James P. Bowers, PE
R. William Rudolph, Jr., PE

July 9, 1991
SCI 430.014

Mr. Paul Smith
Alameda County Health Care Services Agency
80 Swan Way, Room 200
Oakland, California 94621

Remediation Plan
DCA Contaminated Groundwater
13th and Jefferson Streets
Oakland, California

91 JUL 12 AM 11:52

Dear Mr. Smith:

This letter presents our remediation plan for the cleanup of contaminated groundwater associated with floor drain sump releases at 1330 Martin Luther King, Jr. Way in Oakland, California. The previous sump location is shown on Plate 1. Subsurface Consultants, Inc. (SCI) previously observed the removal of the concrete sump and associated contaminated soils. The results of these soil remediation activities are recorded in a report dated September 24, 1990. Groundwater quality studies have been conducted by SCI. The results are recorded in a report dated July 8, 1991.

Since sump removal, 1,2-dichloroethane (DCA) has been detected in Monitoring Wells 47 and 48, which are located adjacent to and downgradient of the previous sump. DCA concentrations have ranged from 6 to 60 ug/l. The highest concentrations have been detected in Well 48. A summary of the analytical results are presented in Table 1. Based on our analytical data, we judge that the approximate extent of the DCA plume is as shown on Plate 1.

Subsurface Consultants, Inc.

171 12th Street • Suite 201 • Oakland, California 94607 • Telephone 415-268-0461 • FAX 415-268-0137

Table 1. Volatile Organic Chemical Concentrations in Groundwater

Well	Date	1,2 DCA[1] (ug/L)[3]	1,2 DCE[2] (ug/L)	Chloroform (ug/L)	Other EPA 8010 (ug/L)
MW-47	12/03/90	ND[4]	11	ND	ND
	01/04/91	16	ND	ND	ND
	03/13/91	6.7	ND	ND	ND
MW-48	10/04/90	60	ND	ND	ND
	12/03/90	31	ND	ND	ND
	01/04/91	15	ND	ND	ND
	03/13/91	30	ND	ND	ND
MW-49	12/03/90	ND	ND	ND	ND
	03/03/91	ND	ND	ND	ND
MW-53	10/04/90	ND	ND	1.2	ND
	12/04/90	ND	ND	1.9	ND
	03/13/91	ND	ND	2.0	ND
MW-54	10/04/90	ND	ND	1.6	ND
	12/04/90	ND	ND	1.5	ND
	01/04/91	ND	ND	ND	ND
	03/13/91	ND	ND	ND	ND
MW-59	03/13/91	ND	ND	ND	ND
	04/03/91	ND	ND	ND	ND

---

1 1,2 Dichloroethane
2 1,2 Dichloroethene
3 Micrograms/liter = parts per billion
4 None detected

We propose to remediate the DCA contaminated groundwater by installing an extraction well at the location shown on Plate 1. The well will be installed in accordance with Regional Water Quality Control Board (RWQCB) guidelines. The well will consist of a 4-inch diameter PVC pipe installed in a 12-inch diameter borehole. Hollow auger drilling equipment will be used. The lower portion of the well will consist of machine slotted well screen with 0.02 inch wide slots. The pipe sections will be connected with flush threaded joints. The annulus around the screen will be

filled with an appropriate filter sand. A bentonite seal will be placed above the filter pack and the upper portions of the borehole will be sealed with cement/bentonite grout. The wellhead will be secured below grade in a utility box. The company installing the well will be a licensed well drilling contractor. Details of the well are shown on Plate 2. We estimate that the well will terminate about 45 feet below street levels.

The well discharge pipeline will be installed within the existing basement garage. The discharge pipe will terminate at the water treatment facility located at the corner of 14th Street and Martin Luther King Jr. Way. The water treatment system is owned by the City of Oakland Redevelopment Agency and for the past year has been in operation at the site treating hydrocarbon contaminated groundwater. To date, the system has performed exceptionally well.

The extraction well will be developed by pumping until the water is relatively free of turbidity. Development water will be discharged into the treatment plant.

A pump test will be performed in the extraction well to evaluate the performance characteristics of the well and the hydraulic parameters of the aquifer. The pump test will consist of pumping groundwater from the extraction well at varying rates. Groundwater levels in existing monitoring wells in the area will be measured to determine the radius of influence of the extraction well. From the data generated, we will choose an appropriate pump, estimate the capture zone for the well and confirm that the well location is suitable. Groundwater extracted during the pump test will be discharged into the treatment plant.

The treatment system utilizes granular activated carbon to treat the contaminated groundwater. Effluent from the extraction well will discharged into a 21,000 gallon, closed top holding tank. From the holding tank, the water is pumped through a particulate filter system and then through two granular activated carbon filter columns plumbed in series. The treated groundwater is then discharged into another 21,000-gallon holding tank and then into the EBMUD sanitary sewer system. The treatment system is capable of processing up to 60 gallons per minute (gpm). The present influent flow rate into the system is approximately 3 gpm. The treatment system will be able to accommodate the increased flows that will be generated by the proposed extraction well.

SCI will obtain the necessary permits from EBMUD to discharge the treated DCA contaminated groundwater into the sanitary sewer system. The treatment system monitoring program will be modified to account for the introduction of DCA into the system.

We are prepared to proceed with remediation as soon as your approval is received. If you have any questions, please call.

Yours very truly,

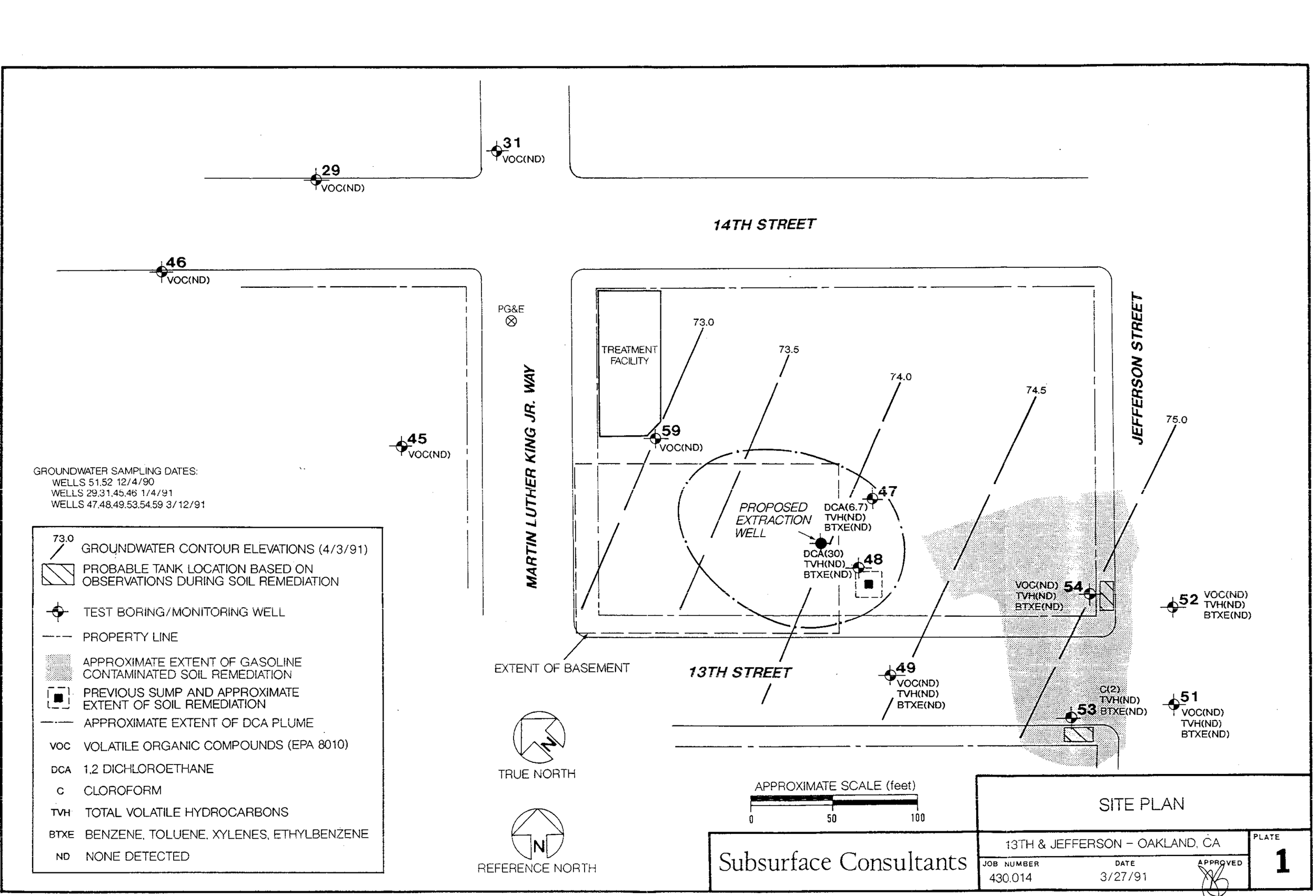
Subsurface Consultants, Inc.

