POOR QUALITY ORIGINAL

Cavalcade Site

Summary of Response Activities

The only proposed response activity at this site was to have been undertaken by the Houston Metropolitan Transit Authority (MTA). This was contingent upon MTA acquiring the site and was described in their May 17, 1983 letter to TDWR (copy attached). With the failure of the bond election, MTA has notified TDWR of their intent not to proceed. No other prospective response activity has been planned.

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1012164

001

000001

METRO

Metropolitan Transit Authority
[illegible]
Houston, Texas 77208-1429

May 17, 1983

Mr. Seth C. Burnitt
Deputy Director
Texas Department of
Water Resources
P. O. Box 13087
Austin, Texas 78711

Subject: Proposed Contamination
Remedial Action Program
Cavalcade Yard & Shop Site
METRO-STAGE ONE, Regional Rail System

Dear Mr. Burnitt:

The Metropolitan Transit Authority of Harris County (METRO) previously informed the Texas Department of Water Resources (TDWR) that it is anticipating the acquisition of tracts of land in North Houston for METRO's Cavalcade Yard & Shop facility. The tracts are bounded approximately by the HB&T Railway Company rail lines on the east and west, and by Cavalcade and Collingsworth Streets on the north and south, respectively.

METRO became aware that this site was formerly used by Koppers Company Inc., and other companies for wood preserving and creosoting operations after contaminated soils and groundwater, related to the creosoting operations, were discovered during METRO's reconnaissance drilling program being conducted by McClelland Engineers, Inc. (MEI). MEI and their environmental consultants, Camp Dresser & McKee Inc. (CDM), have been evaluating the extent of contamination on this site due to the past wood preserving and creosoting activities and/or on-site migration. As discussed with you at our meeting of March 11, 1983, this evaluation has required extensive field investigation, sampling and analysis. The summary results of these efforts were presented at that time. The detailed analytical results were transmitted to your staff on March 12, 1983. Based upon the evaluation of the results of this study by Camp Dresser & McKee Inc. and McClelland Engineers, Inc., METRO is proposing the following program of remedial action for your review and approval:

000002

1. On-site surface water, collected runoff, and groundwater encountered during construction will be pretreated, if required, and discharged into the municipal sanitary sewer system in accordance with the terms and conditions of an Industrial Waste Permit to be obtained from the City of Houston.

2. Areas M & N, as shown on Plate 1, will be excavated to depths of seven (7) and twelve (12) feet respectively to remove all material having observable contamination, defined as visual stains or noticeable creosote odors. The excavation will be backfilled with uncontaminated material and capped with a minimum of three (3) feet of compacted clay having a permeability equal to or less than 1×10^{-7} cm/sec. The excavated material will be disposed of in a permitted TDWR Class III landfill or a Type I municipal landfill permitted by the Texas Department of Health.

3. Other areas of observable soil contamination (as defined above) unearthed during construction shall be addressed using one or a combination of the following remedial measures:

   a. The contaminated material shall be removed as disposed of as a Class III or Type I waste (See Item 2).

   b. The contaminated material shall be capped using a minimum of 18 inches of compacted clay as specified above.

   c. The contaminated material shall be capped using a minimum of four (4) inches of bituminous concrete or portland cement concrete placed in accordance with standard construction practice.

   d. The contaminated material shall be capped using an acceptable synthetic liner installed in accordance with manufacturers recommendations and stabilized with a suitable cover material (less than 18 inches).

All grading associated with construction in these areas will provide positive surface drainage to a collection system.

000003

4. Visibly contaminated sediments and soils containing free liquid shall be drained on-site by spreading on an impermeable surface, i.e. a synthetic liner in a bermed area. Free liquids collected will be disposed of in accordance with Item 1. The drained material shall be disposed of as a Class III or Type I waste (See Item 2). The resulting excavations shall be back-filled with suitable material and capped as presented in Item 3b, c, or d.

5. A groundwater monitoring program will be initiated for the upper sand aquifer within 30 days of completion of the excavation of areas M & N as presented in Item 2. Two groundwater monitoring wells, one upgradient and one downgradient, will be sampled and analyzed for the parameters specified in Appendix I at a frequency of 90 days, for a period of one year. The use of one or more existing on-site wells will be considered for this monitoring program. The duration of the monitoring program will be based on attenuation of the off-site migration of the contamination in the upper sand aquifer resulting from the proposed remedial actions with respect to existing conditions. The following criteria will be used to determine when the groundwater monitoring program will be terminated or if additional groundwater monitoring action may be required:

   a. Existing conditions will be defined as the cumulative sum of the creosote contaminants as listed in Appendix I in a representative downgradient well to be installed in the upper sand aquifer.

   b. If during the first year of sampling and analysis, the cumulative sum of the creosote contaminants in a representative down-gradient well, less existing conditions as defined in Item 5a, is less than 1 ppm in any two (2) successive sampling rounds, then the monitoring program will be terminated.

   c. If during the first year of sampling and analysis, the cumulative sum of the creosote contamints in the representative downgradient well, less existing conditions as defined in Item 5a, is not less than 1 ppm in any two (2) successive sampling rounds, then the monitoring program will be continued and additional remedial action will be considered taking into account upgradient conditions.

000004

d. For the purpose of calculating the cumulative sum of creosote contaminants, BDL (below detection limits) will be considered as zero (0) contribution.

If the groundwater monitoring program is terminated based upon the above, then no additional remedial action or monitoring shall be required by TDWR other than as defined in this Remedial Action Plan for the use of the site for the purposes specified.

6. One deep groundwater monitoring well (approximately 200 feet) shall be installed on-site in the vicinity of areas M & N as shown on Plate 1. If the analyses of the samples from this well show no detectable creosote product contamination as listed in Appendix I, then no additional remedial action other than as defined in this Remedial Action Plan shall be required by TDWR for the use of this site for the purposes specified. If contamination is encountered then we reserve the option to initiate additional studies to determine if off-site disposal practices in the vicinity of this site significantly contributed to the contamination in this aquifer.

7. All closure activities associated with the above program will be certified and directly supervised by a professional engineer.

8. Upon acquisition of the aforementioned properties, a statement will be recorded on the deed notifying any potential purchaser of the properties that the land has been contaminated with wood preserving process wastes.

We feel that this Remedial Action Program will provide for the development and use of this site in an environmentally sound matter. We appreciate TDWR's assistance in the development of this program for this site and look forward to a continued good working relationship with your staff.

METRO wishes to extend an invitation to TDWR to conduct an on-site inspection of the proposed Cavalcade Yard & Shop site and to further discuss the proposed contamination Remedial Action Program. Please notify Donald Stankovsky, Houston Transit Consultants, (713) 871-0600, ext. 690 of the dates you would be available for this inspection and discussion.

000005

This letter serves as formal notice that when METRO does acquire this site, the necessary remedial and closure actions will be initiated by METRO in accordance with terms of the program agreed upon by METRO and TDWR. This confirms METRO's verbal notification during the meeting of March 11, 1989 of METRO's anticipated acquisition and closure of this site. Should METRO decide not to purchase the site, no responsibility for site cleanup or closure activities would be assumed by METRO.

Very truly yours,

William D. Alexander
Assistant General Manager
Rail System Development

WDA:DFS:pm

000006

APPENDIX

A. DEFINITION OF CREOSOTE WASTE PRODUCTS

Wood Preservation K001 - Federal Register Vol. 45, No. 98, Monday, May 19, 1980, Section 261.32

Bottom sediment sludge from the treatment of wastewaters from wood preserving processed that use creosote and/or pentachlorophenol.

B. BASIS FOR LISTING HAZARDOUS WASTES

Federal Register Vol. 45, No. 98, Monday, May 19, 1980, Appendix VII

benzene
benz(a)anthracene
benzo(a)pyrene
chrysene
4-nitrophenol
toluene
naphthalene
phenol
2-chlorophenol
2,4 dimethylphenol
2,4,6 trichlorophenol
pentachlorphenol
4,6-dinitro-o-cresol
tetrachlorophenol
Additional Compounds of concern to Texas Dept. of Water Resources (TDWR)
fluoranthene
benzo(b)fluoranthene
indeno (1,2,3-cd)pyrene
dibenz(a)anthracene
acenaphthylene

000007

800000

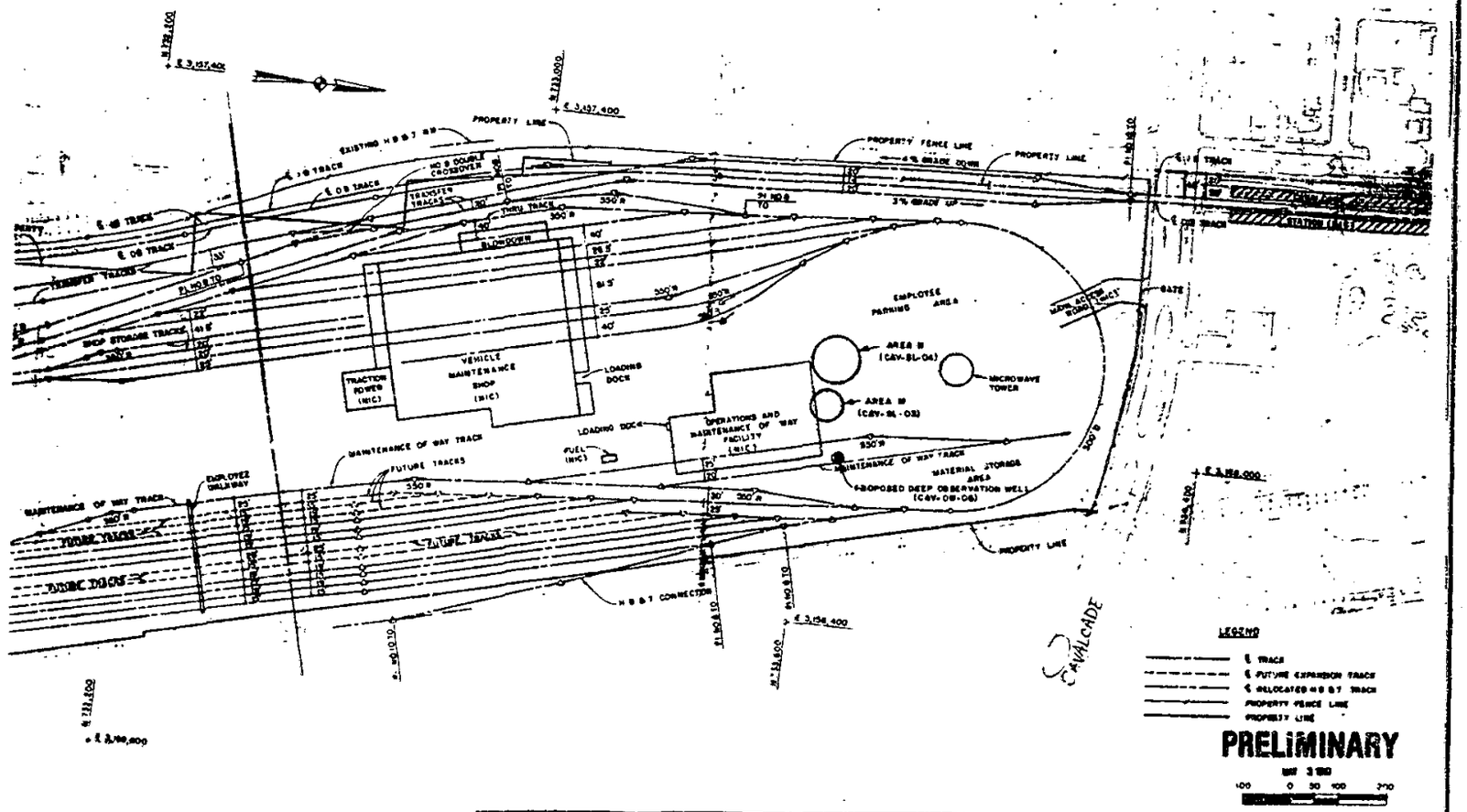


PLATE 1

Attachment Two

Summary of Analytical Results

000009

TEXAS DEPARTMENT OF WATER RESOURCES

RECEIVED

MAR 2 1983

FIELD OPERATIONS

CONFERENCE RECORD

Project: Houston's Metropolitan Transit Authority's (MTA) proposed Cavalcade Street railcar maintenance facility.

