegible]
Rig Mod No. AD-10-A
Rig Ser No. 102481
Weather: Clear and cool
Personal Equipment
1) cotton coveralls
2) steel toed rubber boots
3) Nitril gloves
4) safety

002846

PRELIMINARY

	705 Paul C. Moore	MRA	Time	9:50 ~~9:45~~ 0.5 ppm on SCK-A08-A02
	Bruce Urban	MRA		
Time	755 Mike Young on site	CDM	Time	1005 0.5 ppm on SCK-A08-AB2 at 6-8'
	Wind is from the West		Time	1021 on SCK-A08-AB3
Time	830 on SCK-A10-AB7		Time	1024 0.5 ppm SCK-A08-AB3 background in work area
Time	840 background 0.5 ppm		Time	1036 0.5 ppm SCK-A08-A3 work area
Time	842 SCK-A10-AB7 0.5 ppm		Time	1037 Sample SCK-A08-AB3-01 0 ppm
Time	855 8 ppm for sample SCK-A10-AB7-01		Time	1059 on SCK-A07-AB8 8 ppm background in work area
Time	856 0.5 ppm in SCK-A10-AB7 work area		Time	1114 hit some L.F. moved 4' E to drill
Time	920 on SCK-A08-AB1 wind from the north		Time	1150 decon
Time	9:7 SCK-A08-AB1 work area 0.5 ppm		Time	1256 on SCK-A07-AB6
Time	942 sample SCK-A08-AB1-01 1 ppm		Time	1300 0.5 ppm @ SCK-A07-AB6

PRELIMINARY

1337 water and oily blobs coming up the bore w/ cuttings

Time 1335 0 ppm work area @ SCK-A07-AB6

Time 1405 @ SCK-A06-AB1 0.5 ppm in work area

Time 1417 0.5 ppm @ SCK-A06-AB1 work area

Time 1434 0.5 ppm @ SCK-A06-AB2 in work area

Time 1452 10 ppm sample SCK-A06-AB2-01

Time 1453 0.5 ppm @ SCK-A06-AB2 work area

Time 1510 0.5 ppm @ SCK-A06-AB3 in work area

Time 1515 hit something hard @ 6', possibly a concrete bottom to old pit.

Time 1528 1 ppm for sample SCK-A06-AB3

Time 1549 0.5 ppm @ SCK-A06-AB4 work area

Time 1550 hit something hard @ 4', poss. concrete bottom to pit.

Time 1559 0.5 ppm sample SCK-A06-AB4-01

Time 1604 Decon

Time 1620 @ SCK-A06-AB5 0.5 ppm

Time 1635 sample SCK-A06-AB5-01 7 ppm, sample AB5-02 10 ppm

Time 1650 Decon

Time 1705 Mike Young leaves

-D

PRELIMINARY

PROFILE
BA-B

Time 1725 Leave

1/21/86

Weather Foggy & cool
HNU Ser # 4/416
HNU Mod # PI 101
weather clearing late morning
Rig Mod # AD-10-A
Rig Ser # 102481

HNU span setting
@ 0.63

Time 905 P.C. Moore MRA
B Urban MRA
M Young CDM

@ Site

Time 932 to off site
borings

Time 940 on SCK-A20-AB1

Boring SCK-A20-AB1
is 89.5' E of Elysian
W curb & 8' S of Cavalier

N curb

Time 958 on SCK-A21-AB1
29' E of W bound curb
4.5' S of W bound curb

Time 1010 Decon & get gas

Time 1050 on SCK-A06-AB6

Time 11:00 0.5 ppm

Wind is from the south

BC-1

#2
Time 1120 Sample SCK-A20-AB1-01, 02 0 ppm, SCK-A21-AB1-01, 02 0 ppm

Time 1124 SCK-A06-AB6-01, 02, and 03 are 05, 8 is ppm respectfully

Time 1126 SCK-A06-AB6
work area 0.5 ppm

Time 1130 SCK-A06-AB6 is
28' N of A06-AB4

002849

002849

PRELIMINARY

Time 1133 on SCK-A06-AB7

Time 1140 0.5 ppm background @ SCK-A06-AB7

Time 1155 sample SCK-A06-AB7-1 5 ppm

Time 11:55 0.5 ppm work area SCK-A06-AB7

13'S of SCK-A06-AB4 3' 21' W

Time 1207 on SCK-A06-AB8 background work area 0.5 ppm

Time 1229 3.5 ppm sample @ SCK-A06-AB9-01

Time 1230 0.5 ppm background at SCK-A06-AB9 work area

Time 1240 on SCK-A06-AB9 0.5 ppm

Time 1252 0.5 ppm @ A06-AB9

1300 Sample SCK-A06-AB9-04 12 ppm

Time 1312 SCK-A06-AB10-01 0 ppm

Time 1330 6 ppm sample A06-AB10-01

Time 1341 SCK-A08-AB4 0 ppm in work area

Time 1353 5 ppm sample SCK-A08-AB4-01

Time 1435 0.0 ppm @ SCK-A08-AB4, 82' N of A08-AB3, 11' W of fence

SCK-A08-AB8 is 21' S of A06-AB1, and is 23' W of fence

SCK-A06-AB9 is 16' S of A08-AB3, 44' W of fence

MW11 is 16' from fence

LOCATION	STATION			
24-B	87	72	72	

PRELIMINARY

and 16' from A06-AB8

SCK-A06-A10 is 16' W of fence & 43' S of MW11

1500 leave all

1/23/86

HNU span setting 0.69
Mod No ~~41416~~ PI101
ser No 41416
Rig Mod# AD-10-A
ser No 102481

Weather is Clear
wind is from the East

Paul C. Moore
Bruce Urban @ site
@810, MRA
Mike Young @ site
810 ~~[illegible]~~
Aaron Dishon w/MEI 800
820 decon & cleaning
area & gas up

Time 935 Wayne Turney @ SITE

Time 951 on SCK-A11-AB1
0.5 ppm
1025

Time ~~1000~~ on SCK-A11-AB2
0.5 ppm

Time 10:55 13 ppm sample
A11-AB2-01

F

Time 10:56 0.5 ppm background
@ SCK-A11-AB2

Time 1100 0.5 ppm background
work area @ SCK-A11-AB3 5
B

Time 1127 ~~0.~~3.5 ppm sample
SCK-A11-AB3-01
13

Time 1150 on SCK-A11-AB4
0.5 ppm in work area
background

Time 11:55 get gas

Time 1230 ~~[illegible]~~ 11

Time 1235 hit something

BC-D

002851

002851

PROFILE
BA-B

BC-D

PRELIMINARY

hard below pavement 18"
& could not penetrate

Time 1303 on SCK-A11-AB5
background is 0.5 ppm

Time 1303 Something hard
@ 3' moved bong
6' South & 5' W

Time 1320 Hit something
hard again @ 3'
took sample and moved
to new bong

Time 1330 1.5 ppm sample
SCK-A11-AB5-01

Time 1340 0.5 ppm @ SCK-
A11-AB6 background

Time 14:00 hit PVC
pipe 8" below ground

Time 14:30 Talked w/ ~~Frass~~ Francis
w/ Merchants, she will
notify maintain

Time 1500 @ SCK-A11-AB7

Time 15:00 Jay Fraser @ Site

Time 1510 Bill Tobin @ Site

Time 1525 0.5 ppm @ sample
SCK-A11-AB8-01 : J. Cochran

Time 1530 0.5 ppm background
SCK-A11-AB9

~~Time 1605 0.5 ppm @~~
~~SCK-A11-AB9~~

Time 1530 on SCK-A11-AB8
background 0.5 ppm

Time 15:50 9 ppm sample
SCK-A11-AB8-01

Time 1605 ~~0.5~~ 0.5 ppm
background SCK-A11-AB8

Time 4:10 back to decon

Time 4:40 Leave
1/27/86
Bruce Urban, Paul C. Moore,
Bill Tobin, Wayne Turney : MRA
Tom Hillendahl Arcadco

002852

PROFILE
BA-B

1/23/86 [illegible]
Paul & Bill: loc. borings
Bruce: top off borings, Wayne
1/24/86 well repair

PRELIMINARY

Weather is overcast
Wind from the E
Paul C. Moore MRA } 800
Bruce Urban MRA
Mike Young CDM 800
Wayne Turney MRA 830

CAV-OW-07

Time 835 @ ~~MW-V~~ to
boring holes for Wayne

Time 905 @ decon pad

BC-D

Time 928 @ SCK-AH-AB9
0.5 ppm background

Time 943 hit something hard
@ 2.5' moved
2' 5'

Time 9:48 ~~hit something~~
~~hard @ 2'~~ moved
3' 5 again hit something
hard @ 2', penetrated