James P. Bowers
Geotechnical Engineer 157 (expires 3/31/95)

Attachments: Plate 1 Site Plan
Plate 2 Typical Well Details

cc: Ms. Lois Parr, City of Oakland Redevelopment Agency
Mr. John Esposito, Bramalea Pacific
Mr. Donnell Choy, City of Oakland
Mr. Roy Ikeda, Crosby, Heafy, Roach, and May
Mr. Lester Feldman, RWQCB
Mr. William Meckel, EBMUD

MK:JPB:sld



GROUNDWATER SAMPLING DATES:
WELLS 51,52 12/4/90
WELLS 29,31,45,46 1/4/91
WELLS 47,48,49,53,54,59 3/12/91

- 73.0 GROUNDWATER CONTOUR ELEVATIONS (4/3/91)
- PROBABLE TANK LOCATION BASED ON OBSERVATIONS DURING SOIL REMEDIATION
- TEST BORING/MONITORING WELL
- PROPERTY LINE
- APPROXIMATE EXTENT OF GASOLINE CONTAMINATED SOIL REMEDIATION
- PREVIOUS SUMP AND APPROXIMATE EXTENT OF SOIL REMEDIATION
- APPROXIMATE EXTENT OF DCA PLUME
- VOC VOLATILE ORGANIC COMPOUNDS (EPA 8010)
- DCA 1,2 DICHLOROETHANE
- C CLOROFORM
- TVH TOTAL VOLATILE HYDROCARBONS
- BTXE BENZENE, TOLUENE, XYLENES, ETHYLBENZENE
- ND NONE DETECTED

TRUE NORTH

REFERENCE NORTH

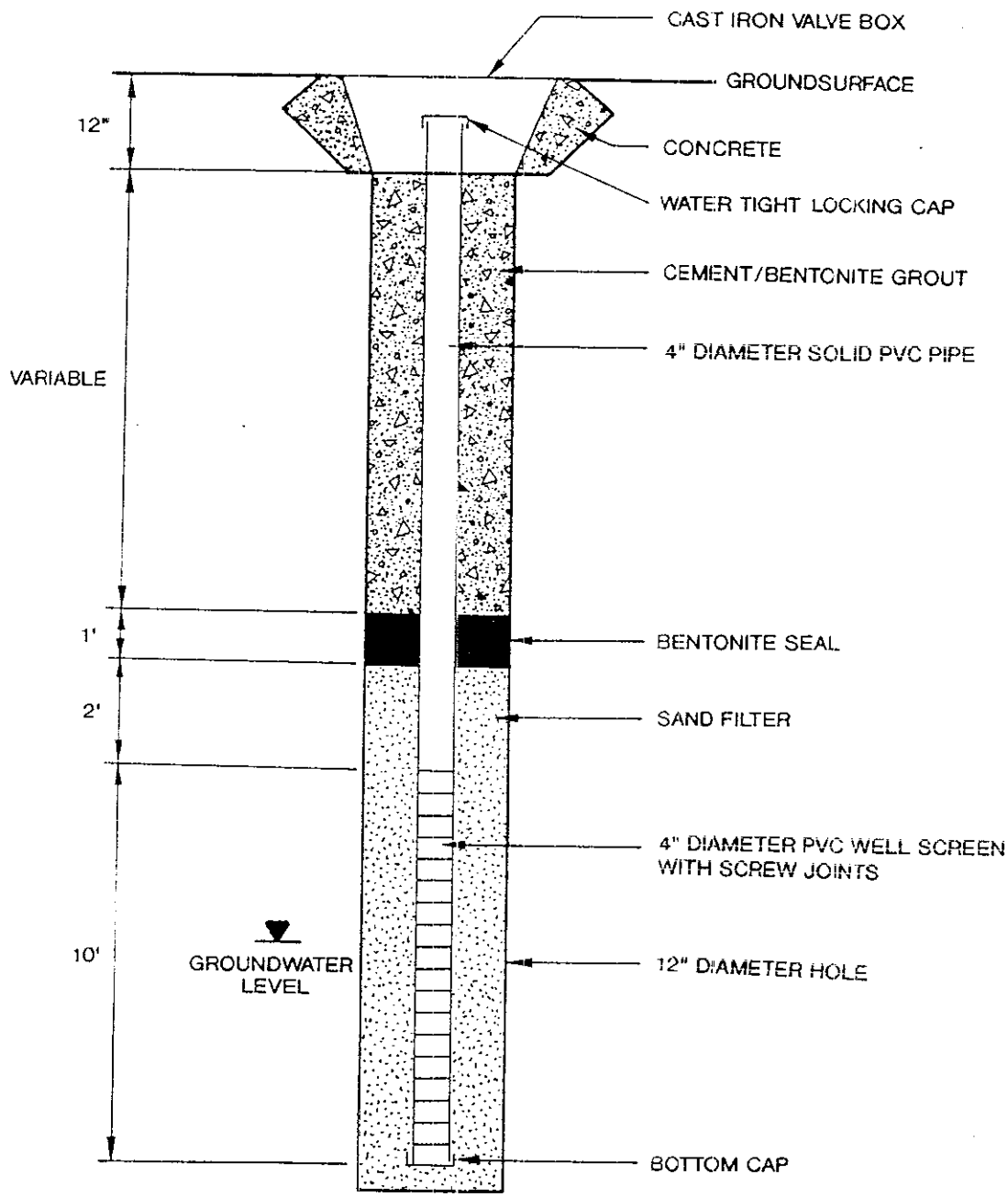
APPROXIMATE SCALE (feet)
0 50 100

SITE PLAN

Subsurface Consultants

13TH & JEFFERSON – OAKLAND, CA

JOB NUMBER	DATE	APPROVED	PLATE
430.014	3/27/91		1



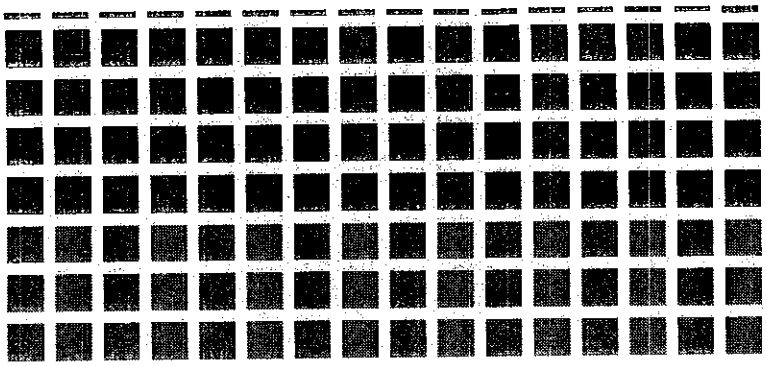
GROUNDWATER EXTRACTION WELL DESIGN

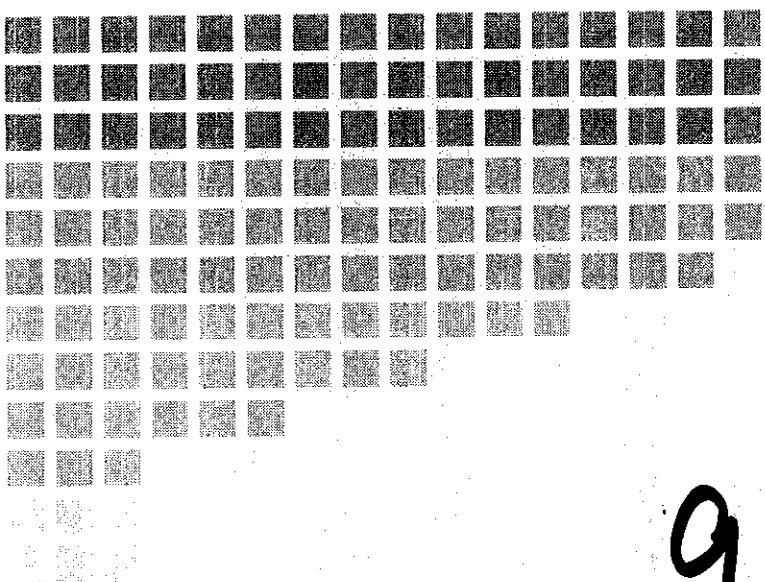
Subsurface Consultants

13TH & JEFFERSON – OAKLAND, CA

JOB NUMBER	DATE	APPROVED
430.014	7/9/91	

PLATE 2





9-24-90

■ Subsurface Consultants, Inc.