Conference date: March 10, 1983 Place: McClelland Engineers, 6100 Hillcroft, Houston

Type of conference: informal

(telephone, staff, formal or informal hearing, other)

Attendance:

Name	Agency
Mike Noggle	McClelland Engineers (MTA consultants)
Bill Todtm	" "
Don Muldoon	Camp, Dresser and McKee Inc. (CDM) (McClelland Consultants)
Dave Doyle	" " "
Robert S. Kier	" " "
Bob Brandes	" " "
Fred C. Dalbey	TDWR

Summary:

The meeting was held to discuss the results of laboratory data relating to a wood preservant contamination study conducted by CDM at MTA's proposed Cavalcade Street railcar maintenance facility. According to the consultants, the data indicate widespread surficial and localized deep soil and shallow groundwater contamination at the site. The contaminants consist primarily of weathered polynuclear aromatic compounds associated with creosote; PCPs were not detected in most samples. Highest contaminant concentrations were found in samples collected from the probable areas where two waste pits had been. Groundwater samples were collected from a shallow sandy stratum approximately 20' below ground. The consultants believe that these sands are probably localized and do not have a hydrological connection with a deeper aquifer. The writer did not receive a copy summary of the study results pending release clearance from MTA. The consultants were concerned about what remedial action, if any, would be required at the site and possible construction delays resulting from TDWR requirements. According to the consultants, MTA is scheduling construction activities to begin at the site in about 9 months. The writer indicated that some remedial action will probably be necessary and suggested that the consultants meet with personnel from the Central Office to discuss what remedial actions may be required at the site.

Prepared by: Fred C. Dalbey mjc

TDWR 0103

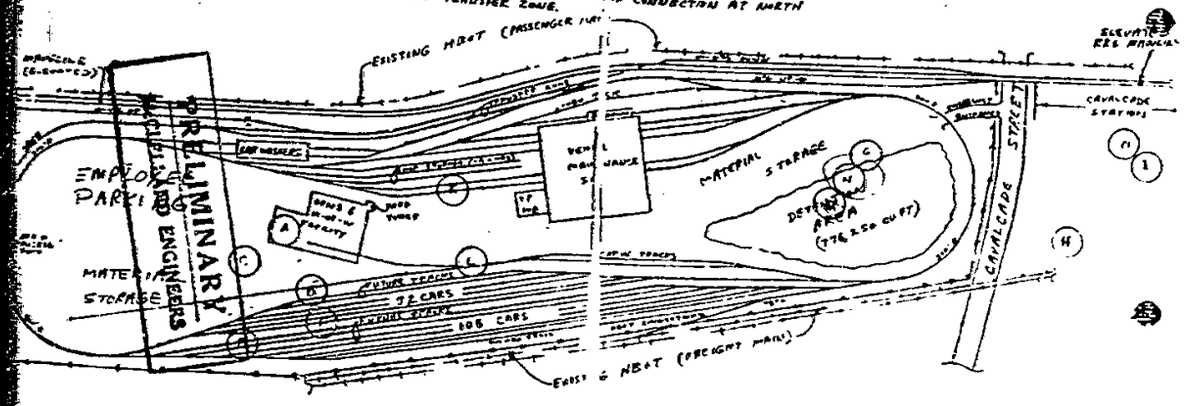
000010

70 ACRES (APPROX)
45,000 FEET TRACK (INITIALLY)
46 TURNOUTS (INITIALLY)
112 CARS INITIAL STORAGE CAPT.
180 CARS FUTURE STORAGE CAPT.

METR-STAGE 1, RRS
CAVALCADE YARD & SHOP
CONEPTUAL LAYOUT

N→

NOTE: THIS PLAN MUST BE DEVELOPED AT 1:100 SCALE TO VERIFY POSITIONING OF CAR WASHER ADJACENT TO TRANSFER ZONE AND SECOND END CONNECTION AT NORTH END OF TRANSFER ZONE.



SCALE: 1" = 250'

RER 2-18-23

000011

Metro Stage One, Regional Rail System
CAVALCADE YARD

CAMP DRESSER & McKEE INC

SURFACE WATER/SEDIMENT ANALYSIS

Location	Description	Indicator Categories: Creosote Coal Tar	Volatile Organics	Refractory Organics	Tar Acids	Metals
A	Surface Water Onsite Pond (W)	0	0	0	0	0
	Sediment	7,600	100 (MEC)	0	0	Pb (61) Zn (160)
B	Surface water R.R. ditch	105	0	18 (DBP)	0	-
	Sediment	109,300	110 (MEC)	0	0	Cu (82) Pb (165) Ni (9.1) Zn (260)
C	Sediment Trucking Co. ditch	9,460	48 MEC)	0	0	Cu (60) Pb (88) Zn (150)
D	Sediment Onsite Pond (E)	10,380	83 (MEC)	0	0	Cu (21) Pb (69) Zn (150)
E	Sediment NE corner ditch	580	39 (MEC)	0	0	Cu (21) Pb (20) Zn (30)

PRELIMINARY
McCLELLAND ENGINEERS

LEGEND:

1. 0 indicates non-detected.
2. All concentrations in ppb except metals are ppm.

3/83

000012

CAMP DRESSER & McKEE INC

Metro Stage One, Regional Rail System
CAVALCADE YARD

OBSERVATION WELL ANALYSIS

Location	Description	Indicator Categories: Creosote Coal Tar	Volatile Organics	Refractory Organics	Tar Acids	Metals
F	Southeast Corner	1,009	0	0	0	CN (0.70
G	Vehicle maintenance shop	18,108	189 (B,T,EB)	66(PCP)	739 (P,DMP)	0
H	Car wash facility	1,756	261 (B,T,EB)	20 (BBP)	210 (2,4,DMP)	0
I	Center of site	7,550	73 (B,T,EB)	0	2,590 (P,2,4, DMP)	CN⁻(0.05 As (0.05
J	North corner	11	0	25 (Bis EHP)	0	0

PRELIMINARY
McCLELLAND ENGINEERS

LEGEND:

1. 0 indicates non-detected.
2. All concentrations in ppb except metals are ppm.

3/83

000013

SURFACE SOILS ANALYSIS

Location	Description	Indicator Categories: Creosote Coal Tar	Volatile Organics	Refractory Organics	Tar Acids	Metals
J	North Corner	184,000	29 (MEC)	0	0	Cr (40) Ni (24)
K	South side of site west of main access road	930	59 (MEC)	0	0	0
L	Onsite southeast corner		39 (MEC)	11 (DOP)	0	Cr (32) Pb (31) Ni (33) Zn (40) As (2.5)
M	Vehicle maintenance shop	480,560	59 (MEC)	0	0	Cu (21) As (82) Cr (79) Pb (54) Zn (290)
N	Vehicle maintenance shop west of M	1,485,000	183 (EB,T)	0	0	Cr (14) Zn (150)
O	Surface soil north of Cavalcade	111,670	18 MEC	112,300 (TCB & PCB)	0	0
P	Northern end of side	328,800	48 ~~MEC,EB~~	720 PCP	0	Cu (150) Ni (63)

PRELIMINARY
McCLELLAND ENGINEERS

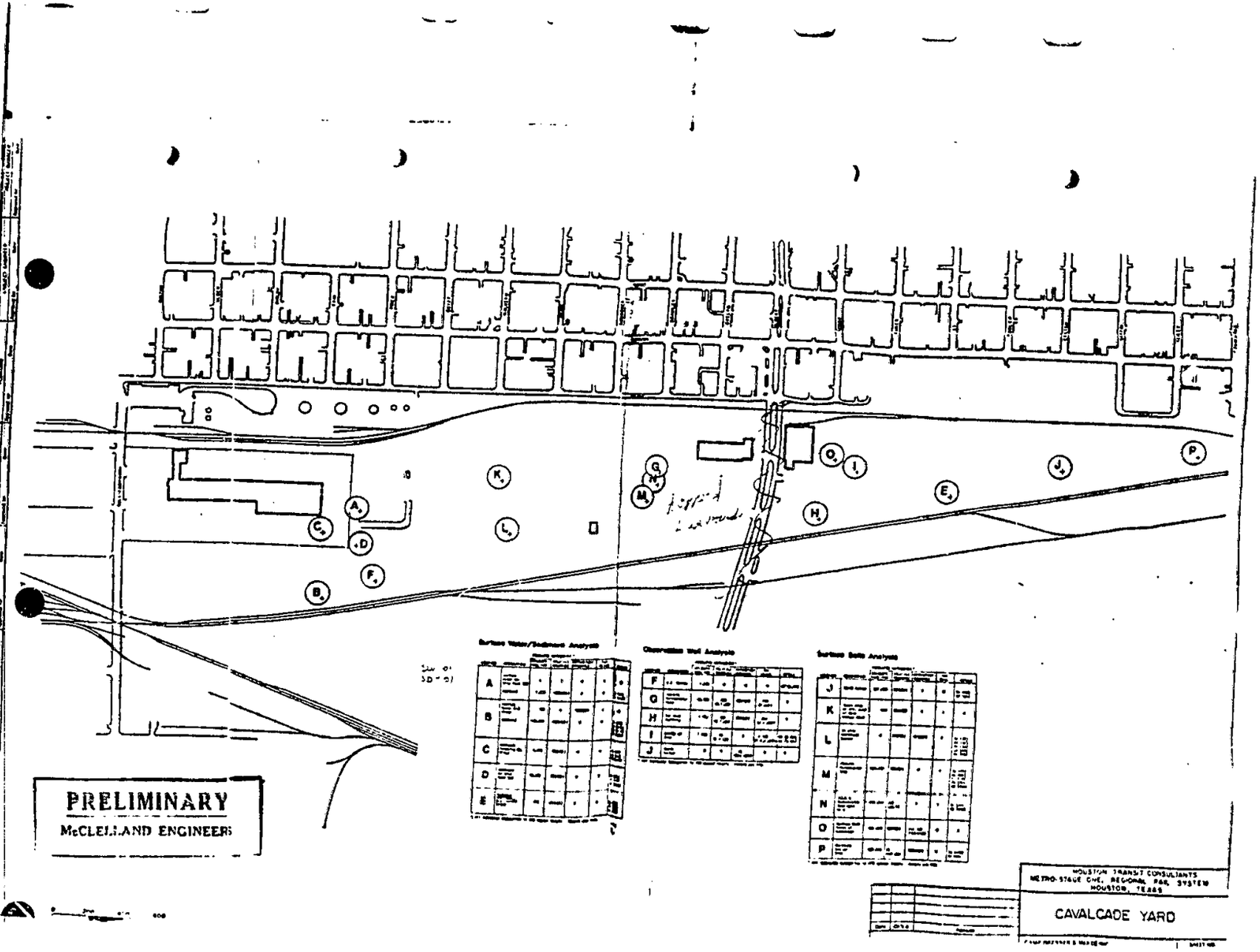
LEGEND:

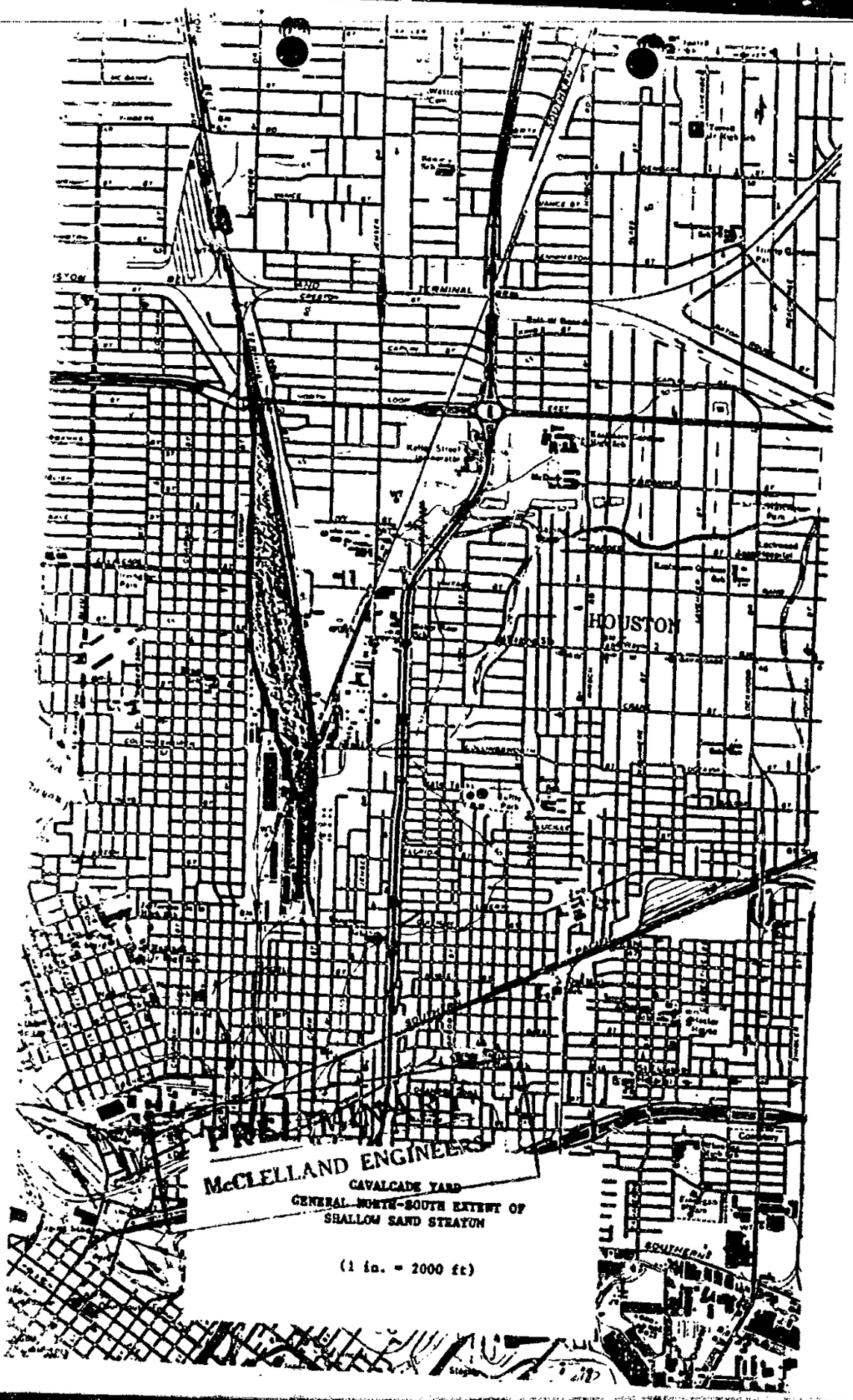
1. 0 indicates non-detected.
2. All concentrations in ppb except metals are ppm.

3/83

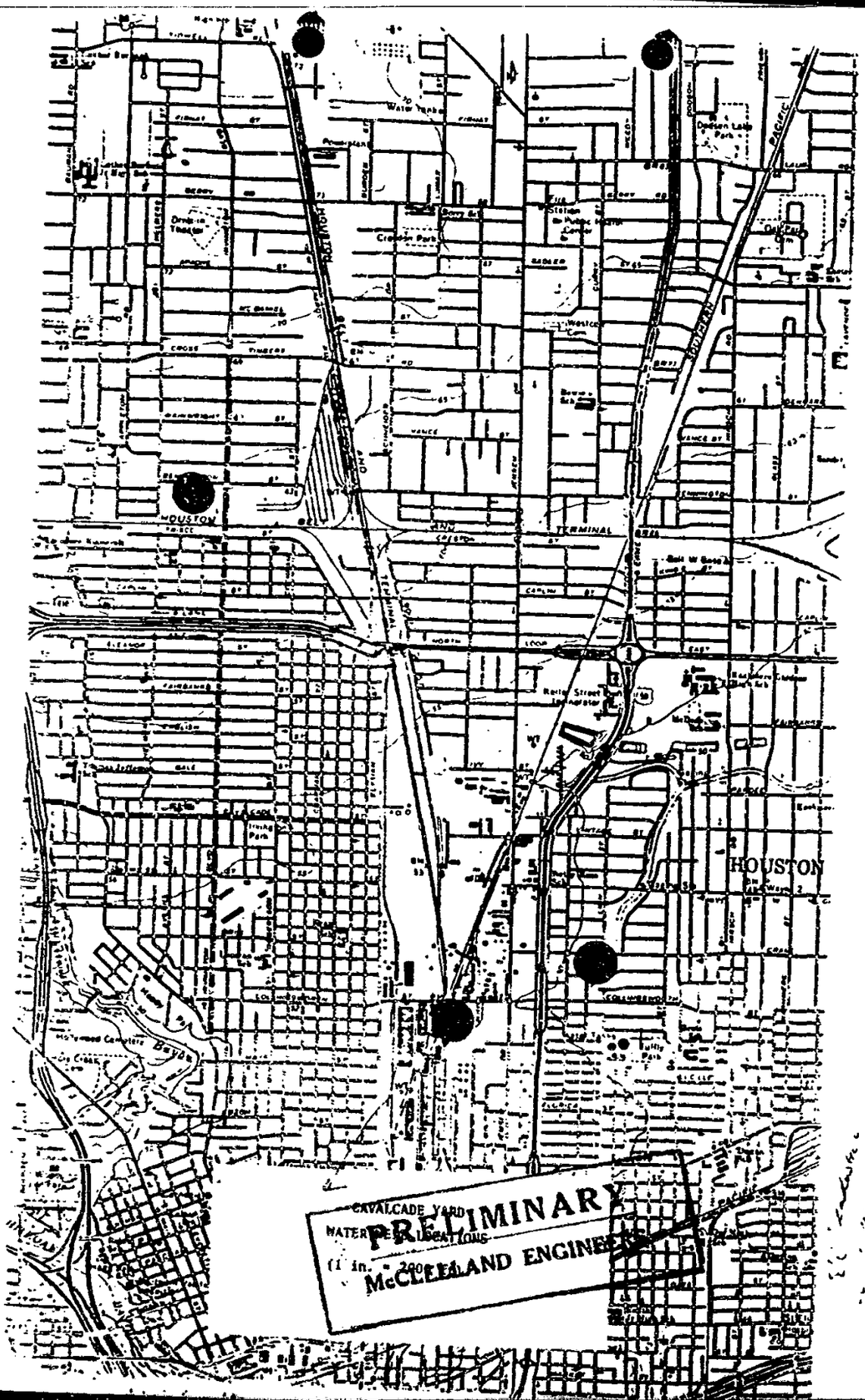
000014

000015


PRELIMINARY
McCLELLAND ENGINEERS
Surface Water/Sediment Analysis
Observation Well Analysis
Surface Soils Analysis
HOUSTON TRANSIT CONSULTANTS
METRO-STAGE ONE, REGIONAL RAIL SYSTEM
HOUSTON, TEXAS
CAVALCADE YARD


HOUSTON
TERMINAL
PRELIMINARY
McCLELLAND ENGINEERS
CAVALCADE YARD
GENERAL NORTH-SOUTH EXTENT OF
SHALLOW SAND STRATUM
(1 in. = 2000 ft)

0000016


HOUSTON
TERMINAL
HOUSTON
Dodson Lake Park
Crosdon Park
Irving Park
Hollywood Cemetery
Bayou
CAVALCADE YARD
WATER
LOCATIONS
(1 in. = 200
PRELIMINARY
McCLELLAND ENGINEE

000017

Metro Stage One, Regional Rail System

CAMP DRESSER & McKEE INC.

SOIL BORING AND MONITORING WELL SUMMARY

Location	Depth	Gen. Soil Description	Screen Depth and Water Conductivity	Remarks
CALDWELL CADE				
SL-05	35'	0-9' Sandy Clay 9-21' Sand 21-35' Mottled Clay	None	Reasonably clean to 32' 32'-35' increasing cresote - slick on mud pit HNU 6.- 15.+ PPM
SL-03	40'	0-28' Silty Clayey Sand 20-35' Mottled Clay 35-40' Sandy Clay	None	Increasing cresote with depth - some cresote all the way HNU 6.- 15.+ PPM
SL-04	40'	0-10' Sandy Clay 10-21' Silty Sand 21-40' Mottled Clay	None	Much cresote 0-21' 21' - 40' decreasing cresote HNU 20.0 - 5.0 PPM
OW-01	19'	0-14' Sandy Clay or Clay 14-19' Sand	14' - 19' 1800 UMOS	Very dirty hole - much cresote-tar balls H_2S Odor - green water when pumped
OW-02	20'	0-10' Sandy Clay or Clay 10-19' Sand	15'-20' 700 UMOS	Dirty hole
OW-03	20'	0-11' Sandy Clay or Clay 11-19' Sand 19-20 Mottled Clay	14'-19' 850 UMOS	Dirty hole - much cresote all the way H_2S odor when pumped HNU 50 PPM 19' - 20' sample
OW-04	19'	0 - 11.5 Sandy Clay 11.5 - 18.5 Sand	14' - 19' 700 UMOS	Dirty hole - floating cresote
OW-05	13'	0-13 Silty Clay Sand	9' - 14' 720 UMOS	Fairly clean hole - no cresote evidence HNU 10. - 15. PPM 5-7' sample
CROSS TIMBERS	N/A			
SL-14	40'	0-2' Fill 2-35' Sandy Cl. 35-40' Mottled Clay	None	Fairly clean HNU 1. - 4.5 PPM
SL-15	40'	0-4' Fill 4-10' Sandy Clay 10-40' Mottled Clay	None	Somewhat dirty so. cresote HNU 1. - 4.5 PPM
SL-16	10'	0-10' Sandy Clay	None	Somewhat dirty so. cresote HNU 7. - 22. PPM
SL-17 (22)	10'	0-10' Sandy Clay	None	Fairly clean HNU 3.5 - 6.0 PPM
SL-18	10'	0-2 Fill and Cresote Tar 2-10 Sandy Clay	None	Somewhat dirty HNU 14' - 32'
SL-19c	40'	0-10 Sandy Clay 10-40 Mottled Clay	None	Fairly clean to 38' 38' cresote - HNU 28.0 HNU range 7. - 28. PPM
SL-20	10'	0-2 Fill 2-10 Sandy Clay	None	Fairly clean HNU 3.5 - 4.0 PPM