Time 9:58 0.5 ppm back
ground

Time 1025 0.5 ppm @
SCK-AH-AB10 background

Hit something hard @ 6'
oil appearance on cuttings
could not penetrate

Time 1105 wind from SE
SCK-A11-AB10-01 20 ppm, SCK-A11-AB10-02, 30 ppm

Time 1123 0.5 ppm @ SCK-AH
-AB12

Time 1150 15 ppm sample SCK-
AH-AB12-01

Time 11:52 0.5 ppm background

Time 12:05 decon

Time 1:30 on SCK-AH-AB12

Time 1400 0 ppm sample SCK-
A11-AB12-01

Time 1420 0.5 ppm SCK-A9-AB6
background

Time 1438 15 ppm sample SCK-A9-AB6-01

002853

002853

PRELIMINARY

Time	1500 Joe Brown Tx Water Commission left 1507	Time	7:36 Paul M to MRA office to get HNU under Bruce forgot
Time	1529 4 ppm sample SCK-A15-AB1-01		
Time	1555 0.5 ppm SCK-A9-AB7	Time	815 @ site, Tony St. Clair there
Time	1612 0.5 ppm SCK-A9-AB7-01		weather is cloudy w/ the wind from NE clearing later in the day
		Time	940 Tom leaves
Time	1613 0.5 background SCK-A9-AB7 1/25/86	Time	1017 on A13 SCK-A13-AB4
Time	7:00 Paul G. Moore MRA @ site Bruce Urban MRA spent the night @ the site, Aaron DeHue on site	Time	1043 on 0.5 ppm background SCK-A13-AB4
		Time	1118 SCK-A15-AB2 0 ppm background
Time	7:15 Tom Hilendahl Arden @ the site to add a trap door to the auger guide of the rig.	Time	1148 0 ppm SCK-A15-AB2 background
		Time	1205 on SCK-A16-AB1
		Time	1207 0.5 ppm SCK-A16-AB1

002854

002854

PRELIMINARY

	background			0.5 ppm background
Time	1245 0.5 ppm SCK-A16 AB1 background		Time	1515 0.5 ppm sample SCK-A9-AB8-01
Time	1315 on SCK-A16-AB2		Time	1517 SCK-A9-AB8 background 0.5 ppm
Time	1317 ~~on~~ 0.0 ppm background SCK-A16-AB2			Personal Protective gear
Time	1333 4 ppm SCK-A16-AB2 -01 sample			Hard hats cotton coveralls Safty glasses Nitril gloves Rubber boots w/ steel toes
Time	1335 0.5 ppm background SCK-A16-AB2			
				HNU Mod PI101
Time	1358 SCK-A15-AB3 0.5 background			ser # 41416, span 0.67
Time				Rig Mod AD-10-A
Time	1450 SCK-A9-AB8 ~~@~~ 0.5 ppm background			ser # 102481
			Time	1540 to decon pad
Time	1430 ~~0.5~~ 5 ppm sample SCK-A15-AB3		Time	16:00 Bruce leaves
			Time	1650 leave
Time	1445 Tommy St Clair leave			1/27/86
Time	1450 on SCK-A9-AB8		9:00	Paul C. Moon MAA

PRELIMINARY

900	Bruce Urban MRA	1206	on SCK-A16-AB2 19 0.5 ppm
800 830	Wayne Turney MRA		
~~830~~ 800	Mic Edgar COM	1225	0 ppm sample SCK-A19-AB2-01
	Weather: Clear & cold wind from the NW	1226	0.5 ppm background SCK-A19-AB2
	Decon; Mon Trailers	1253	0.5 ppm background SCK-A18-AB1
1100	0.5 ppm @ SCK-A9-AB9 background	12:58	Bruce to get gas for rig
1100	0 ppm sample SCK-A9-AB9-01	1325	drilling
1113	0.5 ppm background SCK-A9-AB9, wind from W.	1345	0.5 ppm background & 0 ppm sample SCK-A18-AB1
1119	0.5 ppm background SCK-A19-AB1	1355	0.5 ppm @ SCK-A17-AB1
1145	0 ppm sample SCK-A19-AB1-01	1423	0.0 ppm sample SCK-A17-AB1-01
1146	0.5 ppm background SCK-A19-AB1	1425	0.5 ppm background SCK-A17-AB1
11:50	Tony St. Clair (COM) to replace Mic		

002856

002856

PRELIMINARY

1430	SCK-A17-AB7	1) cotton coveralls
	0.5 ppm background	2) hard hat
		3) safety glasses
1523	Sample SCK-A17-AB7-01	4) steel toe rubber boots
	1 ppm	5) Nitrile gloves
1525	0.5 ppm background	Steven Craig & Bill
	SCK-A17-AB7	Tolen on site when
		to inspect site.
1545	0.5 ppm background	
	SCK-A13-AB6	1/28/96
1600		
	11 ppm sample SCK-A13-AB6-01	
1610	0.5 ppm background	Weather is clear
	SCK-A13-AB7	and cold wind is from
		the south
1640	1 ppm background	HNU Mod. 444 PI 101
	SCK-A13-AB7	Ser # 41416
1645	18 ppm sample SCK-A13-AB7-1	Span Setting: 0.67
1705	Tony St. Clair leaves	~~Rig Mod~~
		Rig Mod AD-10-A
1710	Leave	Ser # 102481
	HNU PI 101 ser # 41416	Personal Safety equip:
	Rig Mod # AD-10-A	
	Ser # 102481	1) Cotton Coverall
	Span setting HNU: 0.67	2) hard hat
		3) steel toed rubber boots
	Protective clothing!	4) Nitrile gloves

	s) safty glasses		1133	2 ppm Sample SCK-A11-AB10
			1140	grouting SCK-A11-AB10
830	Paul C. Moore	MRA	1150	on SCK-A11-AB11
	Bruce Urban	MRA	1152	0.5 ppm background SCK-A11-AB11
	Tony St Elmir	COM		
	all on site		1212	0.5 ppm background SCK-A11-AB11
	Decon equip. Tony to COM job site return 915		1216	0 ppm sample SCK-A11-AB11-01
1005	on SCK-A11-AB3		1230	grouting SCK-A11-AB11
1017	0.5 ppm background SCK-A11-AB3		1240	on SCK-A12-AB1
1037	1.5 ppm sample SCK-A11-AB3-01		1241	0.5 ppm background SCK-A12-AB1
1043	0.5 ppm background SCK-A11-AB3		1325	0.5 ppm background SCK-A12-AB1
~~1045~~ 1045	Grouting hole		1328	21 ppm sample SCK-A12-AB1-01
1055	on SCK-A11-AB10		~~1359~~	~~2~~
1057	0.5 ppm SCK-A11-AB10			

BK-D

002858

PRELIMINARY

1335	on SCK-A12-AB2		1535	0.5 ppm background SCK-A11-AB12
1338	0.5 ppm background SCK-A12-AB2, 3.4 obs. @ 2.5'		1543	Grouting SCK-A11-AB12
1359	22 ppm Sample SCK-A12-AB2-01		1547	on SCK-A11-AB13
1403	0.5 ppm background SCK-A12-AB2, 1.4 obs. @ 2.5'		1548	0.5 ppm SCK-A11-AB13 background
1408	Grouting SCK-A12-AB2		1616	8.5 ppm sample SCK-A11-AB13-01
1425	0.5 ppm @ SCK-A12-AB3 background		1617	0.5 ppm background SCK-A11-AB13
1444	Sample SCK-A12-AB3-01 ~~1445~~ 16 ppm		1623	Grouting SCK-A11-AB13
1452	0.5 ppm background SCK-A12-AB3		1627	on SCK-A11-AB14
1455	Grouting SCK-A12-AB3		1628	0.5 ppm SCK-A11-AB14 background
1503 ~~1503~~	0.5 ppm @ SCK-A11-AB12		1650	5 ppm SCK-A11-AB14-01 sample
1532	1517 ppm sample SCK-A11-AB12-01		1652	0.5 ppm SCK-A11-AB14 background

PRELIMINARY

1655	Gary SCK-A11-ABM
1656	To decon pad
1700	Tony leaves
1710	Bruce & Paul leave

1/29/86

HNU Mod PI101
Set # 4441416 SS: 0.60
Rig Mod AD-10-A
Set # 102481

Personal Protective Clothing:

1) Nitrile gloves
2) Cotton coveralls
3) safty glasses
4) steel-toed rubber boots
5) hard hat

weather is clear and cool; wind is from the south

8:00	Paul C. Moore MRA } on site Bruce Urban MRA }
	Bruce decoming equipment. Paul waiting for drums to be delivered.
837	Tony St. Clair CDM on site
	Drums ~~delivery~~ not delivered. Called Burbank Drum, they will not deliver 10 drums, will have to pick up.
945	Mic Edgar on site to meet w/ Tony
1035	on SCK-A14-AB1
1033	Oppm background SCK-A14-AB1
1114	Oppm background SCK-A14-AB1
1115	Grouting SCK-A14-AB1

1116	lamp in HNU burnt out No good readings for today
1132	on SCK-A14-AB2
1235	Grouting SCK-A14-AB2
~~1238~~	~~on~~
1238	on SCK-A14-AB3
1336	Grouting SCK-A14-AB3
	Wind is from the west.
1506	Took break
1530	@ site changing weather
1600	on SCK-A22-AB1 78' W of Elysian in center of esplanade 1620 fill in boring
1624	on SCK-A23-AB1 42' E on West curb 10' South to South curb

	Fill in boring move back to decon
1650	Tony leaves
1700	leave site
	1/30/86
1820	on site Paul Moore & MRA Bruce Urban Surveying
1130	Lunch
1230	Surveying again
2.00	To Burbank Down Bruce to decon & clean up
300	back up unload drums
345	leave site
	weather was cloudy w/ the wind from the S to SW.