CLOSURE REPORT
FLOOR DRAIN SUMP
13TH AND JEFFERSON STREETS
OAKLAND, CALIFORNIA
SCI 430.006

STID 3623

Prepared for:

Mr. John Esposito
Bramalea Pacific
1221 Broadway, Suite 1800
Oakland, California 94612

By:

Sean O. Carson
Civil Engineer 45074 (expires 3/31/94)

REGISTERED PROFESSIONAL ENGINEER
SEAN O. CARSON
C 45074
CIVIL
STATE OF CALIFORNIA

James P. Bowers
Geotechnical Engineer 157 (expires 3/31/92)

REGISTERED PROFESSIONAL ENGINEER
JAMES P. BOWERS
No. GE 000157
Exp. _____
GEOTECHNICAL
STATE OF CALIFORNIA

Subsurface Consultants, Inc.
171 12th Street, Suite 201
Oakland, CA. 95607

September 24, 1990

I INTRODUCTION

This report records our services during the remediation of contamination resulting from a leaking floor drain sump. The location of the sump was approximately 33 feet north of 13th Street and 148 feet west of Jefferson Street in Oakland, California (Site Plan, Plate 1). Subsurface Consultants, Inc. (SCI) performed a preliminary environmental assessment of the site and presented the results in a report dated September 14, 1988. SCI was subsequently retained to oversee site remediation.

During the preliminary environmental assessment, a test boring was drilled adjacent to the sump. The boring was drilled to a depth of 34 feet. Contamination was not encountered in any of the samples obtained from the boring. However, upon removal of the concrete sump, contaminated soil was visible directly beneath it. The soil was stained gray/green and appeared to extend vertically with little or no lateral spreading.

II EXCAVATION AND REMEDIATION

HSR, Inc. performed the soil/sump remediation. Previous sampling of the sump contents indicated the presence of oil and grease, and very low concentrations of heavy metals, methylene chloride and PCB's. The sump, its contents and the soils within about 4 feet of the sump bottom were removed and disposed of at

the USPCI Grassy Mountain Facility in Knolls, Utah. The sump extended about 4 feet below the groundsurface. During initial excavation, the staining associated with the contaminated soils visually appeared to extend to a depth of approximately 14 feet below groundsurface. For this reason, the excavation was initially terminated at this depth. A soil sample was obtained at the bottom of the excavation. The sample was analyzed for a variety of substances. The analytical test results are summarized in Table 1.

The analytical data indicated that petroleum hydrocarbons had leaked from the sump and remained in the soil below the excavation bottom. The excavation was subsequently widened and deepened to depths of 21, 26 and 28 feet. Soil samples were obtained at each interval and analyzed for hydrocarbons and oil and grease. The excavation was advanced until all contaminated materials were removed. A summary of the analytical test data generated during excavation is presented in Table 2. The extent of the final excavation and typical locations of the final soil samples taken are shown on Plate 1. The excavation was backfilled with on-site native soils. The excavation measured about 15 by 15 feet in plan and extended to a maximum depth of 28 feet. Approximately 250 cubic yards of soil (in-place) were removed. The excavation was extended about 1 foot below the groundwater level.

Table 1. CONTAMINANT CONCENTRATIONS IN SOIL[3] BELOW SUMP

Contaminant	Concentration (mg/kg[1])
Metals	
Barium	42
Cadmium	1.1
Chromium (total)	45
Cobalt	6.8
Copper	10
Lead	7.0
Nickel	25
Vanadium	21
Zinc	18
Other Title 22 Metals	ND[2]
Ethylbenzene	Trace
Total Xylenes	11
Other Volatile Organics (EPA 8240)	ND
Pesticides and PCBs (EPA 8080)	ND
Oil and Grease (SMWW 503E)	1,500
Total Extractable Hydrocarbons (TEH)	
Gasoline	380
Kerosene	48,000
Diesel	270
Total TEH	48,650

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1 mg/kg = milligrams per kilogram

2 ND = None detected at concentrations above detection limits. See test reports for detection limits.

3 Sample Designation: Sump @ 14 feet

Table 2. HYDROCARBON CONCENTRATIONS (mg/kg)[5] IN SOIL

Sample Designation	TEH[1]	O&G[2]	BTXE[3]
Sump @ 14	48,650	1,500	11
Sump @ 21	ND[4]	150	ND
Sump @ 26			
Bottom	ND	89	
North	ND	ND	
South	ND	ND	
West	ND	58	
East	ND	51	
Sump @ 28 (Bottom)	ND	ND	
Well Samples			
N @ 12	ND		
N @ 18	ND		
N @ 24	ND		
S @ 6	ND		
S @ 12	ND		
S @ 18	ND		
S @ 24	34[6]		
S2 @ 24	ND		
E @ 6	ND		
E @ 12	ND		
E @ 18	ND		
E @ 24	ND	ND	
W @ 6	ND		
W @ 12	ND		
W @ 18	ND		
W @ 24	ND	ND	

1 TEH = Total Extractable Hydrocarbons, EPA 8015/3550
2 O&G = Oil and Grease Method SMWW 503E
3 BTXE = Benzene, Toluene, Xylene and Ethylbenzene, EPA 8020
4 ND = None detected at concentrations above detection limits. See test reports for detection limits.
5 mg/kg = milligrams per kilogram
6 Contaminated soil was removed and wall was resampled as S2 @ 24

III SAMPLING PROCEDURES

Samples were obtained from the excavation from soil brought to the surface by the excavator bucket. Sampling was performed using the following procedure: approximately 3 inches of soil was scraped away from the surface, and a clean brass sample liner was driven into the soil with a rubber mallet. The ends of the liner were covered with teflon sheeting, capped, sealed with duct tape and labeled. The samples were placed in an iced cooler and transported to the analytical laboratory. Chain-of-Custody documents accompanied the samples to the laboratory; copies are presented in the Appendix.

IV ANALYTICAL TESTING

Analytical testing was performed by Curtis & Tompkins, Ltd., a Department of Health Services (DHS) certified laboratory. Initially, a sample was analyzed for Title 26 metals, volatile organics (EPA 8240), organochlorine pesticides and PCB's (EPA 8080), oil and grease (SMWW 503E), and total extractable hydrocarbons (EPA 8015/3550). The analytical results revealed the presence of gasoline, kerosene, diesel, and oil and grease. Consequently, subsequent analytical testing was directed toward these materials.

V SOIL AERATION AND DISPOSAL

Contaminated soil removed from the excavation was aerated in accordance with requirements of the Bay Area Air Quality Management District (BAAQMD). The contaminated soil was excavated, stockpiled separately from non-contaminated soil, and covered with an impermeable membrane. Samples of the contaminated soil were obtained, composited and analytically tested to evaluate hydrocarbon concentrations. One composite sample was taken for the approximately 50 cubic yards of contaminated soil. During aeration, the contaminated soil was spread in a thin layer within the aeration area. The material was frequently turned and checked with an organic vapor meter. During aeration, samples of the aerated soil were obtained and analyzed for extractable hydrocarbons to monitor the rate and effectiveness of aeration. The test results are summarized in Table 3. Analytical test reports and Chain-of-Custody documents are included in the Appendix.

The aerated soils were disposed of at the West Contra Costa County Sanitary Landfill in Richmond. This is a Class 3 landfill facility and the soil was disposed of as a non-hazardous waste. Copies of non-hazardous waste manifests are included in the Appendix.