PRELIMINARY
McCLELLAND ENGINEERS

000018

CREOSOTE (1-16)

COAL TAR/PAH (17-27)

1. NAPTHALENE
2. 2-METHYLNAPHALENE*
3. 1-METHYLNAPHALENE*
4. BIPHENYL*
5. 2,6-DIMETHYLNAPTHALENE*
6. 2,3-DIMETHYLNAPTHALENE*
7. ACENAPHTHALENE
8. DIBENZOFURAN*
9. FLUORENE
10. METHYL FLUORENES*
11. PHENANTHRENE
12. ANTHRACENE
13. CARBAZOLE*
14. FLUORANTHENE
15. PYRENE
16. CHRYSENE

17. ACENAPHTHYLENE
18. BENZ(A)ANTHRACENE
19. BENZO(K)FLUORANTHENE
20. BENZO(B)FLUORANTHENE
21. BENZO(A)PYRENE
22. INDENO(1,2,3-CD)PYRENE
23. DIBENZ(A,H)ANTHRACENE
24. BENZ(G,H,I)PERYLENE
25. TRIPHENYLENE*
26. BENZO(E)PYRENE*
27. PERYLENE*

TAR ACIDS

PHENOL
2-CHLOROPEHNOL
2-NITROPHENOL
2,4-DIMETHYLPHENOL
2,4-DICHLOROPHENOL
P-CHLORO-M-CRESOL*
2,4,6-TRICHLOROPHENOL
2,4-DINITROPHENOL
4,-NITROPHENOL
4,6-DINITRO-O-CRESOL*
O-CHLOROPHENOL*
O-CRESOL*
M&P-CRESOL*
2,4,6-TRIMETHYLPHENOL*
BUTYL PHENOLS*

*NON PRIORITY POLLUTANTS

PRELIMINARY
McCLELLAND ENGINEERS

000019

VOLATILE ORGANICS

1V. ACROLEIN
2V. ACRYLONITRILE
3V. BENZENE
4V. BIS (CHLOROMETHYL) ETHER
5V. BROMOFORM
6V. CARBON TETRACHLORIDE
7V. CHLOROBENZENE
8V. CHLORODIBROMOMETHANE
9V. CHLOROETHANE
10V. 2-CHLOROETHYLVINYL ETHER
11V. CHLOROFORM
12V. DICHLOROBROMOMETHANE
13V. DICHLORODIFLUOROMETHANE
14V. 1,1-DICHLOROETHANE
15V. 1,2-DICHLOROETHANE
16V. 1,1-DICHLOROETHYLENE
17V. 1,2-DICHLOROPROPANE
18V. CIS-1,3-DICHLOROPROPENE
19V. TRANS-1,3-DICHLOROPROPENE
20V. ETHYLBENZENE
21V. BROMOMETHANE
22V. CHLOROMETHANE
23V. METHYLENE CHLORIDE
24V. 1,1,2,2-TETRACHLOROETHANE
25V. TETRACHLOROETHYLENE
26V. TOLUENE
27V. 1,2-TRANS-DICHLOROETHYLENE
28V. 1,1,1-TRICHLOROETHANE
29V. 1,1,2-TRICHLOROETHANE
30V TRICHLOROETHYLENE
31V. TRICHLOROFLUOROMETHANE
32V. VINYL CHLORIDE

PRELIMINARY

McCLELLAND ENGINEERS

000020

BASE-NEUTRAL
EXTRACTABLE ORGANICS

1B. ACENAPHTHENE
2B. ACENAPHTHYLENE
3B. ANTHRACENE
4B. BENZIDINE
5B. BENZO (A) ANTHRACENE
6B. BENZO (A) PYRENE
7B. 3,4-BENZOFLUORANTHENE
8B. BENZO (GHI) PERYLENE
9B. BENZO (K) FLUORANTHENE
10B. BIS (2-CHLOROETHOXY) METHANE
11B. BIS (2-CHLOROETHYL) ETHER
12B. BIS (2-CHLOROISOPROPYL) ETHER
13B. BIS (2-ETHYLHEXYL) PHTHALATE
14B. 4-BROMOPHENYL PHENYL ETHER
15B. BUTYL BENZYL PHTHALATE
16B. 2-CHLORONAPHTHALENE
17B. 4-CHLOROPHENYL PHENYL ETHER
18B. CHRYSENE
19B. DIBENZO (A,H) ANTHRACENE
20B. 1,2-DICHLOROBENZENE
21B. 1,3-DICHLOROBENZENE
22B. 1,4-DICHLOROBENZENE
23B. 3,3'-DICHLOROBENZIDINE
24B. DIETHYL PHTHALATE
25B. DIMETHYL PHTHALATE
26B. DI-N-BUTYL PHTHALATE
27B. 2,4-DINITROTOLUENE
28B. 2,6-DINITROTOLUENE
29B. DI-N-OCTYL PHTHALATE
30B. 1,2-DIPHENYLHYDRAZINE
31B. FLUORANTHENE
32B. FLUORENE
33B. HEXACHLOROBENZENE
34B. HEXACHLOROBUTADIENE
35B. HEXACHLOROCYCLOPENTADIENE
36B. HEXACHLOROETHANE
37B. INDENO (1,2,3-CD) PYRENE
38B. ISOPHORONE
39B. NAPHTHALENE
40B. NITROBENZENE
41B. N-NITROSODIMETHYLAMINE
42B. N-NITROSODI-N-PROPYLAMINE
43B. N-NITROSODIPHENYLAMINE
44B. PHENANTHRENE
45B. PYRENE
46B. 1,2,4-TRICHLOROBENZENE

ACID EXTRACTABLE ORGANICS

1A. 2-CHLOROPHENOL
2A. 2,4-DICHLOROPHENOL
3A. 2,4-DIMETHYLPHENOL
4A. 4,6-DINITRO-O-CRESOL
5A. 2,4-DINITROPHENOL
6A. 2-NITROPHENOL
7A. 4-NITROPHENOL
8A. P-CHLORO-M-CRESOL
9A. PENTACHLOROPHENOL
10A. PHENOL
11A. 2,4,6-TRICHLOROPHENOL

INORGANICS
PRIORITY POLLUTANTS

1. ANTIMONY, TOTAL
2. ARSENIC, TOTAL
3. BERYLLIUM, TOTAL
4. CADMIUM, TOTAL
5. CHROMIUM, TOTAL
6. COPPER, TOTAL
7. LEAD, TOTAL
8. MERCURY, TOTAL
9. NICKEL, TOTAL
10. SELENIUM, TOTAL
11. SILVER, TOTAL
12. THALLIUM, TOTAL
13. ZINC, TOTAL
14. CYANIDE, TOTAL

PRELIMINARY
McCLELLAND ENGINEERS

000021

LOG OF BORING NO. CAV-SL-03

CAVALCADE CONTAMINANT SURVEY
METRO-STAGE ONE, REGIONAL RAIL SYSTEM
HOUSTON, TEXAS

LOCATION: N 733639, E 3157965

SURFACE EL 51.3'

DEPTH FT	SYMBOL	SAMPLES	SAMPLE NUMBER	% PASSING NO 200 SIEVE	UNIT DRY WT LB PER CU FT	WATER CONTENT % (Plastic Limit / Natural / Liquid Limit; 20 40 60)	UNDRAINED SHEAR STRENGTH KIPS PER SQ FT (0.5 1.0 1.5 2.0 2.5; KILOPASCALS 25 50 75 100 125)	ORGANIC VAPORS PPM
		Fill: Dark gray fine sand with organic matter and clay pockets	01			CREOSOTE/COAL TAR - 480,560 VOLATILE ORGANICS 59 MEC REFRACTORY ORGANICS - 0 TAR ACIDS - 0 METALS - As(82) Cu(21) Zn(290) Cr(79) Pb(54)		4
		Tan clayey fine sand	02					4
								4
		Brown fine sand				CREOSOTE/COAL TAR - 80,280 VOLATILE ORGANICS - 40 MEC REFRACTORY ORGANICS - 0 TAR ACIDS - 0 METALS - Zn(23)		2
		Very stiff brown clay with silt partings and pockets and creosote wastes						3
								5
								5
40		Gray clayey fine sand with creosote wastes	03			CREOSOTE/COAL TAR - 0 VOLATILE ORGANICS - 33 MEC REFRACTORY ORGANICS - 0 TAR ACIDS - 0 METALS - 0		7

PRELIMINARY
McCLELLAND ENGINEERS

JOB NO.: 0183-0008
COMPLETION DEPTH: 40.0'
DATE: February 4, 1983
DEPTH TO WATER IN BORING: Grouted upon completion

SAMPLER: 3" thin-walled tube
DRILLING METHOD: Wet Rotary

STRENGTH LEGEND
- ● Unconfined Compression
- ▲ Unconsolidated-Undrained Triaxial Compression
- ✚ Miniature Vane (open symbols above indicate remolded tests)
- ✦ Torvane
- ■ Hand Penetrometer

McCLELLAND ENGINEERS
UP DRESSER & McKEE

PLATE

000022

LOG OF BORING NO. CAV-SL-04

CAVALCADE CONTAMINANT SURVEY
METRO-STAGE ONE, REGIONAL RAIL SYSTEM
HOUSTON, TEXAS

N

LOCATION N 733697, E 3157867

SURFACE EL 51.1'

DEPTH	SYMBOL	SAMPLES	SAMPLE NUMBER	% PASSING NO 200 SIEVE	UNIT DRY WT LB PER CU FT	WATER CONTENT, % (Plastic Limit / Natural / Liquid Limit)	UNDRAINED SHEAR STRENGTH KIPS PER SQ FT	ORGANIC VAPORS (ppm)
		FILL: Asphalt roadway						
		Very stiff brown sandy clay	01			CREOSOTE/COAL TAR - 1,485,000 VOLATILE ORGANICS - 188 MEC REFRACTORY ORGANICS - 0 TAR ACIDS - 0 METALS - Cr (14) Zn (150)		15
		Gray clayey fine sand with creosote wastes						20
10		Gray fine sand with creosote wastes	02			CREOSOTE/COAL TAR - 2,546,600 VOLATILE ORGANICS - 181 MEC REFRACTORY ORGANICS - 0 TAR ACIDS - 0 METALS - Zn (83)		10 20 18
		Very stiff brown clay with silt partings and creosote wastes	03			CREOSOTE/COAL TAR - 903,000 VOLATILE ORGANICS - 83 (MEC) REFRACTORY ORGANICS - 0 TAR ACIDS - 100 METALS - Pb (9.1) Zn (24) Ni (15)		20
		Stiff gray sandy clay with creosote wastes						5
			04			CREOSOTE/COAL TAR - 11,040 VOLATILE ORGANICS - 0 REFRACTORY ORGANICS - 0 TAR ACIDS - 0 METALS - 0		5