PRELIMINARY

1/31/96

weather is clear and cool, wind is from the SE

HNU Mod PI 101
Serial 4141C Span 0.60
Rig Mod AD-10-A
Serial is 102481

810 Paul C. Moore MRA
Bruce Urban MRA
on site

900 on SCK-A2-AB1
background 0.5 ppm

9:05 Tony St. Clair on site
CDM

9:21 0.5 ppm background
SCK-A2-AB1

9:22 0 ppm sample SCK-A2
-AB1-01

927 Grouting SCK-A2-AB1
930 on SCK-A2-AB2

940 0.5 ppm background
SCK-A2-AB2

~~944~~ Grouting

953 0 ppm sample SCK-A2-AB2

954 0.5 ppm ~~sample~~ SCK-A2-AB2
background

957 Grouting SCK-A2-AB2

10:05 on SCK-A2-AB3

1010 0.5 ppm background
@ SCK-A2-AB3

1024 0.5 ppm background
@ SCK-A2-AB3

10:25 0 ppm sample SCK-A2-AB3
@

1028 Grouting SCK-A2-AB3

1030 on SCK-A2-AB4

1031 0.5 ppm SCK-A2-AB4
background

PRELIMINARY

1054	0.5 ppm background SCK-A2-AB4		SCK-A2-AB6
		1305 ~~AB5~~	0.0 ppm sample SCK-A2-AB6-01
1055	0 ppm sample SCK-A2-AB4-01		
		1310	Grouting SCK-A2-AB6
1058	0.5 ppm background @ SCK-A2-AB5	1314	on SCK-A2-AB7 0.5 ppm background
1125	12 ppm sample SCK-A2-AB5-01		
		1342	94 ppm sample SCK-A2-AB7-01 No color.
1128	0.5 ppm background SCK-A2-AB5	1342	0.5 ppm background SCK-A2-AB7 on ~~[illegible]~~ hole 6"
1140	To decon and lunch		
1230	Back to Area 2 weather becoming partly cloudy w/ wind from the south	1345	Grouting SCK-A2-AB7
		1355	on SCK-A2-AB8
		1400	0.5 ppm SCK-A2-AB8 Background
1243	on SCK-A2-AB6		
1245	0.5 ppm @ SCK-A2-AB6 background	1414	3 ppm sample SCK-A2-AB8-01
		1415	0.5 ppm SCK-A2-AB8 background
1303	0.5 ppm background		

PRELIMINARY

1420	Grouting SCK-A2-AB8	1520	on SCK-A2-AB11
1422	on SCK-A2-AB9	1523	0.5 ppm SCK-A2-AB11 background
1423	0.5 ppm SCK-A2-AB9 background	1535	0.5 ppm SCK-A2-AB11 background
1441	0.5 ppm background SCK-A2-AB9	1540	6 ppm sample SCK-A2-AB11-01
1443	9 ppm Sample SCK-A2-AB9-01	1550	To decon
1448	Grouting SCK-A2-AB9	1555	Paul back to grout SCK-A2-AB11 Tony leaves
1450	on SCK-A2-AB10	1615	Leave site
1456	0.5 ppm SCK-A2-AB10 background		Personal Safety Equip
1511	2.5 ppm Sample SCK-A2-AB10-01; No odor		1) Nitril gloves 2) hard hats 3) steel-toed rubber boots 4) cotton coveralls 5) safety glasses
1512	0.5 ppm background SCK-A2-AB10		2/3/86
1517	Grouting SCK-A2-AB10		NMC Span setting: 0.54

PROP
AU
AW
AY-Z

PRELIMINARY

HNU Mod PI 101
Ser No 41416

Rae Mod AD-10-A
Mod # 102481

Weather is overcast
~~and~~ cool and windy
The wind is from
the south

800 Paul C. Moore MRA
Bruce Vohn "
@ site

815 Tony St Clair
on site

835 on SCK-A1-AB1

837 0.5 ppm Background
SCK-A1-AB1

~~855~~ 5 ppm sample SCK-A1
-AB1-01

904 0.5 ppm background
SCK-A1-AB1

907 Grouting SCK-A1AB2

922 on SCK-A1-AB2
0.5 ppm background

939 38 ppm sample SCK-A1-AB2
-01

941 0.5 ppm background
SCK-A1-AB2
and grouting

957 on SCK-A1-AB3
0.5 ppm background

1017 grouting SCK-A1AB3

1019 9.3 ppm sample SCK-A1-
AB3-01

1025 on SCK-A1-AB4

1031 0.5 ppm background
SCK-A1-AB4

1047 3.5 ppm sample SCK-A1-A
AB4-01

1048 0.5 ppm SCK-A1-AB4 Back

PRELIMINARY

1050 grouting SCK A1-AB4

1105 on SCK-A1-AB5
0.5 ppm background

1120 Wayne Turney on site @930

1123 3.5 ppm sample SCK-A1-AB5-01

1124 0.5 ppm background SCK-A1-AB5

1130 Grouting SCK-A1-AB5

1140 Tailgate and lunch
Wayne leaves

1240 on SCK-A1-AB6

1250 0.6 ppm background SCK-A1-AB6

1307 5.0 ppm sample SCK-A1-AB6-01

1308 0.5 ppm background SCK-A1-AB6

1315 Grouting SCK-A1-AB6

1335 0.5 ppm background on SCK-A1-AB7

1351 5.5 ppm sample SCK-A1-AB7-01

1353 0.5 ppm background SCK-A1-AB7

1359 Grouting SCK-A1-AB7

1410 0.5 ppm @ SCK-A1-AB8

1429 2 ppm @ sample SCK-A1-AB8-01

1431 0.5 ppm background SCK-A1-AB8

1452 on SCK-A25-AB1
0.5 ppm background

1513 0 ppm sample SCK-A25-AB1-01

1514 0.5 ppm background SCK-A25-AB1

1530 on SCK-A25-AB2 0.5 ppm

PRELIMINARY

	background		
1555	1.5 ppm sample SCK-A25-AB2-01		Personal Safety Equip.
1556	0.5 ppm background SCK-A25-AB2		1) Hard hat 2) Safety Glasses 3) Nitrile Gloves 4) Steel-toe rubber boots 5) Cotton coverall
1557	Coating SCK-A25-AB2		
1600	To [illegible]		Heavy rains @ site last night.
1615	[illegible]		Weather cloudy w/ rain, Wind is from the south
	Personal Safety Equip.		
	1) Nitrile Gloves 2) Cotton coveralls 3) Steel-toed rubber boots 4) hard hat 5) safety glasses	815	Paul G. Moore & Bruce Urban MRA & David Atkinson MRA
		845	Tony St. Clair CDM
		850	Tony leaves
	2/4/86		Decon pad is flooded having to pump water off. Waiting for the rain to stop.
	Span setting: 0.48 HAV Mod PI-101 Sea [illegible] 41416 Rig Mod AD-10-A Sea [illegible] 102481	900	David leaves

PRELIMINARY

9:45	Rain stopped [illegible] equipment	1200	0.5 ppm background SCK-A04-AB01
1025	on SCK-A01-AB09	1231	0 ppm sample SCK-A04-AB01-01
1040	0.5 ppm background SCK-A01-AB09	1232	0.5 ppm background SCK-A04-AB01
1100	0 ppm sample SCK-A04-AB01-01	1237	Grouting SCK-A04-AB01
11:05	Grouting SCK-A01-AB09	1245	on SCK-A04-AB02
1117	on SCK-A25-AB03	129	0.5 ppm background SCK-A04-AB02 moved from the West
1121	0.5 ppm background SCK-A25-AB03	1305	David Atkinson on site w/ pellets
1146	0 ppm sample SCK-A25-AB03-01	1315	David Atkinson leaves
1147	0.5 ppm background SCK-A25-AB03	1326	0.5 ppm background SCK-A04-AB02
1150	grouting SCK-A25-AB03	1330	grouting SCK-A04-AB02
1202	on SCK-A04-AB1	1335	on SCK-A04-AB03

PRELIMINARY

1350	0.5 ppm background SCK-A04-AB03	1532	0.5 ppm background SCK-A04-AB05
1405 ~~1400~~	0.8 ppm sample SCK-A04-AB03-01	1533	0 ppm sample SCK-A04-AB03-01
		1535	Grouting SCK-A04-A05
1407	0.5 ppm background SCK-A04-AB03	1542	Back to decon
1415 ~~1405~~	on SCK-A04-AB04	1600	Tony leaves
1430	0.5 ppm background SCK-A04-AB04	1645	Paul, Bruce & Aaron leave
			2/5/86
1444	0.5 ppm background SCK-A04-A04		HNU ~~44446~~ PI 101 ser #40416, Span 0.65
1445	0 ppm sample SCK-A04-A04-01		Rig Mod AD-10-A ser # 102481
1448	Grouting SCK-A04-AB04		
1455	on SCK-A04-AB05	930	Paul Moore & MRA Bruce Urban MRA @ site
1500	Aaron DeHon on site to core		
1505	0.5 ppm background SCK-A04-AB05	940	Tony St Clair CDM on site

	weather is foggy w/ the wind from the south
890	Unloaded supplies
10.24	Paul Wild on site to probe tube
1030	on SCK-A01-AB10
1033	0.5 ppm background SCK-A01-AB10
	oily mat'l coming out of boring from 10-12' [illegible]
1122	0.5 ppm background SCK-A01-AB10
1123	3.5 ppm sample SCK-A01-AB10, wind from the East cloudy.
1130	Grouting SCK-A01-AB10
1149	on SCK-A01-AB11
1203	0.5 ppm SCK-A01-AB11
1222	0.5 ppm background

	SCK-A01-AB11
1223	0 ppm sample SCK-A01-AB11-01
1230	Grouting SCK-A01-AB11
1244	on SCK-A04-AB06
	Becoming partly cloudy
1254	0.5 ppm background SCK-A04-AB06
1313	wind from SE
1314	0 ppm sample SCK-A01-AB
	06-01
1315	0.5 ppm background SCK-A04-AB06
1320	Grouting SCK-A04-AB06
1330	on SCK-A04-AB07
1331	0.5 ppm background

002870

PRELIMINARY

	SCK-A04-AB07
1405	0.5 ppm background
1407	8.5 ppm Sample SCK-A04-AB07-01
1410	Grouting SCK-A04-AB07
1412	0.5 ppm background @ SCK-AA04-AB08
1436	5 ppm Sample SCK-A04-AB08-01
1437	0.5 ppm background SCK-A04-AB08
1446	Grouting SCK-A04-AB08
1450	To decon
1505	Leave

Personal Safety Equip

1) Nitrile gloves
2) Steel-toed rubber boots
3) hard hat
4) safety glasses
5) cotton coveralls

2/6/86

Personal Safety Equip.