Table 3. CONTAMINANT CONCENTRATIONS IN AERATED SOIL (mg/kg)[1]

Sample Designation	Gasoline	Kerosene	Diesel	O&G[2]	BTXE[3]
Pre Aeration					
Sump A-1 thru 4	ND[4]	700	ND		
During Aeration					
Sump C-2	ND	470	ND	ND	ND
Sump C-3	ND	470	ND	ND	ND
Sump C-4	ND	460	ND	ND	ND
C-8	ND	170	ND		
C-9	ND	110	ND		
C-10	ND	130	ND		
C-11	ND	ND	Trace		
C-12	ND	ND	39		
C-13	ND	ND	54		
C-14	ND	ND	32		
Post Aeration					
C-15	ND	ND	ND		
C-16	ND	ND	ND		
C-17	ND	ND	ND		

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1 mg/kg = milligrams per kilogram
2 O&G = Oil and grease, Method SMWW 503E
3 BTXE = Benzene, Toluene, Xylene and Ethylbenzene, EPA 8020
4 ND= None detected at concentrations above detection limits. See test reports for detection limits.

VI GROUNDWATER MONITORING

A groundwater monitoring well (MW-48) was installed adjacent to and downgradient of the sump excavation. The direction of groundwater flow was estimated using groundwater elevation dated from numerous nearby monitoring wells. The well (MW-48) consists of a 2-inch-diameter schedule 40 PVC pipe with flush-threaded joints. The well was constructed through an 8-inch-diameter hollow-stem auger. The well extends about 35 feet below grade. Groundwater was encountered at a depth of about 27 feet. The lower 10 feet of the well consists of machine-slotted well screen having 0.020 inch slots. The annular space around the screened section was backfilled with Lone Star #3 sand. A bentonite plug, approximately 12 inches thick, was placed above the sand. The annulus above the plug was filled with bentonite grout. The well was finished flush with the groundsurface. The wellhead is secured by a locking cover.

The monitoring well was subsequently developed, purged and sampled. The groundwater sample was analytically tested for suspected contaminants. The test results are summarized below in Table 4.

Table 4. ORGANIC CHEMICAL CONCENTRATIONS IN GROUNDWATER

Well	Sampling Date	TEH[1]	O&G[2]	BTXE[3]	TVH[5]
W-48	7/18/90	ND	ND	ND[4]	ND

1 TEH = Total Extractable Hydrocarbons, EPA 8015/3550
2 O&G = Oil and Grease, Method SMWW 503E
3 BTXE = Benzene, Toluene, Xylene, Ethylbenzene, EPA 8020
4 ND = None detected at concentrations above detection limits. See test reports for detection limits.

VII CONCLUSIONS

Based upon our observations and analytical test results, we conclude that soil remediation was completed satisfactorily. Excavation removed soils containing hydrocarbons at concentrations above the analytical detection limits.

The groundwater from the monitoring well installed near the sump has been sampled and analytically tested. The analytical test results indicate that no detectable concentrations of petroleum hydrocarbons exist in the groundwater. Based on these results, we conclude that there has not been any significant impact on groundwater as a result of sump leakage.

List of Attached Plates

Plate 1 Site Plan

Appendix:

Analytical Test Results

Chain-of-Custody Documents

Non-Hazardous Waste Manifests

Distribution:

1 copy: Mr. John Esposito
Bramalea Pacific
1221 Broadway, Suite 1800
Oakland, CA 94612

1 copy: Ms. Lois Parr
City of Oakland, OEDE
1333 Broadway, Suite 900
Oakland, CA 94612

1 copy: Ms. Katherine Chesick
Alameda County Health Care Services Agency
Division of Hazardous Materials
80 Swan Way, #200
Oakland, CA 94612

1 copy: Mr. Lester Feldman
Regional Water Quality Control Board
1800 Harrison Street, Suite 700
Oakland, CA 94612

1 copy: Mr. Roy Ikeda
Crosby, Heafy, Roach & May
1999 Harrison Street
Oakland, CA 94612

SOC:JPB:RWR:mbl:clh

DIRECTION OF GROUNDWATER FLOW

A

A'

48

N

EXTENT OF EXCAVATION

18

W

SUMP

E

S

WALL SAMPLE LOCATIONS

PLAN

BASEMENT WALL

SIDEWALK

13TH STREET

14TH STREET

148'

33'

SUMP

JEFFERSON STREET

13TH STREET

APPROXIMATE SCALE (feet)

0 10 20

APPROXIMATE SCALE (feet)

0 50 100

CROSS SECTION A – A'

BASEMENT

W@6'

W@12'

W@18'

W@24'

E@6'

E@12'

E@18'

E@24'

SUMP@28'

WATER LEVEL DURING EXCAVATION

WATER LEVEL 7/18/90

DEPTH (feet)

0

10

20

30

REFERENCE NORTH

TRUE NORTH

SITE PLAN & CROSS SECTION

Subsurface Consultants

13TH & JEFFERSON – OAKLAND, CA

JOB NUMBER	DATE	APPROVED
430.006	8/9/90	

PLATE 1

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

DATE RECEIVED: 08/14/89
DATE REPORTED: 08/16/89

LAB NUMBER: 18031

CLIENT: SUBSURFACE CONSULTANTS, INC.

REPORT ON: 1 SOIL SAMPLE

JOB #: 430.005
LOCATION: 13th & JEFFERSON

RESULTS: SEE ATTACHED

for Way for CBG
Laboratory Director

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 18031
CLIENT: SUBSURFACE CONSULTANTS, INC.
PROJECT #: 430.005
SAMPLE ID: SUMP @ 14'

DATE RECEIVED: 08/14/89
DATE ANALYZED: 08/15/89
DATE REPORTED: 08/16/89

Title 22 Metals in Soils & Wastes
Digestion Method: EPA 3050

METAL	RESULT mg/Kg	DETECTION LIMIT mg/Kg	METHOD
Antimony	ND	2.5	EPA 6010
Arsenic	ND	2.5	EPA 6010
Barium	42	0.5	EPA 6010
Beryllium	ND	0.5	EPA 6010
Cadmium	1.1	0.5	EPA 6010
Chromium (total)	45	0.5	EPA 6010
Cobalt	6.8	0.5	EPA 6010
Copper	10	0.5	EPA 6010
Lead	7.0	2.5	EPA 7420
Mercury	ND	0.1	EPA 7470
Molybdenum	ND	0.5	EPA 6010
Nickel	25	0.5	EPA 6010
Selenium	ND	2.5	EPA 6010
Silver	ND	1.0	EPA 6010
Thallium	ND	2.5	EPA 6010
Vanadium	21	1.0	EPA 6010
Zinc	18	0.5	EPA 6010

ND = None Detected

QA/QC SUMMARY

	%RPD	%SPIKE		%RPD	%SPIKE
Antimony	1	94	Mercury	14	62
Arsenic	1	91	Molybdenum	<1	96
Barium	4	105	Nickel	2	91
Beryllium	3	99	Selenium	<1	96
Cadmium	5	98	Silver	1	111
Chromium	20	106	Thallium	1	99
Cobalt	8	92	Vanadium	1	110
Copper	6	91	Zinc	3	106
Lead	16	102			

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 18031
CLIENT: SUBSURFACE CONSULTANTS, INC.
JOB #: 430.005
SAMPLE ID: SUMP @ 14'

DATE RECEIVED: 08/14/89
DATE ANALYZED: 08/16/89
DATE REPORTED: 08/16/89

EPA METHOD 8240: VOLATILE ORGANICS IN SOILS & WASTES

COMPOUND	Result ug/kg	Detection Limit ug/kg
chloromethane	ND	5,000
bromomethane	ND	5,000
vinyl chloride	ND	5,000
chloroethane	ND	5,000
methylene chloride	ND	2,500
trichlorofluoromethane	ND	2,500
1,1-dichloroethene	ND	2,500
1,1-dichloroethane	ND	2,500
trans-1,2-dichloroethene	ND	2,500
chloroform	ND	2,500
1,2-dichloroethane	ND	2,500
1,1,1-trichloroethane	ND	2,500
carbon tetrachloride	ND	2,500
bromodichloromethane	ND	2,500
1,2-dichloropropane	ND	2,500
cis-1,3-dichloropropene	ND	2,500
trichloroethylene	ND	2,500
dibromochloromethane	ND	2,500
1,1,2-trichloroethane	ND	2,500
benzene	ND	2,500
trans-1,3-dichloropropene	ND	2,500
2-chloroethylvinyl ether	ND	5,000
bromoform	ND	2,500
1,1,2,2-tetrachloroethane	ND	2,500
tetrachloroethylene	ND	2,500
toluene	ND	2,500
chlorobenzene	ND	2,500
ethyl benzene	TRACE	2,500