PRELIMINARY
McCLELLAND ENGINEERS

000023

JOB NO. : 0183-0008
COMPLETION DEPTH : 40.0'
DATE : February 4, 1983
DEPTH TO WATER IN BORING : Grouted upon completion

SAMPLER : 3" thin-walled tube

DRILLING METHOD : Wet Rotary

STRENGTH LEGEND
- Unconfined Compression
- Unconsolidated-Undrained Triaxial Compression
- Miniature Vane
- (open symbols above indicate remolded tests)
- Torvane
- Hand Penetrometer

McCLELLAND ENGINEERS INC CHRISTIAN & WHITE

PLATE

LOG OF BORING NO. CAV-SL-05

CAVALCADE CONTAMINANT SURVEY
METRO-STAGE ONE, REGIONAL RAIL SYSTEM
HOUSTON, TEXAS

0

LOCATION : N 734649, E 3157621

SURFACE EL 50.3'

Depth	Symbol	Samples	Sample Number	% Passing No. 200 Sieve	Unit Dry Wt Lb Per Cu Ft	Water Content, % (Plastic Limit / Natural / Liquid Limit; 20 40 60)	Undrained Shear Strength Kips Per Sq Ft (0.5 1.0 1.5 2.0 2.5; Kilopascals 25 50 75 100 125)	Organic Vapors PPM
		Fill: Brown fine sand and clay						
		Fill: Intermixed brown fine sand and clay with organic matter	01					6
		Gray fine sand, slightly clayey -brown below 10'	02					
		Very stiff brown clay, slickensided with sand layers, 19.5' to 21'	03					3
		-with silt partings and layers, 26' to 32'						
		-with creosote wastes below 28'	04					15
			05					7

CREOSOTE/COAL TAR - 111,670
VOLATILE ORGANICS - 18 MEC
REFRACTORY ORGANICS - 112,300
TAR ACIDS - 0
METALS - 0

CREOSOTE/COAL TAR - NA
VOLATILE ORGANICS - 47 MEC
REFRACTORY ORGANICS - 0
TAR ACIDS - 0
METALS - 0

CREOSOTE/COAL TAR - 480
VOLATILE ORGANICS - 23 MEC
REFRACTORY ORGANICS - 0
TAR ACIDS - 0
METALS - Ni(19)

CREOSOTE/COAL TAR - 186,660
VOLATILE ORGANICS - 28 MEC
REFRACTORY ORGANICS - 0
TAR ACIDS - 0
METALS - 0

CREOSOTE/COAL TAR - 0
VOLATILE ORGANICS - 41 MEC
REFRACTORY ORGANICS - 0
TAR ACIDS - 0
METALS - Pb (10) Zn(25) Ni (23)

PRELIMINARY
McCLELLAND ENGINEERS

JOB NO. : 0183-0008
COMPLETION DEPTH : 40.0'
DATE : February 3, 1983
DEPTH TO WATER IN BORING : Grout upon completion

SAMPLER : 3" thin-walled tube
DRILLING METHOD : Wet Rotary

STRENGTH LEGEND
- Unconfined Compression
- Unconsolidated-Undrained Triaxial Compression
- Laboratory Vane
- (open symbols above indicate remolded tests)
- Torvane
- Hand Penetrometer

McCLELLAND ENGINEERS
DAMES & MOORE

PLATE

000024

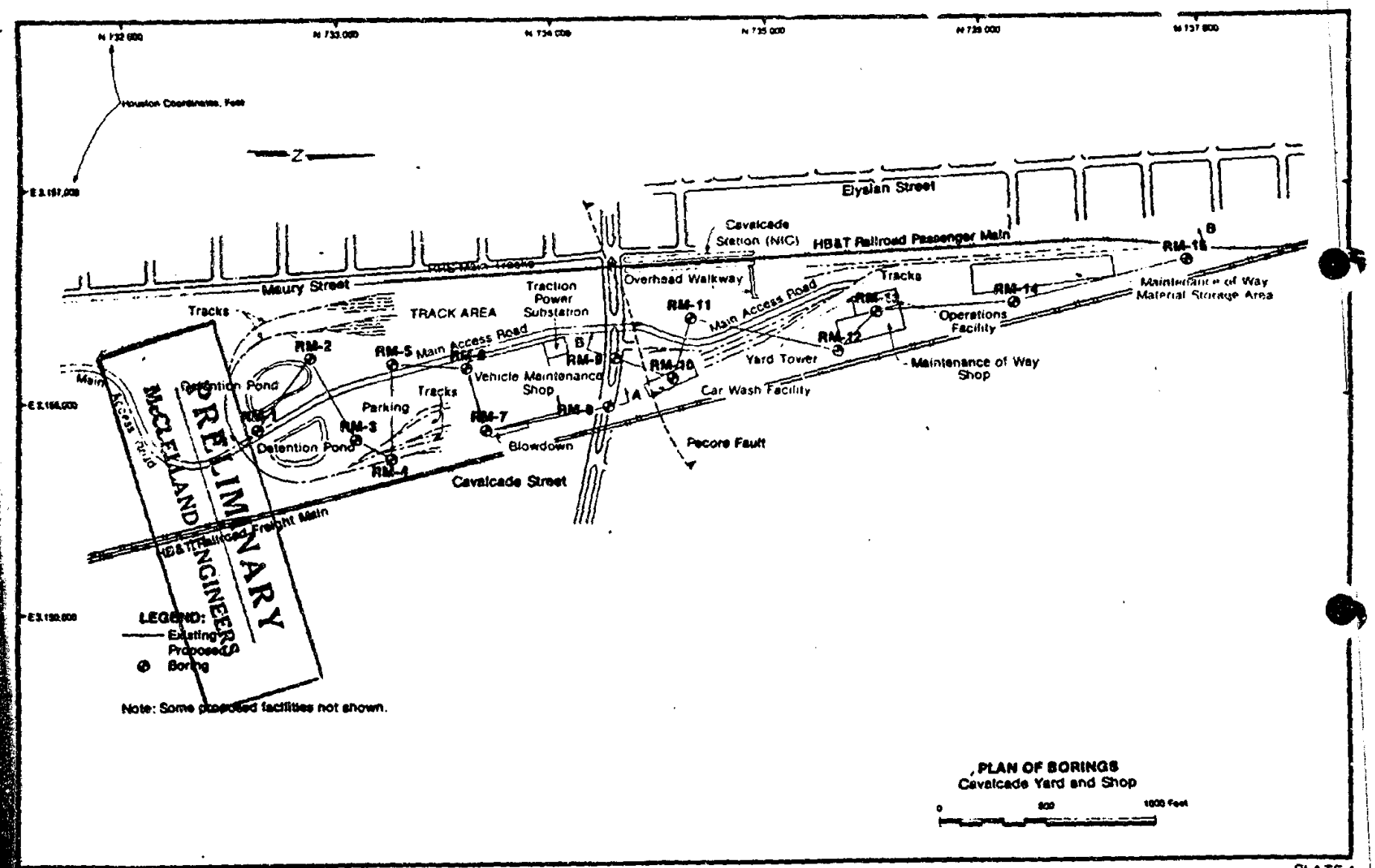
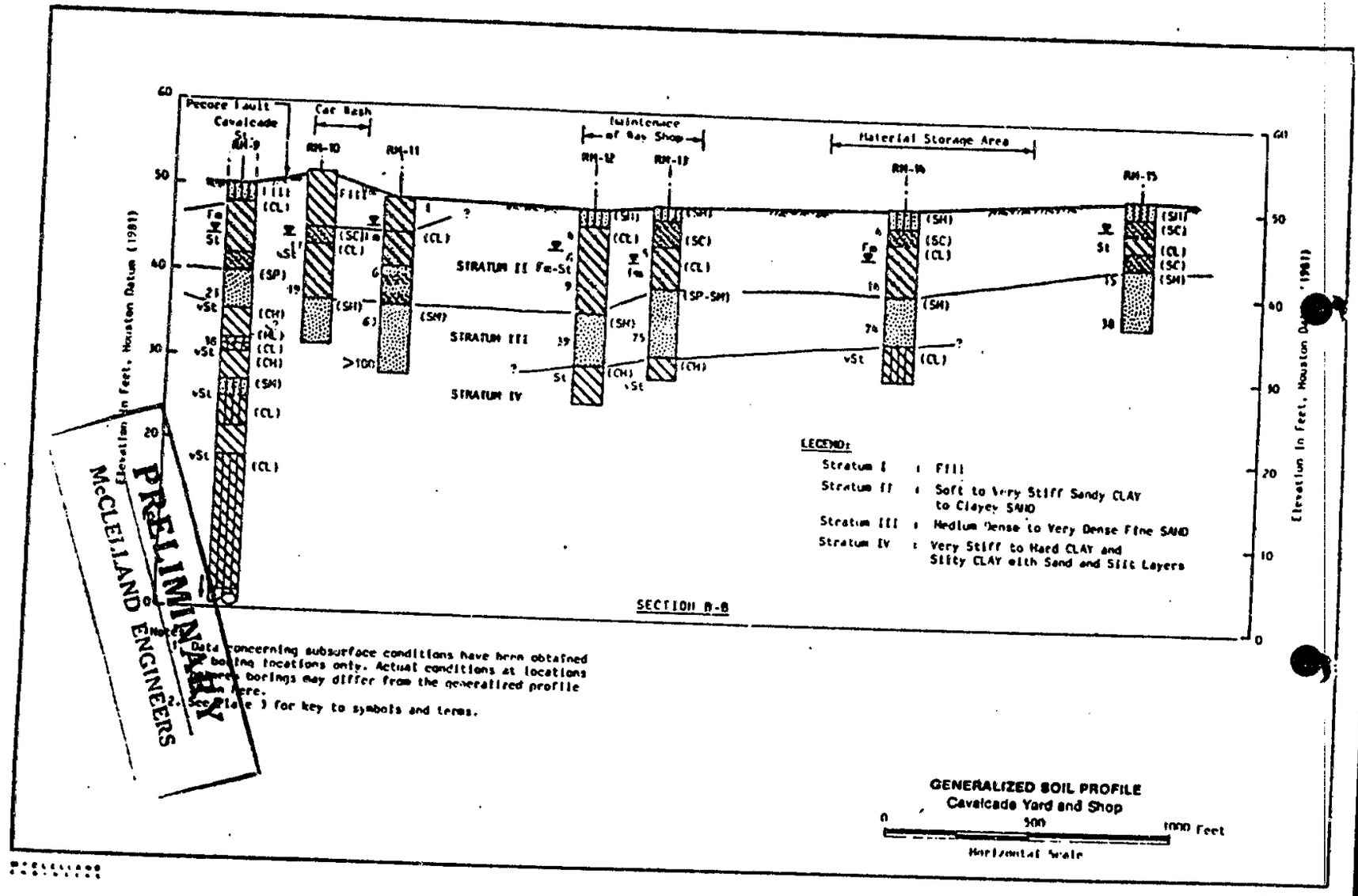