1) Nitrile gloves
2) rubber steel-toed boots
3) Cotton coveralls
4) safety glasses
5) hard hat

Rig Mod AD-10-A
Ser # 102481

HNU is not working
will not be in the
field today.

840 @ site Paul C. Moore
& Bruce Urban MRA

weather is clear
and cool w/ the wind
from the NW

[illegible]

002871

002871

PRELIMINARY

	Decon equip.	1215	Dickie repres. David Conner on site to pick up coveralls
1000	on SCK-A04-AB09	1220	David leaves
		1230	Grouting SCK-A03-AB02 25' South of CAV-OW-14
	Water coming out hole while going down from 10' to 12'	1240	Decon pad ~~Lunch~~
		1250	To Lunch; Wayne leaves
	Boring caving in to 9'	~~1300~~ 1330 ~~1355~~ 1355	Aaron Dutton & John Johnson MEI back
1044	To grouting SCK-A04-AB09 87' ~~87~~ North of CAV-OW-06 100' E of Fence	~~1400~~ 1415 ~~1415~~	Wayne Turney & David Parker on site to w/ scrap pump
1100	on SCK-A03-AB01	1420 ~~1420~~	on SCK-A04-AB10
1149	Grouting SCK-A03-AB01	1444	Wayne & David leave
	SCK-A03-AB01 is 23' W of CAV-OW-14	~~14~~	water coming up boring @ interval 6'-8'
	Wind is from the North	1455	Grouting SCK-A04-AB10
1208	Wayne Turney on site to deliver barrels		SCK-A04-AB10 15' South of original position

1503	David Parker & Wayne Turney back.	1515	~~Aaron & John leave~~
1515 1540	on SCK-A04-AB11 & Aaron & John leave		2/7/91
1540	Grouting SCK-A04-AB11	8:12	on site; Brace Urban Paul C. Moore MRA
1550	on SCK-A04-AB12		
1620	Grouting SCK-A04-AB12		Decon equip.
1623	To decon; Tony leave		HNU spare reading 0.72 Mod PI101 Ser # 41416
	SCK-A04-AB12 is 37' E of fence & 30 N of pavement edge		Rig Mod AD-10-A Ser # 102481
1635 1635	David Parker & Wayne Turney leave		Safety Equip. 1) Nitrile Gloves 2) hard hat 3) Cotton coveralls 4) Steel-toe rubber boots 5) safety glasses
1640	leave site		
		8:35	Tony St. Clair UDM on site

PRELIMINARY

	Weather is clear & cool w/ wind from the East	10:48	0.5 ppm SCK-A04-AB14 background, sky cloudy
		1049	Grouting SCK-A04-AB14
927	on SCK-A04-AB13	1053	on SCK-A04-AB15
930	0.5 ppm background SCK-A04-AB13	1054	0.5 ppm background SCK-A04-AB15
1003	0.5 ppm background SCK-A04-AB13	1147	0.6 ppm background SCK-A04-AB15
1005	0.5 ppm sample SCK-A04-AB13-01	1148	0.5 ppm ~~background~~ SCK-A04-AB15-01
1006	0.5 ppm sample SCK-A04-AB13-02	1153	Grouting SCK-A04-AB15
1010	Grouting SCK-A04-AB13	1155	To decon & unload drums
1024	on SCK-A04-AB14	1220	on SCK-A24-AB01
1027	0.5 ppm SCK-A04-AB14 background	1223	0.5 ppm background SCK-A24-AB01
1047	0.5 ppm sample SCK-A04-AB014-01	1210	HY obstruction @ 1' moved w 2'

BA-B

BC-D

PRELIMINARY

1242	Wind again moved 1 hr
1258	0.5 ppm background
1259	0.5 ppm sample SCK-A24-AB01-01
1300 ~~1310~~	Grouting SCK-A24-AB01
1310	on SCK-A24-AB02
1320	0.5 ppm background SCK-A24-AB02
1344	0.5 ppm background SCK-A24-AB02
1345	0.5 ppm sample SCK-A24-AB02-01
1348	Grouting SCK-A24-AB02
1405	on SCK-A24-AB03
1406	0.5 ppm background SCK-A24-AB03
1439	0.5 ppm background SCK-A24-AB01
1440	0.5 ppm sample SCK-A24-AB03-01
1443	grouting SCK-A24-AB03
1448	To decon Tony leaves
1535	leave

2/10/86

Weather is cold, rainy. The wind is from the north

9:15 Paul C. Moore on site to repair monitoring wells and decon equip.

Had to add extensions to m.w. protective casing CAU-OW-01-02, CAU-OW-08, CAU-OW-10-11 and 13-14, plus male adaptors & threaded caps to replace

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PRELIMINARY

missing slip cap

1530 leave Site

2/11/85

Personal Safety Equip:
1) Hard hat
2) Nitrile Gloves
3) Cotton Cover alls
4) Steel-toed rubber boots
5) Safety glasses

HNU Mod # PI 101
Ser # 41416

Rig Mod AD-10-A
Ser # 102481

HNU span setting: 0.75

815 Bud & Bruce on MAA site

830 Mike Young CDM on site

The weather is cloudy & cold w/ light snow flurrys. wind from the North

849 on SCK-A24-AB04

851 0.5 ppm background SCK-A24-AB04

914 0.5 ppm background SCK-A24-AB04

920 0.5 ppm Sample SCK-A24-AB04

925 Grouting SCK-A24-AB04

936 on SCK-A24-AB05

937 0.5 ppm background SCK-A24-AB05

Cloudy Breakin

1027 0.5 ppm background SCK-A24-AB05

1027 Grouting SCK-A24-AB05

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PRELIMINARY

1035 on SCK-A26-AB01	SCK-A26-AB02
1050 0.5 ppm background SCK-A26-AB01	1237 0.5 ppm Sample SCK-A26-AB 02-01
1057 hit obstruction @ 15' moved 4' North	1240 Grading SCK-A26-AB02
1100 hit obstruction @ 3' moved 3' North	1305 on SCK-A26-AB03
1115 0.5 ppm background SCK-A26-AB01	1306 0.5 ppm background SCK-A26-AB03
1119 0.5 ppm Sample SCK-A26-AB01-01	1334 0.5 ppm background SCK-A26-AB03
1120 0.5 ppm SCK-A26-AB01-01 sample	1335 0.5 ppm Sample SCK-A26-AB03-01
1126 Grading SCK-A26-AB01	1339 Grading SCK-A26-AB03
1147 on SCK-A26-AB02	1350 on SCK-A26-AB04
1152 0.5 ppm SCK-A26-AB02 background	1354 0.5 ppm background SCK-A26-AB04
1235 0.5 ppm background	1433 0.5 ppm background SCK-A26-AB04

PRELIMINARY

1435 0.5 ppm sample
SCP-A21-(A804-01)

1455 Make Leaves

1525 Paul & Bruce leave

2/3/86

The weather is cloudy
& cold w/ [illegible]
from the NE

875 P.C. Moon on site

830 Surveyors on site
R. Roosa & R. [illegible]
Earp; Sidney Gullett & [illegible]

Bruce Liban to deliver
[illegible]

[illegible] Rappers on site [illegible]
(Shaw Craig, Jim Campbell)
1040 Leave site

002878

APPENDIX C

SOP-HWCL-02

CALIBRATION OF THE HNU PI 101

PHOTOIONIZATION ANALYZER

002879

STANDARD OPERATING PROCEDURE

Number: SOP-HWCL-02
Originated By: PRW
Approved By: WRT

Page: 1 of 6
Date: Jan. 1986
Status: Final
Rev.: 1 (May 1986)

****

CALIBRATION OF THE HNU PI 101 PHOTOIONIZATION ANALYZER

1.0 Scope and Application

1.1 This procedure is designed to calibrate the HNU PI 101 Photoionization Analyzer to permit direct measurement relative to isobutylene. Calibration is performed to provide a basis for using a constant napthalene response factor relative to isobutylene.

002880

2.0 Summary of Method

2.1 Two isobutylene standards are analyzed with the instrument to determine span potentiometer settings which give direct measurement relative to isobutylene. The average of the two span potentiometer settings is used for subsequent field air quality monitoring and soil sample headspace analysis.