Non-Priority Hazardous Pollutant Substances List Compounds

acetone	ND	5,000
carbon disulfide	ND	2,500
2-butanone	ND	5,000
vinyl acetate	ND	5,000
2-hexanone	ND	5,000
4-methyl-2-pentanone	ND	5,000
styrene	ND	2,500
total xylenes	11,000	2,500

QA/QC SUMMARY: SURROGATE RECOVERIES		
1,2-Dichloroethane-d4	74%	70-12
Toluene-d8	103%	81-11
Bromofluorobenzene	90%	74-12

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 18031
CLIENT: SUBSURFACE CONSULTANTS, INC.
SAMPLE ID: SUMP @ 14'
PROJECT #: 430.005

DATE RECEIVED: 08/14/89
DATE EXTRACTED: 08/15/89
DATE ANALYZED: 08/16/89
DATE REPORTED: 8/16/89

EPA 8080: Organochlorine Pesticides and PCBs in Soil & Wastes
Extraction Method: EPA 3550 - Sonication

COMPOUND	Result (mg/kg)	Detection Limit (mg/kg)
alpha-BHC	ND	0.05
beta-BHC	ND	0.05
gamma-BHC	ND	0.05
delta-BHA	ND	0.05
Heptachlor	ND	0.05
Aldrin	ND	0.05
Heptachlor Epoxide	ND	0.05
Endosulfan I	ND	0.05
pp-DDE	ND	0.05
Dieldrin	ND	0.05
Endrin	ND	0.05
Endosulfan II	ND	0.05
Endosulfan Sulfate	ND	0.05
4,4,-DDD	ND	0.05
Endrin Aldehyde	ND	0.05
pp-DDT	ND	0.05
Chlordane	ND	0.5
Toxaphene	ND	0.5
Methoxychlor	ND	0.5
PCB 1016	ND	0.5
PCB 1221	ND	0.5
PCB 1232	ND	0.5
PCB 1242	ND	0.5
PCB 1248	ND	0.5
PCB 1254	ND	0.5
PCB 1260	ND	0.5

ND = Not detected. Limit of detection appears right column.

Curtis & Tompkins, Ltd.

LAB NUMBER: 18031
CLIENT: SUBSURFACE CONSULTANTS, INC.
PROJECT # : 430.005

DATE RECEIVED: 08/14/89
DATE ANALYZED: 08/16/89
DATE REPORTED: 08/16/89

ANALYSIS: OIL AND GREASE
METHOD: SMWW 503E

LAB ID	SAMPLE ID	RESULT	UNITS	DETECTION LIMIT
18031-1	SUMP @ 14'	1,500	mg/Kg	50

QA/QC SUMMARY

RPD, %	7
RECOVERY, %	83

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 18031
CLIENT: SUBSURFACE CONSULTANTS, INC.
PROJECT #: 430.005
LOCATION: 13TH & JEFFERSON

DATE RECEIVED: 08/14/89
DATE ANALYZED: 08/16/89
DATE REPORTED: 08/16/89

Extractable Petroleum Hydrocarbons in Soils & Wastes
EPA 8015 (Modified)
Extraction Method: EPA 3550

LAB ID	CLIENT ID	GASOLINE (mg/Kg)	KEROSINE (mg/Kg)	DIESEL (mg/Kg)
18031-1	SUMP @ 14'	380*	48,000**	270***

* Fingerprint pattern does not match Hydrocarbon standards. Quantitation based on total area within C6-C9 boiling range.

** Fingerprint pattern does not match Hydrocarbon standards. Quantitation based on total area within C9-C12 boiling range.

*** Fingerprint pattern does not match Hydrocarbon standards. Quantitation based on total area within C12-C22 boiling range.

ND = Not Detected; Limit of detection in parentheses.

QA/QC SUMMARY

Duplicate: Relative % Difference	7
Spike: % Recovery	94

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2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

DATE RECEIVED: 08/22/89
DATE REPORTED: 08/29/89

LAB NUMBER: 18092

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: 1 SOIL SAMPLE

JOB #: 430.005
LOCATION: 13TH & JEFFERSON

RESULTS: SEE ATTACHED

Laboratory Director

Curtis & Tompkins, Ltd.

LAB NUMBER: 18092
CLIENT: SUBSURFACE CONSULTANTS
PROJECT # : 430.005
LOCATION: 13TH & JEFFERSON

DATE RECEIVED: 08/22/89
DATE ANALYZED: 08/28/89
DATE REPORTED: 08/29/89

ANALYSIS: OIL AND GREASE
METHOD: SMWW 503E

LAB ID	SAMPLE ID	RESULT	UNITS	DETECTION LIMIT
18092-1	SUMP @ 21	150	mg/Kg	50

QA/QC SUMMARY

RPD, %	7
RECOVERY, %	84

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 18092
CLIENT: SUBSURFACE CONSULTANTS
JOB #: 430.005
LOCATION: 13TH & JEFFERSON

DATE RECEIVED: 08/22/89
DATE ANALYZED: 08/28/89
DATE REPORTED: 08/29/89

Extractable Petroleum Hydrocarbons in Soils & Wastes
EPA 8015 (Modified)
Extraction Method: EPA 3550

LAB ID	CLIENT ID	GASOLINE (mg/Kg)	KEROSENE (mg/Kg)	DIESEL (mg/Kg)	OTHER (mg/Kg)
18092-1	SUMP @ 21	ND(10)	ND(10)	ND(10)	ND(10)

ND = Not Detected; Limit of detection in parentheses.

QA/QC SUMMARY

Duplicate: Relative % Difference	6
Spike: % Recovery	103

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 18092
CLIENT: SUBSURFACE CONSULTANTS
PROJECT #: 430.005
LOCATION: 13TH & JEFFERSON
SAMPLE ID: SUMP @ 21

DATE RECEIVED: 08/22/89
DATE ANALYZED: 08/23/89
DATE REPORTED: 08/29/89

EPA 8020: Volatile Aromatic Hydrocarbons in Soils & Wastes
Extraction Method: EPA 5030 - Purge & Trap

COMPOUND	Result ug/Kg	LOD ug/Kg
Benzene	ND	5
Toluene	ND	5
Ethyl Benzene	ND	5
Total Xylenes	ND	5
Chlorobenzene	ND	5
1,4-Dichlorobenzene	ND	5
1,3-Dichlorobenzene	ND	5
1,2-Dichlorobenzene	ND	5

ND = None Detected. Limit of detection (LOD) in last column.

QA/QC:

Duplicate: Relative % Difference	5
Average Spike Recovery %	89

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

DATE RECEIVED: 09/07/89
DATE REPORTED: 09/15/89

LAB NUMBER: 18209

CLIENT: SUBSURFACE CONSULTANTS, INC.

REPORT ON: 5 SOIL SAMPLES

JOB #: 430.005
LOCATION: 13th AND JEFFERSON

RESULTS: SEE ATTACHED

QA/QC Officer

Laboratory Director

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 18209
CLIENT: SUBSURFACE CONSULTANTS
JOB #: 430.005
LOCATION: 13th AND JEFFERSON

DATE RECEIVED: 09/07/89
DATE ANALYZED: 09/12/89
DATE REPORTED: 09/15/89

Extractable Petroleum Hydrocarbons in Soils & Wastes
EPA 8015 (Modified)
Extraction Method: EPA 3550

LAB ID	CLIENT ID	GASOLINE (mg/Kg)	KEROSENE (mg/Kg)	DIESEL (mg/Kg)	OTHER (mg/Kg)
18209-1	SUMP @ 26' (BOTTOM)	ND(10)	ND(10)	ND(10)	ND(10)
18209-2	SUMP @ 26' (NORTH)	ND(10)	ND(10)	ND(10)	ND(10)
18209-3	SUMP @ 26' (SOUTH)	ND(10)	ND(10)	ND(10)	ND(10)
18209-4	SUMP @ 26' (WEST)	ND(10)	ND(10)	ND(10)	ND(10)
18209-5	SUMP @ 26' (EAST)	ND(10)	ND(10)	ND(10)	ND(10)

ND = Not Detected; Limit of detection in parentheses.

QA/QC SUMMARY

Duplicate: Relative % Difference	<1
Spike: % Recovery	97

Curtis & Tompkins, Ltd.