Houston Coordinates, Feet
Elysian Street
Cavalcade Station (NIC)
HB&T Railroad Passenger Main
Overhead Walkway
Tracks
Maintenance of Way Material Storage Area
Operations Facility
Maintenance of Way Shop
Yard Tower
Car Wash Facility
Main Access Road
Traction Power Substation
Vehicle Maintenance Shop
Blowdown
Pecore Fault
Cavalcade Street
Maury Street
TRACK AREA
Parking
Detention Pond
HB&T Railroad Freight Main
RM-1
RM-2
RM-3
RM-4
RM-5
RM-6
RM-7
RM-8
RM-9
RM-10
RM-11
RM-12
RM-13
RM-14
RM-15
LEGEND:
Existing
Proposed
Boring
Note: Some proposed facilities not shown.
PRELIMINARY
McCLELLAND ENGINEERS
PLAN OF BORINGS
Cavalcade Yard and Shop
0
500
1000 Feet

PLATE 1



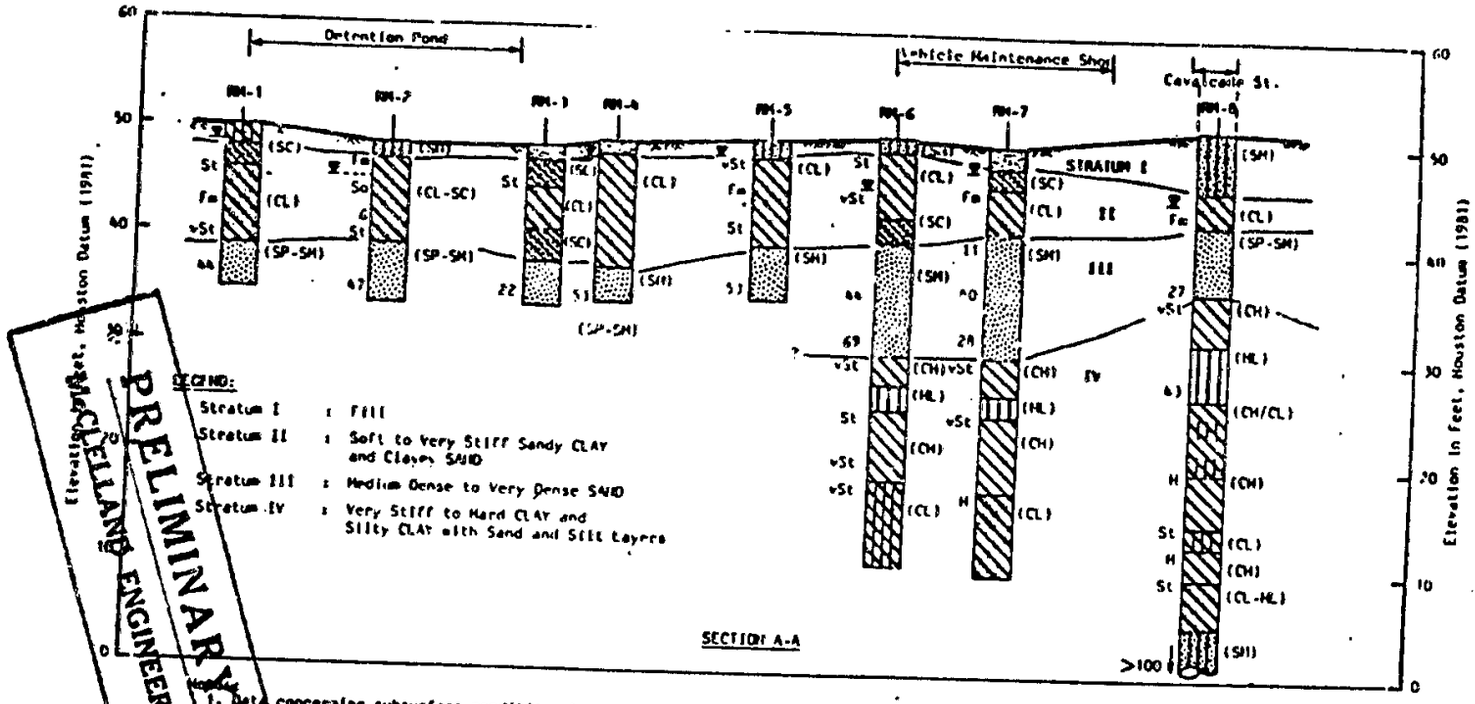
Note: 1. Data concerning subsurface conditions have been obtained at boring locations only. Actual conditions at locations between borings may differ from the generalized profile shown here.
2. See Plate 1 for key to symbols and terms.

PRELIMINARY
McCLELLAND ENGINEERS

GENERALIZED SOIL PROFILE
Cavalcade Yard and Shop

PLATE

000026



PRELIMINARY
CLELLAND ENGINEERS

Notes:
1. Data concerning subsurface conditions have been obtained at boring locations only. Actual conditions at locations between borings may differ from the generalized profile shown here.
2. See Plate 3 for key to symbols and terms.