3.0 Apparatus and Materials

3.1 HNU PI 101 Photoionization Analyzer manufactured by HNU Systems, Cambridge, Massachussetts with 10.2 eV probe.

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3.2 Certified 10 ppm and 50 ppm isobutylene standards in nitrogen. Standards can be obtained from Scott Specialty Gases, Houston, Texas.

3.3 A flow meter calibrated in 1 standard cubic feet per hour (SCFH) increments with appropriate fittings for connection to bottled gas standards and a pressure regulator.

3.4 Teflon tubing, 3/16 in. ID and 1/8 in. ID.

3.5 Ultrasonic cleaner.

3.6 Kimwipes.

3.7 Long-stem cotton swabs.

3.8 Cleaning compound from HNU Systems, Cambridge, Massachussetts.

3.9 Phillips head screwdriver and small flat-head screwdriver.

3.10 Spectral grades of methanol and acetone. Cyclohexane may be used in place of acetone.

****

4.0 Probe Cleaning

4.1 Hold probe upright and remove the black end cap. The white Teflon ionization chamber will probably remain in the cap. Gently tap the end cap until the ionization chamber drops out.

4.2 Remove the UV lamp and add several drops of HNU cleaning compound to the bottom of the lamp (the metal support where the small lens is located) and on the inside rim of the metal support. Take a cotton swab and kimwipe and rub in a circular motion until visually clean.

4.3 Dip a kimwipe into the methanol and thoroughly clean the same areas. Set aside and let the lamp air dry 15 minutes.

4.4 Place the ionization chamber with wire mesh screen side facing up. Remove 4 small screws from the metal ring. The metal ring is held in place by one solder connection which must not be broken. The metal ring can be gently pivoted out of the way of the wire mesh screen. Remove wire mesh screen and gently push metal ring back in place. Rinse the screen with acetone or cyclohexane and let air dry 5 minutes. Follow with a methanol rinse.

4.5 The ionization chamber should be placed in acetone or cyclohexane in an ultrasonic cleaner for at least 5 minutes. Remove and let air dry 5 minutes.

4.6 Place the ionization chamber in a beaker of methanol for 5 minutes. Remove the ionization chamber and let it air dry for 1 hour, or place in oven at 50 to 100°C for 10 minutes. The oven must not be concurrently used for samples. Be sure that the ionization chamber is covered with a kimwipe during drying to prevent dust accumulation.

4.7 Flush the aluminum probe extension with acetone or cyclohexane. Use long-stem cotton swabs to thoroughly clean the inside of the extension, followed by a methanol rinse. Oven dry at 50 to 100 °C for 10 minutes, or air dry for 1 hour.

4.8 Reassemble the probe and attach it to the readout module. Turn the function switch to "BATT". The meter needle should be in the green area of the meter display and the low battery indicator light should not be on. Turn the function switch to "STANDBY" and statically zero the instrument using the electronic zero potentiometer. Turn the function switch to the

0-20 scale. A properly cleaned instrument will display a 0.1 to 0.5 ppm response to normal laboratory background air quality at a span potentiometer setting of 9.8. Background readings greater than about 0.5 ppm indicate that further drying of the probe elements or further cleaning may be necessary. Length of time between cleanings may vary.

5.0 Calibration

5.1 Attach the pressure regulator/flow meter assembly to the 10 ppm isobutylene calibration gas bottle.

5.2 Attach the Teflon tubing to the flow meter with a reducer so that there is a good seal.

5.3 Turn the instrument on and check the battery. If the battery charge is satisfactory, then electronically zero the instrument using the zero potentiometer. Record the initial span potentiometer setting.

5.4 Attach the free end of the Teflon tubing to the probe inlet. This inlet is accessible with the aluminum probe extension off. Open the flow meter valve so that a constant 2 SCFH reading is obtained.

5.5 Set the meter range to the 0-200 scale for the 10 ppm isobutylene standard, and to the 0-2000 scale for the 50 ppm isobutylene standard. Record the initial measurement as one-tenth of the meter reading.

5.6 Adjust the span potentiometer, if necessary, to obtain the correct direct reading for the calibration gas concentration. Record the new span potentiometer setting and measurement reading in accordance with Step 5.5.

5.7 Close the valve to the gas bottle and the flow meter. Remove the regulator/flow meter assembly and attach to the 50 ppm isobutylene calibration gas bottle. Perform Steps 5.3 to 5.6. Calculate the average value for the final span potentiometer settings for both standards and lock the span potentiometer setting in place. Electronically zero the instrument again, if necessary.

6.0 Documentation

6.1 Record all calibration data on Photoionization Detector Calibration Record.

7.0 References

Instruction Manual for Model PI 101 Photoionization Analyzer, HNU Systems, 1975.

PHOTOIONIZATION DETECTOR CALIBRATION RECORD

PROJECT:	PHOTOIONIZATION DETECTOR	CALIBRATION GAS
PROJECT NO.:	MODEL	GAS TYPE:
CLIENT:		FLOW RATE (SCFH):
CALIBRATION LOCATION: ☐ LABORATORY ☐ FIELD	SERIAL NO.	LOW STANDARD (PPM)
		HIGH STANDARD (PPM)

DATE / BY	ZERO CHECK (D) DYNAMIC (S) STATIC	ZERO ADJUSTMENT				LOW STANDARD CALIBRATION				HIGH STANDARD CALIBRATION			
		INITIAL		FINAL		SPAN SETTING		READING		SPAN SETTING		READING	
		YES	NO	YES	NO	INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL	INITIAL	FINAL

McBride-Ratcliff and Associates, Inc.

SOIL HEADSPACE MEASUREMENTS

DATE SAMPLED: DATE ANALYZED:	TIME	PROBE ☐ 9.5 eV ☐ 10.2 eV ☐ 11.7 eV	SPAN SETTING	PROJECT NO.
REFERENCE GAS	SCALE		LOCATION: ☐ LAB ☐ FIELD	TECHNICIAN

SAMPLE NUMBER	DEPTH FT.	SCALE 0-20	SCALE 0-200	SCALE 0-2000	TOTAL ORGANIC VAPORS (PPM) AMBIENT	SAMPLE	ACTUAL	REMARKS

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APPENDIX D

SOP-HWCL-03

METHOD OF X-RAY FLUORESCENCE ANALYSIS

OF

METALS IN SOIL

002888

STANDARD OPERATING PROCEDURE

Number:	SOP-HWCL-03	Page:	1 of 7
Originated By:	PRW	Date:	Jan. 1986
Approved By:	WRT	Status:	Final
		Rev.:	0

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METHOD OF X-RAY FLUORESCENCE ANALYSIS OF METALS IN SOIL

1.0 Scope and Application

1.1 This procedure is for the qualitative analysis of metals in soil using an X-ray fluorescence analyzer. A radioactive source is chosen which emits X-rays to obtain spectral responses from metal compounds in a soil media. Metals can be identified and quantified by the characteristic energies which they re-emit. Typical lower detection limits are 25 to 50 ppm in complex soil media.

2.0 Summary of Method

2.1 A dried and homogenized soil sample is placed in a calibrated X-ray fluorescence analyzer and subjected to X-rays. Re-emitted X-rays are detected and analyzed to identify metals and their concentrations.

3.0 Apparatus and Materials

3.1 A Columbia Scientific Industries X-Met 840 Portable X-Ray Analyzer with powder/liquid sample probe.

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3.2 Analytical balance capable of weighing to 0.1gm.

3.3 Plastic sample cups and mylar film from Columbia Scientific Industries.

3.4 Drying oven capable of maintaining a constant temperature of 105° C.

3.5 Grinder, ball mill grinder, mortar and pestle, or similar apparatus capable of reducing dry soils to fine powders.

3.6 Glass cutting board and stainless steel knife or device to grate the sample.

3.7 U.S. Standard Sieve No. 10 (2.00 mm) and U.S. Standard Sieve No. 200 (0.075 mm).

4.0 Sample, Preservation, and Handling

4.1 Samples shall be stored in detergent washed, tap water rinsed 8 oz. or 16 oz. glass jars with Teflon-lined lids at 4°C. Maximum holding time for soil samples is 6 months. At least 100 gm of soil is required.

5.0 Procedure

5.1 Remove the sample from the jar and place it on a glass cutting board. With a stainless steel knife or grating device, break the sample down to 1/4-in. pieces or less and thoroughly mix the samples.

5.2 Fill a weighing dish with about 50 gm of soil and record the weight of the soil. Dry the soil for 24 hours at a constant temperature of 105°C. Weigh the dried soil and compute the moisture content on a dry weight basis, in accordance with ASTM D 2216.

5.3 Grind the samples in the grinding apparatus until they are fine powders. Samples with gravel and large organic materials should be sieved first with a U.S. Standard Sieve No. 10. Weigh and record the weight of material retained on the sieve. After grinding is complete, the powders should be sieved with a U.S. Standard Sieve No. 200. Materials passing the U.S. Standard Sieve No. 200 are to be used for the analysis. Samples with high concentrations of organic compounds may not pass the No. 200 sieve and should be sieved with a U.S. Standard Sieve No. 10 if less than 5 gm pass the No. 200 sieve.

5.4 Prepare the sample cup by placing a piece of the mylar film over the bottom of the larger half of the sample cup. Snap the smaller half of the sample cup over the bottom of the larger half. This clamps the mylar film in place. The film should be tight, without wrinkles.

5.5 Fill the cup with the dried, pulverized samples. Tap the cup on a hard surface until no more settling is observed to occur and the sample surface is visually flat and uniform. A 1/4 in. to 1/2 in. layer of sample should be in each cup.