LAB NUMBER: 18209
CLIENT: SUBSURFACE CONSULTANTS
PROJECT # : 430.005
LOCATION: 13th AND JEFFERSON

DATE RECEIVED: 09/07/89
DATE ANALYZED: 09/13/89
DATE REPORTED: 09/15/89

ANALYSIS: OIL AND GREASE
METHOD: SMWW 503E

LAB ID	SAMPLE ID	RESULT	UNITS	DETECTION LIMIT
18209-1	SUMP @ 26' (BOTTOM)	89	mg/Kg	50
18209-2	SUMP @ 26' (NORTH)	ND	mg/Kg	50
18209-3	SUMP @ 26' (SOUTH)	ND	mg/Kg	50
18209-4	SUMP @ 26' (WEST)	58	mg/Kg	50
18209-5	SUMP @ 26' (EAST)	51	mg/Kg	50

ND = None Detected

QA/QC SUMMARY

RPD, %	5
RECOVERY, %	84

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

LAB NUMBER: 19868
CLIENT: SUBSURFACE CONSULTANTS
PROJECT # : 430.006
LOCATION: 13th & JEFFERSON

DATE RECEIVED: 02/08/90
DATE REQUESTED: 03/12/90
DATE ANALYZED: 03/13/90
DATE REPORTED: 03/14/90

ANALYSIS: OIL AND GREASE
METHOD: SMWW 503E

LAB ID	SAMPLE ID	RESULT	UNITS	DETECTION LIMIT
19868-1	SUMP @ 28	ND	mg/Kg	50
19868-2	E @ 24	ND	mg/Kg	50
19868-3	W @ 24	ND	mg/Kg	50

ND = NOT DETECTED

QA/QC SUMMARY

RPD, %	3
RECOVERY, %	86

QA/QC OFFICER

LABORATORY DIRECTOR

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

DATE RECEIVED: 02/08/90
DATE REPORTED: 02/12/90

RECEIVED
FEB 20 1990

LAB NUMBER: 19538

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: 16 SOIL SAMPLES

PROJECT #: 430.006
LOCATION: 13TH & JEFFERSON

RESULTS: SEE ATTACHED

Alan for MEP
QA/QC Officer

Laboratory Director

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 19538
CLIENT: SUBSURFACE CONSULTANTS
JOB #: 430.006
LOCATION: 13th & JEFFERSON

DATE RECEIVED: 02/08/90
DATE ANALYZED: 02/11/90
DATE REPORTED: 02/12/90

Extractable Petroleum Hydrocarbons in Soils & Wastes
California DOHS Method
LUFT Manual October 1989

LAB ID	CLIENT ID	KEROSENE (mg/Kg)	DIESEL (mg/Kg)	OTHER (mg/Kg)
19538-1	SUMP@28	ND(10)	ND(10)	ND(10)
19538-2	N@12	ND(10)	ND(10)	ND(10)
19538-3	N@18	ND(10)	ND(10)	ND(10)
19538-4	N@24	ND(10)	ND(10)	ND(10)
19538-5	S@6	ND(10)	ND(10)	ND(10)
19538-6	S@12	ND(10)	ND(10)	ND(10)
19538-7	S@18	ND(10)	ND(10)	ND(10)
19538-8	S@24	34*	ND(10)	ND(10)
19538-9	E@6	ND(10)	ND(10)	ND(10)
19538-10	E@12	ND(10)	ND(10)	ND(10)
19538-11	E@18	ND(10)	ND(10)	ND(10)
19538-12	E@24	ND(10)	ND(10)	ND(10)
19538-13	W@6	ND(10)	ND(10)	ND(10)
19538-14	W@12	ND(10)	ND(10)	ND(10)
19538-15	W@18	ND(10)	ND(10)	ND(10)
19538-16	W@24	ND(10)	ND(10)	ND(10)

*Fingerprint pattern does not match hydrocarbon standards. Quantitation based on area sum within C10-C16 boiling range.

ND = NOT DETECTED; LIMIT OF DETECTION IN PARENTHESES

QA/QC SUMMARY

Duplicate: Relative % Difference	<1
Spike: % Recovery	97

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

LABORATORY NUMBER: 19586
CLIENT: SUBSURFACE CONSULTANTS
JOB #: 430.006
LOCATION: SUMP REMEDIATION

DATE RECEIVED: 02/14/90
DATE ANALYZED: 02/16/90
DATE REPORTED: 02/20/90

Extractable Petroleum Hydrocarbons in Soils & Wastes
California DOHS Method
LUFT Manual October 1989

LAB ID	CLIENT ID	KEROSENE (mg/Kg)	DIESEL (mg/Kg)	OTHER (mg/Kg)
19586-1	S2 @ 24'	ND(10)	ND(10)	ND(10)

ND = Not Detected; Limit of detection in parentheses.

QA/QC SUMMARY

Duplicate: Relative % Difference	4
Spike: % Recovery	99

M. E. Printeza
QA/QC OFFICER

for CBG
LABORATORY DIRECTOR

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

DATE RECEIVED: 08/23/89
DATE REPORTED: 08/24/89

LAB NUMBER: 18095

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: 1 SOIL COMPOSITE

JOB #: 430.005
LOCATION: 13TH & JEFFERSON

RESULTS: SEE ATTACHED

Laboratory Director

Curtis & Tompkins Ltd

LABORATORY NUMBER: 18095
CLIENT: SUBSURFACE CONSULTANTS
JOB #: 430.005
LOCATION: 13TH & JEFFERSON

DATE RECEIVED: 08/23/89
DATE ANALYZED: 08/23/89
DATE REPORTED: 08/24/89

Extractable Petroleum Hydrocarbons in Soils & Wastes
EPA 8015 (Modified)
Extraction Method: EPA 3550

LAB ID	CLIENT ID	GASOLINE (mg/Kg)	KEROSENE (mg/Kg)	DIESEL (mg/Kg)	OTHER (mg/Kg)
18095-1,2,3,4	SUMP A-1/ SUMP A-2/ SUMP A-3/ SUMP A-4	ND(10)	700	ND(10)	ND(10)

ND = Not Detected; Limit of detection in parentheses.

QA/QC SUMMARY

Duplicate: Relative % Difference	11
Spike: % Recovery	103

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
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DATE RECEIVED: 09/13/89
DATE REPORTED: 09/18/89

LAB NUMBER: 18250

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: 3 SOIL SAMPLES

JOB #: 430.006
LOCATION: 13TH & JEFFERSON

RESULTS: SEE ATTACHED

QA/QC Officer

Laboratory Director

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 18250
CLIENT: SUBSURFACE CONSULTANTS
JOB #: 430.006
LOCATION: 13TH & JEFFERSON

DATE RECEIVED: 09/13/89
DATE ANALYZED: 09/13/89
DATE REPORTED: 09/18/89

Extractable Petroleum Hydrocarbons in Soils & Wastes
EPA 8015 (Modified)
Extraction Method: EPA 3550

LAB ID	CLIENT ID	GASOLINE (mg/Kg)	KEROSENE (mg/Kg)	DIESEL (mg/Kg)	OTHER (mg/Kg)
18250-1	SUMP C-4	ND(10)	470*	ND(10)	ND(10)
18250-2	SUMP C-2	ND(10)	470*	ND(10)	ND(10)
18250-3	SUMP C-3	ND(10)	460*	ND(10)	ND(10)

*Fingerprint pattern does not match Hydrocarbon standards. Quantitation based on largest peaks within C9-C12 boiling range.

ND = Not Detected; Limit of detection in parentheses.

QA/QC SUMMARY

Duplicate: Relative % Difference	7
Spike: % Recovery	96

Curtis & Tompkins, Ltd.