GENERALIZED SOIL PROFILE
Cavalcade Yard and Shop

0 50 100 Feet
Horizontal Scale

PLATE

000027

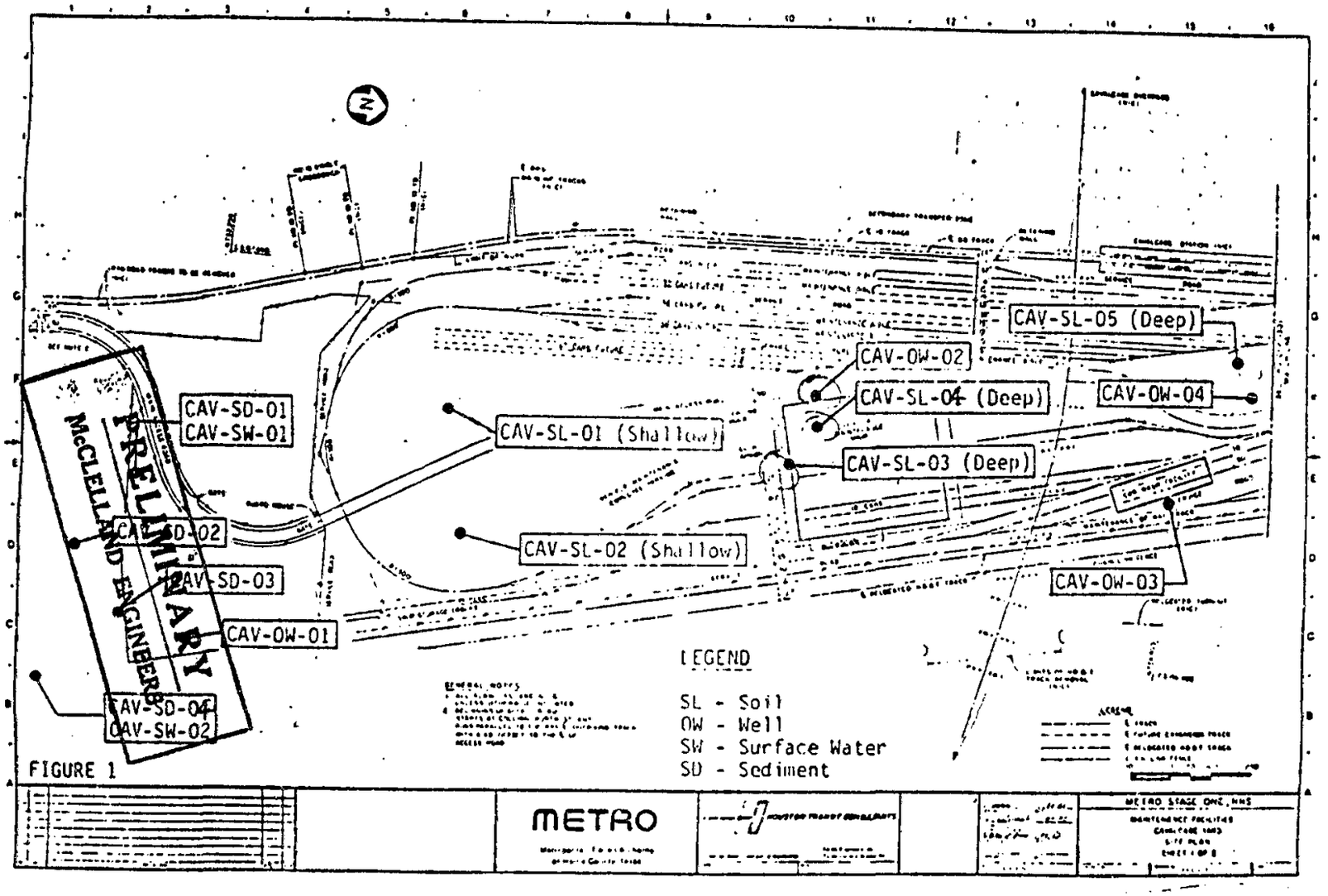


FIGURE 1

000028

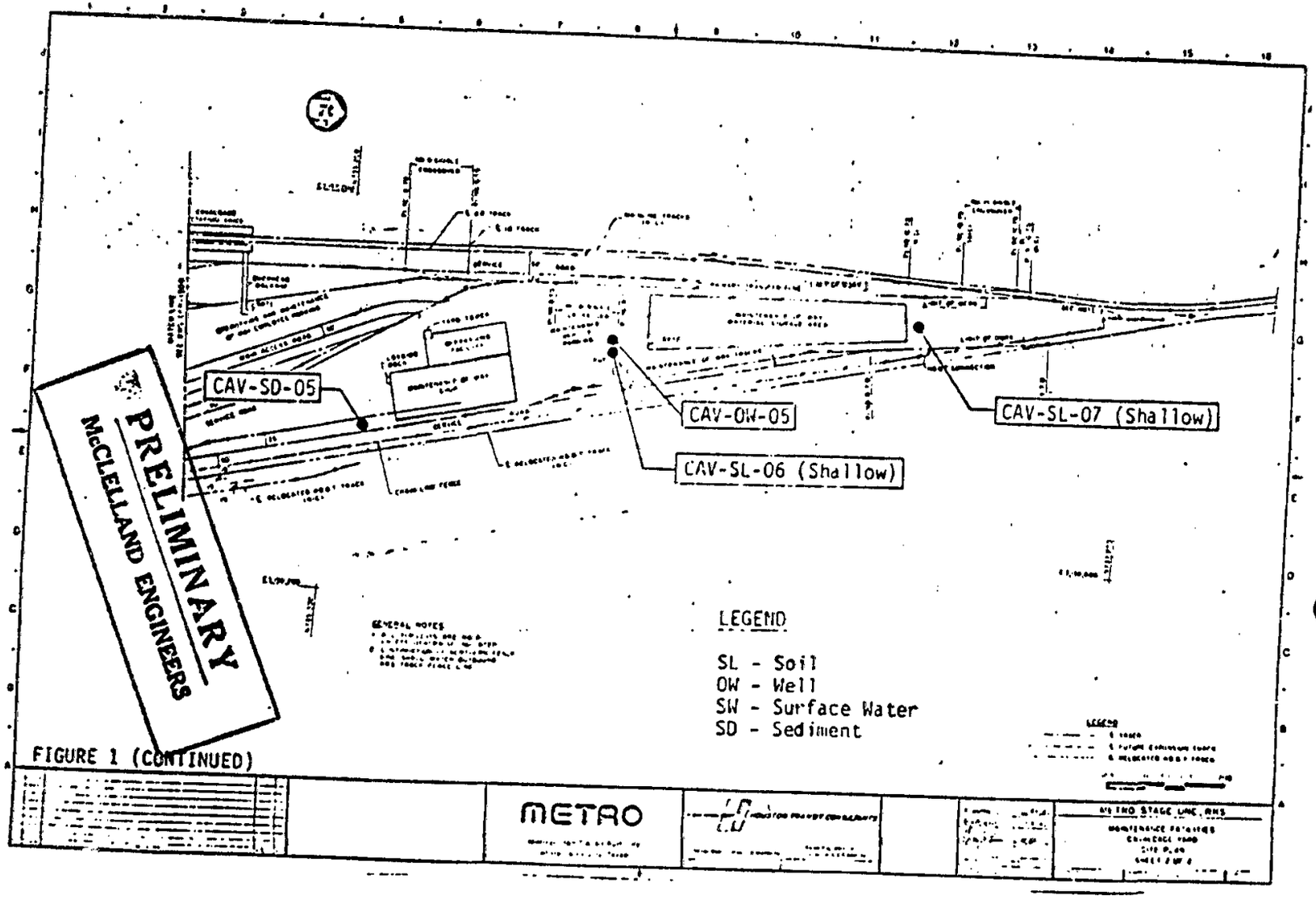


FIGURE 1 (CONTINUED)

000029

Surface Water

CAVALCADE YARD

SUMMARY OF ANALYTICAL RESULTS

BASE NEUTRAL INDICATOR COMPOUNDS
(concentrations reported in ppm)

Sample No.	Depth	Acenaphthene	Anthracene	Chrysene	Fluoranthene	Fluorene	Napthalene	Phenanthrene	Pyrene
CAV-SW-01-012	Surface	BDL(1)	BDL	BDL	BDL	BDL	BDL	BDL	BDL
CAV-SW-02-012	Surface	BDL	BDL	0.012	0.017	BDL	BDL	BDL	0.014
CAV-SD-01-008	Surface	BDL	0.240	0.550	1.10	BDL	BDL	0.650	0.850
CAV-SD-02-007	Surface	BDL	4.70	0.530	0.750	0.360	BDL	BDL	0.690
CAV-SD-03-010	Surface	BDL	1.60	0.680	1.20	BDL	BDL	0.860	1.10
CAV-SD-04-011	Surface	0.580	2.10	14.0	25.0	0.520	BDL	14.0	22.0
CAV-SD-05-006	Surface	BDL	BDL	BDL	0.320	BDL	BDL	BDL	0.260
CAV-SL-01-001	Surface	BDL	BDL	0.200	BDL	BDL	BDL	BDL	0.010
CAV-SL-02-002	Surface	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
CAV-SL-03-01	1.0	0.780	12.0	42.0	120.0	0.980	1.00	20.0	110.0
CAV-SL-03-02	6.0	BDL	1.00	4.60	24.0	BDL	BDL	5.80	20.0
CAV-SL-03-03	40.0	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
CAV-SL-04-02	11.0	360.0	520.0	20.0	640.0	110.0	640.0	110.0	280.0
CAV-SL-04-03	7 22.5	80.0	48.0	36.0	120.0	64.0	200.0	180.0	88.0
CAV-SL-04-04	4 40.0	0.540	0.580	0.320	2.00	0.340	BDL	4.40	1.40
(2) CAV-SL-05-01	1.0	BDL	5.00	17.0	9.30	0.240	BDL	BDL	BDL
CAV-SL-05-02	7.5	No Results Reported							
CAV-SL-05-03	23.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
CAV-SL-06-01	30.0	22.0	BDL	1.70	24.0	18.0	30.0	54.0	18.0
CAV-SL-06-02	35.0	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
CAV-SL-06-003	Surface	17.0	BDL	BDL	40.0	17.0	27.0	56.0	23.0
CAV-SL-07-003	Surface	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
CAV-OW-01-05	19.1	16.0	BDL	7.80	130.0	16.0	33.0	54.0	44.0
CAV-OW-02	10.0	0.049	BDL	BDL	0.023	0.073	0.670	0.160	0.017
CAV-OW-03-03	18.9	No Results Reported							
CAV-OW-06-01	19.5	0.450	0.096	BDL	BDL	0.026	0.770	0.180	BDL
CAV-OW-05-02	9.9	Incomplete Results			BDL	0.100	7.30	0.150	BDL
CAV-OW-06-03	?	Inconsistent Results Reported							
		Duplicate Sample - No Base Neutral Tests Assigned							

(1) BDL - Below Detection Limit
(2) 110 ppm Trichlorobenzene

PRELIMINARY
MAY 1990
ENGINEERS

Groundwater

000030

000030

CAVALCADE YARD

SUMMARY OF ANALYTICAL RESULTS

ACID EXTRACTABLE INDICATOR COMPOUNDS
(concentrations reported in ppm)

Sample No.	Depth	9H-Fluorene	Fluoranthene	Pyrene	Phenanthrene	Naphthalene	Dimethylphenol	Chrysene	Pentachlorophenol
CAV-SW-01-012	Surface	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
CAV-SW-02-012	Surface	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
CAV-SD-01-008	Surface	BDL	0.028	0.031	BDL	BDL	BDL	BDL	BDL
CAV-SD-02-007	Surface	BDL	0.360	0.320	BDL	BDL	BDL	BDL	BDL
CAV-SD-03-010	Surface	0.220	BDL	BDL	2.20	BDL	BDL	BDL	BDL
CAV-SD-04-011	Surface	0.008	BDL	BDL	0.130	BDL	BDL	BDL	BDL
[illegible]6	Surface	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
CAV-SL-01-001	Surface	BDL	0.260	0.280	BDL	BDL	BDL	BDL	BDL
CAV-SL-02-002	Surface	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
CAV-SL-03-01	1.0	BDL	BDL	3.00	0.740	BDL	BDL	BDL	BDL
CAV-SL-03-02	6.0	BDL	2.00	1.8	1.00	BDL	BDL	BDL	BDL
CAV-SL-03-03	40.0	BDL	BDL	BDL	BDL	BDL	BDL	0.780	BDL
CAV-SL-04-02	11.0	0.360	0.440	0.360	0.360	BDL	BDL	0.500	BDL
CAV-SL-04-03	?	0.240	0.320	0.260	BDL	0.820	BDL	BDL	BDL
CAV-SL-04-[illegible]	?	BDL	BDL	BDL	BDL	1.00	BDL	BDL	BDL
[illegible]	1.0	BDL	0.520	0.800	BDL	BDL	1.00	BDL	BDL
[illegible]-02	7.5		No Results	Reported	BDL	BDL	BDL	BDL	BDL
[illegible]	23.5	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
[illegible]	0.0	2.6	3.0	2.4	10.0	5.2	BDL	BDL	BDL
[illegible]	31.0	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
[illegible]	Surface	52.0	37.0	BDL	BDL	62.0	BDL	BDL	BDL
[illegible]	?	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
[illegible]	Surface	38.0	BDL	42.0	BDL	35.0	BDL	BDL	BDL
CAV-OW-01-0[illegible]	?	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.720
CAV-OW-02	[illegible]		No Results	Reported					
[illegible]	[illegible]	BDL	BDL	BDL	BDL	0.110	0.210	BDL	BDL
[illegible]	[illegible]	BDL	BDL	BDL	BDL	BDL	1.80	BDL	BDL
CAV-OW-05-02	[illegible]	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
CAV-OW-06-03	[illegible]	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

Duplicate Sample - No Acid Extractables Assigned

BDL - Below Detection Limit

PRELIMINARY
AND ENGINEERS

000031

CAVALCADE YARD

SUMMARY OF ANALYTICAL RESULTS

PRIORITY POLLUTANT METALS
(concentrations reported in ppm)

Sample No.	Depth	Arsenic	Chromium	Copper	Lead	Mercury	Nickel	Other Compounds
CAV-SW-01-012	Surface	BDL	BDL	BDL	BDL	BDL	BDL	
CAV-SW-02-012	Surface	BDL	BDL	BDL	BDL	BDL	BDL	
CAV-SD-01-008	Surface	2.0	10.0	13.0	61.0	0.025	4.5	
CAV-SD-02-007	Surface	2.4	13.0	60.0	88.0	0.043	4.9	
CAV-SD-03-010	Surface	1.5	12.0	21.0	69.0	0.032	5.4	
CAV-SD-04-011	Surface	2.2	9.7	82.0	185.0	0.017	9.1	
[illegible]	Surface	1.5	6.8	21.0	20.0	0.006	2.7	
CAV-SL-01-001	Surface		Incomplete Data					
CAV-SL-02-002	Surface	2.5	7.6	32.0	31.0	0.009	33.0	
CAV-SL-03-01	1.0	82.0	79.0	21.0	54.0	0.040	2.7	
CAV-SL-03-02	6.0	1.5	14.0	1.9	7.2	0.062	3.0	
CAV-SL-03-03	40.0	0.33	3.4	1.3	7.2	0.009	2.1	
CAV-SL-04-02	11.0		Inconsistent Results					
CAV-SL-04-03	?	1.2	8.1	7.7	9.1	0.004	15.0	(Ethylbenzene, Tolvene)
CAV-SL-04-04	?	0.29	3.7	1.2	6.4	0.005	4.5	(Ethylbenzene, Dimethylbenzene)
[illegible]	1.0	0.94	5.7	30.0	44.0	0.023	4.3	2.3 (PCB-1260)
[illegible]	7.5	0.48	3.7	0.81	4.0	0.010	2.5	
[illegible]	23.5	0.25	5.7	5.6	10.0	0.011	19.0	
[illegible]	30.0	BDL	4.6	3.2	6.5	0.007	3.7	
[illegible]	35.0	0.42	7.4	5.7	10.0	0.007	23.0	
[illegible]	Surface	0.53	40.0	3.5	5.0	0.010	24.0	
[illegible]	?	0.34	28.0	2.9	5.8	0.044	12.0	
[illegible]	Surface	0.26	3.5	150.0	3.6	0.006	6.3	(Ethylbenzene, Dimethylbenzene)
CAV-[illegible]	19.1	BDL	BDL	0.06	BDL	BDL	BDL	0.70 (Cyanide)
CAV-[illegible]	20.0		No Results Reported					
[illegible]	18.9	BDL	BDL	BDL	BDL	BDL	BDL	0.01 (Cyanide) (Benzene, Tolvene)
[illegible]	19.5	BDL	BDL	BDL	BDL	BDL	BDL	0.05 (Cyanide) (Benzene, Tolvene)
[illegible]	13.9	BDL	BDL	0.05	BDL	BDL	BDL	(Methylbenzene)
CAV-[illegible]	?		Duplicate Sample - No Metals Tested					(Benzene, Dichloroethylene)

BDL - Below Detection Limit

PRELIMINARY
ENGINEERS

000032

Attachment Three

Cavalcade Yard Waste Volume

Analysis of aerial photography for the period of concern reveals five distinct waste pits in addition to contaminated areas of product storage.