5.6 Turn the X-MET 840 on. The LCD should read "SELF TEST COMPLETE" and the ">" sign should be displayed. This display may be replaced by "GAIN CONTROL: COUNT RATE TOO LOW". This is normal. Allow the machine to warm up for at least 1/2 hour with the probe lid closed. Open up the lid and wait an additional 5 minutes for gain control stabilization. The instrument is ready to measure samples. Keep the lid of the probe open for gain control between the sample analyses.

5.7 Place the sample cup in the probe, making sure the lid is completely closed, and press "START".

After it has finished scanning, "ASSAYS" will appear and the metals of interest and their concentrations (mg/kg dry weight basis) will appear on the screen. Record the results on the X-ray Analysis Data Sheet. Enter "STD" on the keypad after each measurement and record the standard deviation of counting statistics for each metal. Store the samples in glass storage vials for future reference. Report results by total wet weight. Calculations are as follows:

$$\frac{\text{Sample Dry wt}}{\text{Sample Wet wt.}} \times \text{Results (mg/kg)} = \text{Corrected Results (mg/kg)}$$

For samples that were sieved with a U.S. Standard Sieve No. 10, the weight of materials retained should be subtracted from the sample dry weight in the calculations:

$$\frac{\text{Sample Dry wt.} - \text{Retained Sample wt.}}{\text{Sample Wet wt.}} \times \text{Results (mg/kg)} = \text{Corrected Results (mg/kg)}$$

6.0 Equipment Cleanup

6.1 The knife, grating device, and cutting board should be detergent washed and tap water rinsed to

remove all dirt and air dried between samples. The cups should be detergent washed and tap water rinsed between samples and air dried. Replace the mylar film between each analysis.

7.0 Quality Assurance/Quality Control Measures

7.1 Ten percent of the samples will have a replicate analysis to evaluate analytical precision. Randomly choose 1 sample and prepare a separate aliquot and perform analysis in accordance with Section 5.0. Record the results on the : Ray Analysis Data Sheet. Record the respective standard deviations of counting statistics.

7.2 Compute the differences for each metal concentration between the original analysis and the replicate analysis. If any values differ by greater than 2 reportable standard deviations, then conduct a second relicate analysis on a third aliquot from the same sample. Reportable standard deviation is defined as the greater of the two values of the standard deviation of counting statistics and the calibration model standard deviation.

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7.3 To check for instrument precision, perform an analysis of a known standard. This should be performed once per day. If the average of the standard results vary greater than 2 reportable standard deviations, then open the lid of the probe to allow it to undergo gain control for 15 minutes. Remeasure the sample.

8.0 References

8.1 Operating Instructions: X Met 840 Portable XRF Analyzer, Columbia Scientific Industries, 1985.

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X-RAY ANALYSIS DATA SHEET

PROJECT NO.:	PROJECT:	CLIENT:	METALS CONCENTRATION/SAMPLE STANDARD DEVIATION

DATE TESTED:	BY:						ARSENIC	CHROMIUM	COPPER	LEAD	ZINC
SAMPLE NO.	DEPTH	SAMPLE DATE	TARE WEIGHT	CAN PLUS WET SOIL	CAN PLUS DRY SOIL	WATER CONTENT	MODEL SD=32 MODEL DL=65	MODEL SD=204 MODEL DL=66	MODEL SD=42 MODEL DL=26	MODEL SD=162 MODEL DL=101	MODEL SD=56 MODEL DL=30

REPLICATE SAMPLE NO.	METAL	STANDARD VALUE / END-OF-DAY VALUE	DEV.	REPLICATE 1 RESULTS					
	As	1578 ± 67		DIFFERENCE					
STANDARD SAMPLE NO.	Cr	1436 ± 200		LESS THAN 2 STANDARD DEVIATIONS ?	☐ YES ☐ NO	☐ YES ☐ NO	☐ YES ☐ NO	☐ YES ☐ NO	☐ YES ☐ NO
CHECKED BY:	Cu	427 ± 37		REPLICATE 2 RESULTS					
DATE:	Pb	174 ± 63		DIFFERENCE					
STATUS: ☐ DRAFT ☐ FINAL	Zn	2612 ± 56		LESS THAN 2 STANDARD DEVIATIONS ?	☐ YES ☐ NO	☐ YES ☐ NO	☐ YES ☐ NO	☐ YES ☐ NO	☐ YES ☐ NO

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APPENDIX E

SUMMARY OF SOIL METALS

SURROGATE TEST RESULTS

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KOPPERS - SOUTH CAVALCADE SITE

Soil Surrogate Test Results (ppm) (1),(2)

Sample No.	Sample Depth -ft-	Sample Date	Metals Test Date	Water Content, Percent (3)	Arsenic (DL=88) Conc.	Arsenic std. dev.	Chromium (DL=88) Conc.	Chromium std. dev.	Copper (DL=25) Conc.	Copper std. dev.	Lead (DL=101) Conc.	Lead std. dev.	Zinc (DL=30) Conc.	Zinc std. dev.
A01-AB01-01	7	2-3-86	2-10-86	18.1	BDL	53	BDL	204	BDL	42	125	162	BDL	56
A01-AB02-01	4	2-3-86	2-10-86	17.3	BDL	57	BDL	204	BDL	42	112	162	196	56
A01-AB03-01	5	2-3-86	2-10-86	15.7	BDL	54	BDL	204	BDL	42	120	162	304	56
A01-AB04-01	8	2-3-86	2-10-86	18.8	BDL	50	BDL	204	BDL	42	166	162	141	56
A01-AB05-01	5	2-3-86	2-10-86	15.5	BDL	61	BDL	204	BDL	42	138	162	247	56
A01-AB06-01	6	2-3-86	2-10-86	14.2	BDL	57	BDL	204	BDL	42	127	162	BDL	56
A01-AB07-01	4	2-3-86	2-10-86	15.5	BDL	58	BDL	204	BDL	42	222	162	35	56
A01-AB08-01	8	2-3-86	2-10-86	16.0	BDL	54	BDL	204	BDL	42	BDL	162	47	56
A01-AB09-01	4	2-4-86	2-7-86	20.2	BDL	58	BDL	204	BDL	42	210	162	BDL	56
A01-AB10-01	12	2-5-86	2-10-86	25.6	BDL	58	BDL	204	BDL	42	BDL	162	81	56
A01-AB11-01	5	2-5-85	2-10-86	18.5	BDL	49	BDL	204	BDL	42	165	162	BDL	56
A02-AB01-01	5	1-31-86	2-7-86	15.4	BDL	50	BDL	204	BDL	42	140	162	BDL	56
A02-AB02-01	3	1-31-86	2-7-86	17.2	BDL	50	BDL	204	BDL	42	249	162	BDL	56
A02-AB03-01	7	1-31-86	2-7-86	16.9	BDL	52	BDL	204	BDL	42	152	162	BDL	56
A02-AB04-01	6	1-31-86	2-7-86	17.8	BDL	50	BDL	204	BDL	42	171	162	BDL	56
A02-AB05-01	4	1-31-86	2-7-86	18.4	BDL	47	BDL	204	29	42	242	162	BDL	56
A02-AB06-01	6	1-31-86	2-7-86	15.0	BDL	46	BDL	204	BDL	42	BDL	162	BDL	56
A02-AB07-01	4	1-31-86	2-7-86	15.5	BDL	52	BDL	204	BDL	42	162	162	BDL	56
A02-AB08-01	7	1-31-86	2-7-86	14.8	BDL	46	BDL	204	BDL	42	148	162	BDL	56
A02-AB09-01	4	1-31-86	2-7-86	16.8	BDL	49	BDL	204	BDL	42	158	162	BDL	56
A02-AB10-01	5	1-31-86	2-7-86	17.0	BDL	50	BDL	204	BDL	42	129	162	BDL	56
A02-AB11-01	7	1-31-86	2-7-86	15.2	BDL	49	BDL	204	BDL	42	226	162	BDL	56
A03-AB01-01	10	2-6-86	2-10-86	26.1	BDL	53	BDL	204	BDL	42	147	162	BDL	56
A03-AB02-01	5	2-6-86	2-10-86	6.8	BDL	48	BDL	204	BDL	42	BDL	162	BDL	56
A04-AB01-01	7	2-4-86	2-7-86	16.6	BDL	43	BDL	204	BDL	42	171	162	BDL	56
A04-AB02-01	5	2-4-86	2-7-86	19.5	BDL	36	BDL	204	BDL	42	190	162	BDL	56
A04-AB03-01	8	2-4-86	2-7-86	17.6	BDL	37	BDL	204	BDL	42	106	162	BDL	56
A04-AB04-01	4	2-4-86	2-7-86	19.0	BDL	49	BDL	204	BDL	42	183	162	BDL	56
A04-AB05-01	3	2-4-86	2-7-86	18.1	BDL	53	BDL	204	BDL	42	146	162	BDL	56
A04-AB06-01	8	2-5-86	2-11-86	22.1	BDL	49	BDL	204	42	42	149	162	BDL	56
A04-AB07-01	10	2-5-86	2-11-86	21.2	BDL	55	BDL	204	BDL	42	175	162	BDL	56
A04-AB08-01	5	2-5-86	2-11-86	19.4	BDL	59	BDL	204	BDL	42	165	162	BDL	56
A04-AB09-01	11	2-6-86	2-11-86	23.0	BDL	58	BDL	204	BDL	42	160	162	BDL	56
A04-AB10-01	8	2-6-86	2-11-86	19.6	BDL	55	BDL	204	BDL	42	255	162	BDL	56
A04-AB11-01	8	2-6-86	2-11-86	18.8	BDL	49	BDL	204	BDL	42	123	162	BDL	56
A04-AB12-01	7	2-6-86	2-11-86	18.7	BDL	44	BDL	204	BDL	42	114	162	BDL	56
A04-AB13-01	6	2-7-86	2-19-86	18.2	BDL	46	BDL	204	BDL	42	144	162	BDL	56
A04-AB13-02	12	2-7-86	2-19-86	30.5	BDL	56	BDL	204	BDL	42	122	162	BDL	56
A04-AB14-01	5	2-7-86	2-19-86	19.8	BDL	51	BDL	204	BDL	42	104	162	BDL	56
A04-AB15-01	10	2-7-86	2-19-86	28.0	BDL	45	134	204	BDL	42	BDL	162	BDL	56
A05-AB01-01	4	1-16-86	1-21-86	22.8	BDL	48	BDL	204	BDL	42	158	162	BDL	56
A05-AB02-01	4	1-17-86	1-21-86	20.3	BDL	53	BDL	204	BDL	42	208	162	BDL	56