LAB NUMBER: 18250
CLIENT: SUBSURFACE CONSULTANTS
PROJECT # : 430.006/13TH & JEFFERSON

DATE RECEIVED: 09/13/89
DATE ANALYZED: 09/15/89
DATE REPORTED: 09/18/89

ANALYSIS: OIL AND GREASE
METHOD: SMWW 503E

LAB ID	SAMPLE ID	RESULT	UNITS	DETECTION LIMIT
18250-1	SUMP C-2	ND	mg/Kg	50
18250-2	SUMP C-3	ND	mg/Kg	50
18250-3	SUMP C-4	ND	mg/Kg	50

ND = NONE DETECTED

QA/QC SUMMARY

RPD, %	1
RECOVERY, %	88

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 18250
CLIENT: SUBSURFACE CONSULTANTS
JOB NUMBER: 430.006
JOB LOCATION: 13TH & JEFFERSON

DATE RECEIVED: 09/13/89
DATE ANALYZED: 09/13/89
DATE REPORTED: 09/18/89

Benzene, Toluene, Ethyl Benzene, Xylenes by EPA 8020
Extraction by EPA 5030 Purge and Trap

LAB ID	CLIENT ID	BENZENE (ug/kg)	TOLUENE (ug/kg)	TOTAL XYLENES (ug/kg)	ETHYL BENZENE (ug/kg)
18250-1	SUMP C-4	ND(5)	ND(5)	ND(5)	ND(5)
18250-2	SUMP C-2	ND(5)	ND(5)	ND(5)	ND(5)
18250-3	SUMP C-3	ND(5)	ND(5)	ND(5)	ND(5)

ND = NONE DETECTED; LIMIT OF DETECTION IN PARENTHESES.

QA/QC SUMMARY

%RPD	18
%RECOVERY	93

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LABORATORY NUMBER: 18367
CLIENT: SUBSURFACE CONSULTANTS
JOB #: 430.006
LOCATION: JEFFERSON ST. SUMP REMEDIATION

DATE RECEIVED: 09/27/89
DATE ANALYZED: 09/27/89
DATE REPORTED: 09/29/89

Extractable Petroleum Hydrocarbons in Soils & Wastes
EPA 8015 (Modified)
Extraction Method: EPA 3550

LAB ID	CLIENT ID	GASOLINE (mg/Kg)	KEROSENE (mg/Kg)	DIESEL (mg/Kg)	OTHER (mg/Kg)
18267-1	C - 8	ND(10)	170*	ND(10)	ND(10)
18267-2	C - 9	ND(10)	110*	ND(10)	ND(10)
18267-3	C - 10	ND(10)	130*	ND(10)	ND(10)

ND = Not Detected; Limit of detection in parentheses.

* = Fingerprint pattern does not match Hydrocarbon Standards.
Quantitation based on area sum within C9 to C12 boiling range.

QA/QC SUMMARY

Duplicate: Relative % Difference	2
Spike: % Recovery	98

QA/QC OFFICER

LABORATORY DIRECTOR

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

DATE RECEIVED: 10/11/89
DATE REPORTED: 10/12/59

LAB NUMBER: 18481

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: 4 SOIL SAMPLES

JOB #: 430.006
LOCATION: JEFFERSON ST.

RESULTS: SEE ATTACHED

M.S. Privitera
QA/QC Officer

Laboratory Director

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 18481
CLIENT: SUBSURFACE CONSULTANTS
JOB #: 430.006
LOCATION: JEFFERSON ST. SUMP REMEDIATION

DATE RECEIVED: 10/11/89
DATE ANALYZED: 10/11/89
DATE REPORTED: 10/12/89

Extractable Petroleum Hydrocarbons in Soils & Wastes
EPA 8015 (Modified)
Extraction Method: EPA 3550

LAB ID	CLIENT ID	GASOLINE (mg/Kg)	KEROSENE (mg/Kg)	DIESEL (mg/Kg)	OTHER (mg/Kg)
18481-1	C - 11	ND(10)	ND(10)	TRACE(5.8)*	ND(10)
18481-2	C - 12	ND(10)	ND(10)	39*	ND(10)
18481-3	C - 13	ND(10)	ND(10)	54*	ND(10)
18481-4	C - 14	ND(10)	ND(10)	32*	ND(10)

* Fingerprint pattern does not match hydrocarbon standard. Quantitation based on area sum within C12-C22 boiling range.

ND = Not Detected; Limit of detection in parentheses.

QA/QC SUMMARY

Duplicate: Relative % Difference	16
Spike: % Recovery	97

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

DATE RECEIVED: 02/23/90
DATE REPORTED: 03/06/90

LAB NUMBER: 19676

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: 3 SOIL SAMPLES

PROJECT #: 430.006
LOCATION: SUMP REMEDIATION

RESULTS: SEE ATTACHED

A Lau for MEP
QA/QC Officer

for CBS
Laboratory Director

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 19676
CLIENT: SUBSURFACE CONSULTANTS
JOB #: 430.006
LOCATION: SUMP REMEDIATION

DATE RECEIVED: 02/23/90
DATE ANALYZED: 03/04/90
DATE REPORTED: 03/06/90

Extractable Petroleum Hydrocarbons in Soils & Wastes
California DOHS Method
LUFT Manual October 1989

LAB ID	CLIENT ID	KEROSENE (mg/Kg)	DIESEL (mg/Kg)	OTHER (mg/Kg)
19676-1	C-15	ND(10)	ND(10)	ND(10)
19676-2	C-16	ND(10)	ND(10)	ND(10)
19676-3	C-17	ND(10)	ND(10)	ND(10)

ND = Not Detected; Limit of detection in parentheses.

QA/QC SUMMARY

Duplicate: Relative % Difference	6
Spike: % Recovery	83

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (415) 486-0900

DATE RECEIVED: 07/19/90
DATE REPORTED: 07/23/90

LAB NUMBER: 101112

CLIENT: SUBSURFACE CONSULTANTS

REPORT ON: 1 WATER SAMPLE

PROJECT #: 430.006
LOCATION: 13TH & JEFFERSON SUMP

RESULTS: SEE ATTACHED

QA/QC Approval

Final Approval

Curtis & Tompkins, Ltd.

LAB NUMBER: 101112
CLIENT: SUBSURFACE CONSULTANTS
PROJECT # : 430.006
LOCATION: 13TH & JEFFERSON SUMP

DATE RECEIVED: 07/19/90
DATE ANALYZED: 07/23/90
DATE REPORTED: 07/23/90

ANALYSIS: HYDROCARBON OIL AND GREASE
METHOD: SMWW 17:5520F (503E)

LAB ID	SAMPLE ID	RESULT	UNITS	REPORTING LIMIT
101112-1	48	ND	mg/L	20

ND = Not detected at or above reporting limit

QA/QC SUMMARY

RPD, %	9
RECOVERY, %	85

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 101112
CLIENT: SUBSURFACE CONSULTANTS
JOB #: 430.006
LOCATION: 13TH & JEFFERSON SUMP

DATE RECEIVED: 07/19/90
DATE EXTRACTED: 07/19/90
DATE ANALYZED: 07/20/90
DATE REPORTED: 07/23/90

Extractable Petroleum Hydrocarbons in Water
California DOHS Method
LUFT Manual October 1989

LAB ID	CLIENT ID	KEROSENE RANGE (mg/L)	DIESEL RANGE (mg/L)	REPORTING LIMIT (mg/L)
101112-1	48	ND	ND	0.5

ND = Not Detected at or above reporting limit.

QA/QC SUMMARY

RPD, %	1
RECOVERY, %	108

Curtis & Tompkins, Ltd.

LABORATORY NUMBER: 101112
CLIENT: SUBSURFACE CONSULTANTS
JOB NUMBER: 430.006
JOB LOCATION: 13TH & JEFFERSON SUMP

DATE RECEIVED: 07/19/90
DATE ANALYZED: 07/19/90
DATE REPORTED: 07/23/90

Total Volatile Hydrocarbons with BTXE in Aqueous Solutions
TVH by California DOHS Method/LUFT Manual October 1989
BTXE by EPA 5030/8020

LAB ID	CLIENT ID	TVH AS GASOLINE (ug/L)	BENZENE (ug/L)	TOLUENE (ug/L)	ETHYL BENZENE (ug/L)	TOTAL XYLENES (ug/L)
101112-1	48	ND(50)	ND(0.5)	ND(0.5)	ND(0.5)	ND(0.5)

ND = Not detected at or above reporting limit; Reporting limit indicated in parentheses.