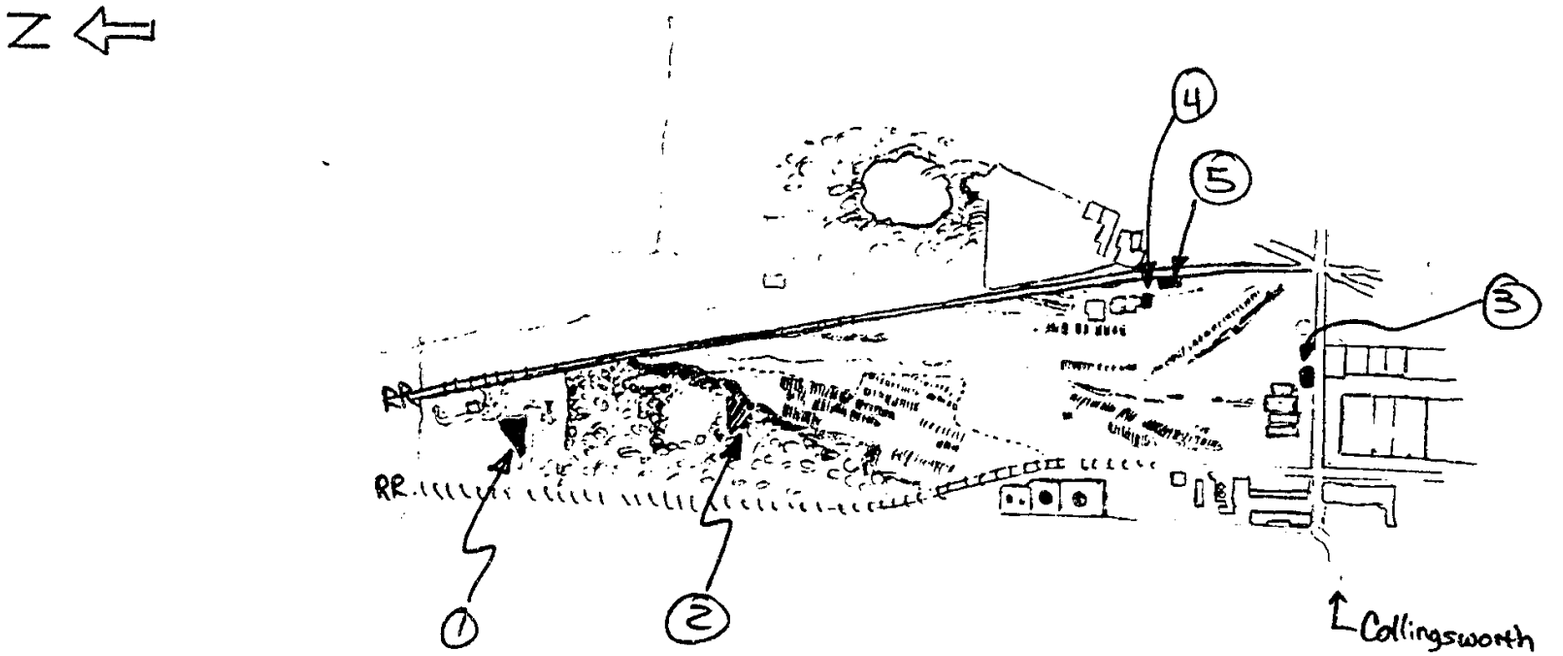
Pit #1	$\frac{50' \times 150'}{2}$	= 3,750 ft.^{2}
Pit #2	100' x 100'	= 10,000 ft.^{2}
Pit #3	50 x 100	= 5,000
Pit #4	30 x 50	= 1,500
Pit #5	30 x 70	= 2,100

Total pit area from aerial photography = 22,350 ft.^{2}

Depth of waste sludges is conservatively estimated at 2'. Thus waste volume is at least:

$$\frac{(22,350) \times (2)}{27} = 1,656 \text{ yd}^3$$

000033



1" = Approx. 666'
Date: 1961
Tracing of Aerial Photograph

Attachment 4

Harris Galveston Coastal

Subsidence District

Records

000035

HARRIS-GALVESTON COASTAL SUBSIDENCE DISTRICT
1660 WEST BAY AREA BOULEVARD
PHONE 713/406-1105 - FRIENDSWOOD, TX 77546

GENTLEMEN:

DUE TO THE LARGE VOLUME OF REQUESTS FOR WELL DATA, IT HAS BEEN NECESSARY TO STANDARDIZE OUR OUTPUT FORMAT.

THE ENCLOSED PRINTOUT LISTS ALL WELLS WITHIN 3.0 MILES OF THE FOLLOWING POINT BY ASCENDING LATITUDE (I.E. FROM SOUTH TO NORTH):

LATITUDE	29 DEG	47 MIN	30 SEC
LONGITUDE	95 DEG	21 MIN	0 SEC

WE REGRET WE CAN NO LONGER CUSTOMIZE OUR OUTPUT TO INDIVIDUAL SPECIFICATIONS AND HOPE THAT THE ENCLOSED WILL SERVE YOUR NEEDS.

SINCERELY YOURS

J. L. HOLZSCHUH
SENIOR HYDROLOGIST

000037

WELL NO.	OWNERS NAME	STATE WELL NO.	LATITUDE	LONGITUDE	DEPTH	CASING DIAM.	APPROX. TO 1ST SCREEN	TOTAL DEPTH	[illegible] DRILLED	APPROX. H2 PUMP
1576	GENERAL PORTLAND, INC.	65-14-7 5	294523	9520 5	50	14	[illegible]	[illegible]	[illegible]	0
2637	TISHMAN MANAGEMENT OF HOUSTON	65-14-7 0	[illegible]	[illegible]	50	[illegible]	0	900	[illegible]	0.
3624	FIRST CITY NATIONAL BANK	65-14-7 0	294536	952112	50	8	455	550	1981	0.
2265	SWANN ICE SERVICE INC [illegible]	65-14-7 0	294541	[illegible]	25	[illegible]	0	0	[illegible]	0.
[illegible]43	HOUSTON SHELL & CONCRETE	65-14-7 0	[illegible]	[illegible]	19	[illegible]	[illegible]	[illegible]	[illegible]	0.
[illegible]	HOUSTON, CITY OF	65-13-[illegible]	294545	952248	43	[illegible]	[illegible]	[illegible]	[illegible]	573362600.
[illegible]180	HOUSTON LIGHTING & POWER COMPANY	65-14-[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	590400.
[illegible]19	HOUSTON CITY OF	65-14-7 2	294552	[illegible]	25	[illegible]	[illegible]	[illegible]	[illegible]	573362600.
1181	HOUSTON LIGHTING & POWER COMPANY	65-14-7 4	294553	9521 8	39	24	900	1500	1949	590400.
1576	SOUTHLAND CORPORATION, THE	65-14-7 0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.
1807	BUILDERS SUPPLY CO. OF HOUSTON	65-14-7 0	294557	9521 0	30	[illegible]	0	0	[illegible]	0.
3625	BUILDERS SUPPLY CO. OF HOUSTON	65-14-7 0	[illegible]	[illegible]	30	[illegible]	0	0	1981	9892000.
[illegible]18	COMET RILE MILLS, INC	65-14-8 0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	25000000.
[illegible]	HOUSTON, CITY OF	65-13-[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	573362600.
1951	NATIONAL VINEGAR COMPANY	65-14-7 0	2946 3	9520 8	45	4	486	506	1968	14599955.
[illegible]	NATIONAL VINEGAR COMPANY	65-14-7 0	2946 3	9520 8	45	4	486	506	1968	14599955.
[illegible]9	[illegible] PAINT & VARNISH COMPANY	[illegible]	[illegible]	[illegible]	55	[illegible]	[illegible]	[illegible]	1965	9185540.
[illegible]	[illegible] INC.	65-14-7 0	[illegible]	[illegible]	80	[illegible]	0	0	19 0	0.
	[illegible]			[illegible]		[illegible]	[illegible]	[illegible]	19 0	0
				[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0

[illegible]	[illegible]									
1788	LAMAR HOTEL	65-13-6 0	294710	[illegible]	50	[illegible]	0	0	1928	0.
2169	HARDING, GEORGE F.	65 13-9 0	[illegible]	[illegible]	60	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1084	HOUSTON, CITY OF	65-14-4 6	[illegible]	[illegible]	50	[illegible]	[illegible]	[illegible]	1914	[illegible]
2910	CROZIER-NELSON CHEM & CONST.	65-14-4 0	294748	952058	55	0	0	0	19 0	0.
1086	HOUSTON, CITY OF	65 14 4 4	[illegible]	[illegible]	50	24	[illegible]	[illegible]	1949	516298778.

WELL NO.	OWNERS NAME	STATE WELL NO.	LATITUDE	LONGITUDE	ELEV.	CASING DIAM	DEPTH TO 1ST SCREEN	TOTAL DEPTH	YEAR DRILLED	APPROX. 82 PUMP
2334	FREEDMAN BROTHERS PACKING CO.	[illegible]	294814	[illegible]	146	[illegible]	[illegible]	511	[illegible]	3384300.
1085	HOUSTON, CITY OF	65 14 1 5	294815	[illegible]	50	[illegible]	[illegible]	[illegible]	[illegible]	516298778.
2270	GOODWILL INDUSTRIES OF HOUSTON	65-14 431	[illegible]	[illegible]	52	10	[illegible]	[illegible]	1955	3457300.
2770	[illegible] OIL COMPANY [illegible]	[illegible]	294834	[illegible]	60	[illegible]	0	[illegible]	[illegible]	16285.
3214	TRUMIX CONCRETE COMPANY	[illegible]	294845	[illegible]	[illegible]	[illegible]	0	0	[illegible]	6238550.
3215	TRUMIX CONCRETE COMPANY	65 14 420	294845	952057	55	6	456	478	1971	6238550.
[illegible]	HOUSTON, CITY OF	65-14 1 3	2949 9	[illegible]	55	[illegible]	999	1839	1949	516298778.
[illegible]	[illegible] HILL & COMPANY INC.	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	1967	0.
[illegible]	[illegible] STAR [illegible] STRIES, INC	65-14-4 0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	548	1974	19071618.
[illegible]	[illegible]	[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	1949	516298778.

SITE
Monte Beach Park
AIRLINE
HOUSTON
FRISCO
BENNINGTON
WAINWRIGHT
CROSS
TIMBERS
MC DANIEL
APPLETON
CAPLIN
ELEANOR
FAIRBANKS
ENGLISH
GALE
TERMINAL
AND
BELT

PACIFIC
TEXAS
OXFORD
STUDEWOOD
HOUSTON AVE
WHITE OAK
Holy Cross Cem.
Hollywood Cemetery
Sherman Sch
Jefferson Davis