(1) Total weight basis. (2) BDL denotes below detection limits. (3) Dry weight basis. (4) DL denotes detection limits.

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HOPPERS - SOUTH CAVALCADE SITE

(1), (2)
Soil Surrogate Test Results (ppm)

Sample No.	Sample Depth -ft-	Sample Date	Metals Test Date	Water Content, percent (3)	Arsenic (DL=88) Conc.	Arsenic std. dev.	Chromium (DL=88) Conc.	Chromium std. dev.	Copper (DL=25) Conc.	Copper std. dev.	Lead (DL=101) Conc.	Lead std. dev.	Zinc (DL=30) Conc.	Zinc std. dev.
A05-A803-01	5	1-17-86	1-21-86	11.7	BDL	47	BDL	204	BDL	42	BDL	162	BDL	56
A05-A804-01	3	1-17-86	1-21-86	18.7	BDL	58	BDL	204	BDL	42	BDL	162	BDL	56
A05-A805-01	4	1-17-86	2-4-86	19.7	BDL	52	BDL	204	BDL	42	235	162	BDL	56
A06-A801-01	4	1-20-86	1-24-86	17.6	BDL	52	BDL	204	BDL	42	180	162	BDL	56
A06-A802-01	6	1-20-86	1-24-86	16.7	BDL	59	BDL	204	BDL	42	227	162	BDL	56
A06-A803-01	6	1-20-86	1-23-86	34.6	BDL	32	BDL	204	59	42	109	162	277	56
A06-A804-01	3	1-20-86	1-23-86	194.0	365	57	BDL	204	222	42	363	162	1034	56
A06-A805-01	2	1-20-86	1-24-86	10.8	BDL	240	BDL	204	BDL	42	BDL	162	2062	56
A06-A805-02	5	1-20-86	1-23-86	19.0	BDL	57	BDL	204	BDL	42	BDL	162	BDL	56
A06-A806-01	2	1-21-86	2-4-86	(TAP)	2790	277	BDL	204	BDL	42	BDL	162	198	56
A06-A806-02	5	1-21-86	1-23-86	16.9	BDL	51	BDL	204	BDL	42	BDL	162	BDL	56
A06-A806-03	8	1-21-86	1-23-86	26.8	BDL	44	BDL	204	BDL	42	146	162	BDL	56
A06-A807-01	5	1-21-86	1-23-86	19.0	BDL	51	BDL	204	BDL	42	104	162	BDL	56
A06-A808-01	2	1-21-86	1-24-86	15.2	BDL	33	BDL	204	81	42	123	162	BDL	56
A06-A809-01	6	1-21-86	1-24-86	18.4	BDL	49	BDL	204	BDL	42	153	162	BDL	56
A06-A810-01	4	1-21-86	1-23-86	23.7	BDL	58	BDL	204	BDL	42	171	162	BDL	56
A07-A801-01	8	1-16-86	1-21-86	20.1	BDL	47	BDL	204	BDL	42	112	162	BDL	56
A07-A802-01	4	1-16-86	1-21-86	21.3	BDL	35	BDL	204	BDL	42	147	162	524	56
A07-A803-01	6	1-16-86	1-21-86	18.1	BDL	41	BDL	204	44	42	120	162	43	56
A07-A803-02	8	1-16-86	1-21-86	19.7	BDL	51	BDL	204	BDL	42	178	162	BDL	56
A07-A804-01	4	1-16-86	1-21-86	26.0	106	45	BDL	204	BDL	42	BDL	162	33	56
A07-A805-01	2	1-17-86	1-23-86	19.8	BDL	52	BDL	204	BDL	42	400	162	314	56
A07-A806-01	2	1-20-86	1-24-86	7.8	151	32	109	204	BDL	42	BDL	162	557	56
A07-A806-02	3	1-20-86	1-24-86	23.2	206	52	BDL	204	BDL	42	BDL	162	BDL	56
A07-A807-01	2	1-20-86	1-24-86	19.3	BDL	51	BDL	204	BDL	42	232	162	72	56
A07-A807-02	6	1-20-86	1-24-86	29.7	BDL	53	BDL	204	BDL	42	155	162	BDL	56
A08-A801-01	2	1-20-86	1-24-86	15.8	BDL	32	BDL	204	128	42	163	162	BDL	56
A08-A802-01	4	1-20-86	1-24-86	17.1	BDL	45	BDL	204	BDL	42	201	162	BDL	56
A08-A803-01	2	1-20-86	1-23-86	22.7	BDL	55	BDL	204	BDL	42	177	162	BDL	56
A08-A804-01	4	1-21-86	1-23-86	18.4	BDL	49	BDL	204	BDL	42	113	162	BDL	56
A09-A801-01	2	1-15-86	1-21-86	9.2	353	32	BDL	204	486	42	197	162	1228	56
A09-A802-01	2	1-15-86	1-21-86	12.1	170	32	BDL	204	47	42	BDL	162	153	56
A09-A803-01	8	1-17-86	1-24-86	17.4	BDL	48	BDL	204	BDL	42	182	162	BDL	56
A09-A804-01	3	1-17-86	1-24-86	14.6	BDL	58	BDL	204	BDL	42	244	162	40	56
A09-A805-01	5	1-18-86	1-23-86	17.6	BDL	49	BDL	204	BDL	42	287	162	BDL	56
A09-A806-01	4	1-24-86	2-4-86	20.6	BDL	46	BDL	204	BDL	42	128	162	BDL	56
A09-A807-01	4	1-24-86	2-4-86	24.7	BDL	45	BDL	204	BDL	42	190	162	BDL	56
A09-A808-01	4	1-25-86	2-4-86	9.4	164	32	BDL	204	BDL	42	BDL	162	BDL	56
A09-A809-01	6	1-27-86	2-4-86	20.4	BDL	50	BDL	204	32	42	BDL	162	BDL	56
A10-A801-01	8	1-15-86	1-21-86	16.8	BDL	44	BDL	204	BDL	42	108	162	BDL	56
A10-A802-01	6	1-15-86	1-21-86	19.0	BDL	47	BDL	204	BDL	42	123	162	BDL	56
A10-A803-01	3	1-16-86	1-24-86	17.1	BDL	46	BDL	204	27	42	195	162	BDL	56

(1) Total weight basis. (2) BDL denotes below detection limits. (3) Dry weight basis. (4) DL denotes detection limits.

002899

WOPPERS - SOUTH CAVALCADE SITE

Soil Surrogate Test Results (ppm) (1),(2)

Sample No.	Sample Depth -ft-	Sample Date	Metals Test Date	Water Content, percent (3)	Arsenic (DL=88) Conc.	Arsenic std. dev.	Chromium (DL=68) Conc.	Chromium std. dev.	Copper (DL=25) Conc.	Copper std. dev.	Lead (DL=101) Conc.	Lead std. dev.	Zinc (DL=30) Conc.	Zinc std. dev.
A10-AB04-01	6	1-18-86	1-24-86	17.2	BDL	40	BDL	204	39	42	BDL	162	BDL	56
A10-AB05-01	4	1-18-86	1-24-86	15.0	BDL	51	BDL	204	BDL	42	132	162	226	56
A10-AB06-01	5	1-18-86	1-23-86	16.1	BDL	41	BDL	204	BDL	42	BDL	162	BDL	56
A10-AB07-01	4	1-20-86	1-24-86	16.8	BDL	51	BDL	204	BDL	42	151	162	267	56
A10-AB08-01	5	1-29-86	2-6-86	18.2	BDL	46	BDL	204	BDL	42	164	162	BDL	56
A10-AB09-01	8	1-29-86	2-6-86	16.0	BDL	46	BDL	204	BDL	42	BDL	162	BDL	56
A11-AB01-01	6	1-23-86	2-4-86	16.4	BDL	49	BDL	204	BDL	42	BDL	162	2680	56
A11-AB02-01	2	1-23-86	2-4-86	16.8	BDL	50	BDL	204	BDL	42	BDL	162	4122	56
A11-AB03-01	4	1-28-86	2-6-86	17.7	BDL	42	BDL	204	53	42	BDL	162	2442	56
A11-AB05-01	3	1-23-86	2-4-86	15.3	118	32	166	204	81	42	BDL	162	1274	56
A11-AB07-01	6	1-23-86	2-4-86	16.4	BDL	48	BDL	204	BDL	42	BDL	162	BDL	56
A11-AB08-01	2.5	1-23-86	2-4-86	20.8	BDL	56	BDL	204	BDL	42	BDL	162	2918	56
A11-AB09-01	5	1-24-86	2-4-86	13.8	BDL	53	BDL	204	BDL	42	BDL	162	4048	56
A11-AB10-01	6	1-23-86	2-4-86	16.5	BDL	49	BDL	204	BDL	42	106	162	435	56
A11-AB11-01	8	1-23-86	2-4-86	37.2	BDL	45	BDL	204	BDL	42	BDL	162	BDL	56
A11-AB12-01	5	1-28-86	2-4-86	14.3	BDL	39	BDL	204	BDL	42	BDL	162	252	56
A11-AB13-01	5	1-28-86	2-4-86	18.5	BDL	46	BDL	204	BDL	42	118	162	BDL	56
A11-AB14-01	4	1-28-86	2-4-86	17.6	BDL	50	BDL	204	BDL	42	BDL	162	3230	56
A12-AB01-01	2.5	1-28-86	2-4-86	16.7	BDL	53	BDL	204	BDL	42	145	162	298	56
A12-AB02-01	2.5	1-28-86	2-4-86	15.6	BDL	57	BDL	204	BDL	42	228	162	223	56
A12-AB03-01	3	1-28-86	2-4-86	18.3	BDL	59	BDL	204	BDL	42	238	162	228	56
A13-AB01-01	4	1-24-86	2-4-86	17.6	497	64	208	204	420	42	1131	162	5213	56
A13-AB01-02	8	1-24-86	2-4-86	56.2	BDL	166	91	204	436	42	BDL	162	15858	64
A13-AB02-01	5	1-24-86	2-6-86	120.5	BDL	77	BDL	204	BDL	42	BDL	162	2482	56
A13-AB03-01	5	1-24-86	2-6-86	15.8	BDL	44	BDL	204	BDL	42	BDL	162	BDL	56
A13-AB04-01	5	1-25-86	2-6-86	12.4	93	58	BDL	204	BDL	42	245	162	70	56
A13-AB05-01	8	1-23-86	2-6-86	18.8	BDL	35	BDL	204	BDL	42	BDL	162	BDL	56
A13-AB06-01	5	1-27-86	2-6-86	15.7	BDL	43	BDL	204	BDL	42	138	162	BDL	56
A13-AB07-01	8	1-27-86	2-6-86	18.4	BDL	44	BDL	204	BDL	42	155	162	BDL	56
A14-AB01-01	6	1-29-86	2-6-86	15.4	BDL	43	BDL	204	BDL	42	BDL	162	BDL	56
A14-AB01-02	12	1-29-86	2-6-86	19.5	BDL	43	BDL	204	BDL	42	154	162	BDL	56
A14-AB02-01	4	1-29-86	2-6-86	16.9	BDL	51	BDL	204	BDL	42	130	162	BDL	56
A14-AB02-02	10	1-29-86	2-6-86	17.5	BDL	40	BDL	204	BDL	42	BDL	162	BDL	56
A14-AB02-03	12	1-29-86	2-6-86	21.1	BDL	49	BDL	204	BDL	42	106	162	BDL	56
A14-AB03-01	8	1-29-86	2-6-86	16.0	BDL	43	BDL	204	BDL	42	BDL	162	BDL	56
A14-AB03-02	12	1-29-86	2-6-86	20.3	BDL	54	BDL	204	BDL	42	207	162	BDL	56
A15-AB01-01	8	1-24-86	2-6-86	14.5	BDL	43	BDL	204	BDL	42	192	162	BDL	56
A15-AB02-01	4	1-25-85	2-6-86	15.5	BDL	44	BDL	204	BDL	42	240	162	BDL	56
A15-AB03-01	5	1-25-85	2-6-86	17.8	BDL	51	BDL	204	BDL	42	149	162	BDL	56
A16-AB01-01	8	1-25-86	2-6-86	17.0	BDL	42	BDL	204	BDL	42	114	162	BDL	56
A16-AB02-01	4	1-25-85	2-6-86	18.5	BDL	56	BDL	204	BDL	42	208	162	BDL	56
A17-AB01-01	6	1-27-86	2-6-86	15.4	BDL	50	BDL	204	BDL	42	133	162	BDL	56

(1) Total weight basis. (2) BDL denotes below detection limits. (3) Dry weight basis. (4) DL denotes detection limits.

002900

POPPERS - SOUTH CAVALCADE SITE

Soil Surrogate Test Results (ppm) (1),(2)

Sample No.	Sample Depth -ft-	Sample Date	Metals Test Date	Water Content, percent (3)	Arsenic (DL=89) Conc.	Arsenic std. dev.	Chromium (DL=88) Conc.	Chromium std. dev.	Copper (DL=25) Conc.	Copper std. dev.	Lead (DL=101) Conc.	Lead std. dev.	Zinc (DL=30) Conc.	Zinc std. dev.
A17-AB02-01	5	1-27-86	2-6-86	15.6	BDL	51	BDL	204	BDL	42	BDL	162	942	56
A18-AB01-01	7	1-27-86	2-6-86	17.3	BDL	44	BDL	204	BDL	42	BDL	162	BDL	56
A19-AB01-01	8	1-27-86	2-8-86	24.0	BDL	48	BDL	204	BDL	42	152	162	BDL	56
A19-AB02-01	4	1-27-86	2-6-86	14.5	BDL	49	BDL	204	BDL	42	153	162	BDL	56
A20-AB01-01	2	1-21-86	1-23-86	14.7	113	58	BDL	204	BDL	42	173	162	BDL	56
A20-AB01-02	4	1-21-86	1-23-86	15.7	BDL	53	BDL	204	BDL	42	267	162	BDL	56
A21-AB01-01	2	1-21-86	1-23-86	15.9	BDL	51	BDL	204	BDL	42	197	162	BDL	56
A21-AB01-02	4	1-21-86	1-23-86	8.3	BDL	53	BDL	204	25	42	184	162	BDL	56
A22-AB01-01	1	1-29-86	2-6-86	13.7	BDL	58	BDL	204	BDL	42	183	162	BDL	56
A22-AB01-02	4	1-29-86	2-6-86	14.2	BDL	55	BDL	204	BDL	42	241	162	184	56
A23-AB01-01	1	1-29-86	2-6-86	16.2	BDL	56	BDL	204	BDL	42	170	162	BDL	56
A23-AB01-02	4	1-29-86	2-6-86	19.2	BDL	44	BDL	204	BDL	42	BDL	162	BDL	56
A24-AB01-01	7.5	2-7-86	2-19-86	25.7	BDL	48	BDL	204	BDL	42	BDL	162	BDL	56
A24-AB02-01	5	2-7-86	2-19-86	19.8	BDL	54	BDL	204	BDL	42	164	162	BDL	56
A24-AB03-01	12	2-7-86	2-19-86	25.6	BDL	51	BDL	204	BDL	42	BDL	162	BDL	56
A24-AB04-01	8	2-11-86	2-24-86	22.5	BDL	45	BDL	204	BDL	42	242	162	BDL	56
A24-AB05-01	12	2-11-86	2-24-86	24.9	BDL	32	295	204	BDL	42	159	162	BDL	56
A25-AB01-01	5	2-3-86	2-10-86	16.5	BDL	48	BDL	204	BDL	42	144	162	BDL	56
A25-AB02-01	8	2-3-86	2-10-86	18.2	BDL	54	BDL	204	BDL	42	153	162	BDL	56
A25-AB03-01	7	2-4-86	2-7-86	20.5	BDL	48	BDL	204	BDL	42	BDL	162	BDL	56
A26-AB01-01	5	2-11-86	2-24-86	16.8	BDL	46	BDL	204	BDL	42	116	162	BDL	56
A26-AB02-01	13	2-11-86	2-24-86	31.1	116	49	BDL	204	BDL	42	BDL	162	42	56
A26-AB03-01	5	2-11-86	2-24-86	17.1	BDL	36	BDL	204	BDL	42	BDL	162	BDL	56
A26-AB04-01	10	2-11-86	2-24-86	25.8	BDL	45	BDL	204	BDL	42	BDL	162	BDL	56
A27-AB01-01	2	2-14-86	2-24-86	17.9	BDL	53	BDL	204	BDL	42	310	162	BDL	56
A27-AB01-02	4	2-14-86	2-24-86	18.9	BDL	48	BDL	204	BDL	42	110	162	BDL	56
A28-AB01-01	2	2-14-86	2-24-86	14.3	BDL	58	BDL	204	BDL	42	215	162	BDL	56
A28-AB01-02	4	2-14-86	2-24-86	16.1	BDL	52	BDL	204	BDL	42	186	162	BDL	56
A28-AB02-01	2	2-14-86	2-24-86	16.2	BDL	58	BDL	204	BDL	42	320	162	BDL	56
A28-AB02-02	4	2-14-86	2-24-86	18.7	BDL	48	BDL	204	BDL	42	293	162	BDL	56

(1) Total weight basis. (2) BDL denotes below detection limits. (3) Dry weight basis. (4) DL denotes detection limits.

002901