QA/QC SUMMARY

RPD, %	<1
RECOVERY, %	102

Subsurface Consultants

CHAIN OF CUSTODY RECORD & ANALYTICAL TEST REQUEST

Project Name: 13th + Jefferson

SCI Job Number: 430.005

Project Contact at SCI: Sean Carson

Sampled By: Sean Carson

Analytical Laboratory: Curtis + Tompkins

Analytical Turnaround: RAPID 24 HOUR

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
SUMP @ 14'8"	S	T	8/14/89		EPA 8240	
					EPA 8080	
					O&G	
					TPH	
					TITLE 22 METALS	

* * * * * *

Released by: J. Thomas Gibbs Date: 8-14-89

Released by Courier: Date:

Received by Laboratory: Date:

Relinquished by Laboratory: Date:

Received by: Michael May Date: 8-14-89

[1] Sample Type: W = water, S = soil, O = other (specify)
[2] Container Type: V = VOA, P = plastic, G = glass, T = brass tube, O = other (specify)

Notes to Laboratory:
-Notify SCI if there are any anomalous peaks on GC or other scans
-Questions/clarifications...contact SCI at (415) 268-0461

Subsurface Consultants

CHAIN OF CUSTODY RECORD
& ANALYTICAL TEST REQUEST

Project Name: 13th + Jefferson

SCI Job Number: 430.005

Project Contact at SCI: Sean Carson

Sampled By: Sean Carson

Analytical Laboratory: Curtis + Tompkins

Analytical Turnaround: 5 day

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
Sump @ 21	S	T	8/21/89		TEH-K	8015/3550
					O+G	503E
					BTXE	8020/5030

* * * * * *

Released by: Denis Aliprandi Date: 8-22-89

Released by Courier: _____ Date: _____

Received by Laboratory: Belinda Peters Date: 8/22/89

Relinquished by Laboratory: _____ Date: _____

Received by: _____ Date: _____

[1] Sample Type: W = water, S = soil, O = other (specify)
[2] Container Type: V = VOA, P = plastic, G = glass, T = brass tube, O = other (specify)

Notes to Laboratory:
-Notify SCI if there are any anomalous peaks on GC or other scans
-Questions/clarifications...contact SCI at (415) 268-0461

Subsurface Consultants

CHAIN OF CUSTODY RECORD & ANALYTICAL TEST REQUEST

Project Name: 13th & JEFFERSON

SCI Job Number: 430.0085

Project Contact at SCI: J. BOWERS

Sampled By: D. ALEXANDER

Analytical Laboratory: CURTIS & TOMPKINS

Analytical Turnaround: NORMAL

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
SUMP @ 26' (BOTTOM)	S	T	9/6/89		TEH & O+G	
SUMP @ 26' (NORTH)	S	T	9/6/89		TEH & O+G	
SUMP @ 26' (SOUTH)	S	T	9/6/89		TEH, O+G	
SUMP @ 26' (WEST)	S	T	9/6/89		TEH, O+G	
SUMP @ 26' (EAST	S	T	9/6/89		TEH, O+G	

* * * * * *

Released by: Dennis Alexander Date: 9-7-89

Released by Courier: _____ Date: _____

Received by Laboratory: Nancy Yamada Date: 9/7/89

Relinquished by Laboratory: _____ Date: _____

Received by: _____ Date: _____

[1] Sample Type: W = water, S = soil, O = other (specify)
[2] Container Type: V = VOA, P = plastic, G = glass, T = brass tube, O = other (specify)

Notes to Laboratory:
-Notify SCI if there are any anomalous peaks on GC or other scans
-Questions/clarifications...contact SCI at (415) 268-0461

Subsurface Consultants

CHAIN OF CUSTODY RECORD
& ANALYTICAL TEST REQUEST

Project Name: 13th + Jefferson [redacted] 8e

SCI Job Number: 430,005

Project Contact at SCI: Sean Carson

Sampled By: David Feinberg

Analytical Laboratory: Curtis + Tompkins

Analytical Turnaround: 1 day Rush!

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
sumpA-1	S	T	8/23/89			
sumpA-2	S	T			TEH-K	8015/3550
sumpA-3	S	T				
sumpA-4	S	T				
		1 composite sample				

* * * * * *

Released by: David L Feinberg Date: 8/23/89

Released by Courier: _____ Date: _____

Received by Laboratory: Steven Summers Date: 8/23/89

Relinquished by Laboratory: _____ Date: _____

Received by: _____ Date: _____

[1] Sample Type: W = water, S = soil, O = other (specify)
[2] Container Type: V = VOA, P = plastic, G = glass, T = brass tube, O = other (specify)

Notes to Laboratory:
-Notify SCI if there are any anomalous peaks on GC or other scans
-Questions/clarifications...contact SCI at (415) 268-0461

Subsurface Consultants

CHAIN OF CUSTODY RECORD & ANALYTICAL TEST REQUEST

Project Name: 13th + Jefferson Sump

SCI Job Number: 430.006

Project Contact at SCI: Sean Carson

Sampled By: Dennis Alexander

Analytical Laboratory: Curtis + Tompkins

Analytical Turnaround: Rapid

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
SUMP C-2	S	T	9/12/89		TEH-K	8015/3550
					O+G	SMWW 503
					BTXE	8020/5030
SUMP C-3	S	T	9/12/89		TEH-K	8015/3550
					O+G	SMWW 503
					BTXE	8020/5030
SUMP C-4	S	T	9/12/89		TEH-K	8015/3550
					O+G	SMWW 503
					BTXE	8020/5030

* * * * * *

Released by: David Lemieux Date:

Released by Courier: Date:

Received by Laboratory: Nancy Ridder Date: 9/13/89 920am

Relinquished by Laboratory: Date:

Received by: Date:

[1] Sample Type: W = water, S = soil, O = other (specify)
[2] Container Type: V = VOA, P = plastic, G = glass, T = brass tube, O = other (specify)

Notes to Laboratory:
-Notify SCI if there are any anomalous peaks on GC or other scans
-Questions/clarifications...contact SCI at (415) 268-0461

Subsurface Consultants

CHAIN OF CUSTODY RECORD & ANALYTICAL TEST REQUEST

Project Name: Jefferson St. Sump Remediation

SCI Job Number: 430.006

Project Contact at SCI: Sean Carson

Sampled By: Dennis Alexander

Analytical Laboratory: Curtis & Tompkins

Analytical Turnaround: 24 hr. RAPID!!!

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
C-8	S	T	9-26-89		TEH	
C-9	↓	↓	↓		↓	
C-10	↓	↓	↓		↓	

* * * * * *

Released by: Dennis Alexander Date: 9-27-89

Released by Courier: _____ Date: _____

Received by Laboratory: Belinda Peters Date: 9-27-89

Relinquished by Laboratory: _____ Date: _____

Received by: _____ Date: _____

[1] Sample Type: W = water, S = soil, O = other (specify)
[2] Container Type: V = VOA, P = plastic, G = glass, T = brass tube, O = other (specify)

Notes to Laboratory:
-Notify SCI if there are any anomalous peaks on GC or other scans
-Questions/clarifications...contact SCI at (415) 268-0461

Subsurface Consultants

CHAIN OF CUSTODY RECORD
& ANALYTICAL TEST REQUEST

Project Name: Samp Remediation

SCI Job Number: 430.006

Project Contact at SCI: Sean Carson

Sampled By: Dennis Alexander

Analytical Laboratory: Curtis and Tompkins

Analytical Turnaround: * 5 day

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
C-15	S	T	2-23-90		TEH	
C-16	S	T	"		TEH	
C-17	S	T	"		TEH	

* * Call Project Contact for turnaround * * *

Released by: Dennis Alexander Date: 2-23-90

Released by Courier: Date:

Received by Laboratory: [signature] Date: 2-23-90

Relinquished by Laboratory: Date:

Received by: Date:

[1] Sample Type: W = water, S = soil, O = other (specify)
[2] Container Type: V = VOA, P = plastic, G = glass, T = brass tube, O = other (specify)

Notes to Laboratory:
-Notify SCI if there are any anomalous peaks on GC or other scans
-Questions/clarifications...contact SCI at (415) 268-0461

Subsurface Consultants

& ANALYTICAL TEST REQUEST

Project Name: 13th + Jefferson

SCI Job Number: 430.006

Project Contact at SCI: Sean Carson

Sampled By: Jim Crowley

Analytical Laboratory: Curtis-Tompkins

Analytical Turnaround: Rapid

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
SUMPe28	S	T	2/8/90		TEH	EPA 8015/3550
Ne12						
Ne18						
Ne24						
Se6						
Se12						
Se18						
Se24						
Ee6						
Ee12	↓	↓	↓		↓	↓

* * 10 separate tests * * * *

Released by: L. Thomas Tibbs Date:

Released by Courier: Date:

Received by Laboratory: Date: 2/8/90 1700

Relinquished by Laboratory: Date:

Received by: Date:

[1] Sample Type: W = water, S = soil, O = other (specify)
[2] Container Type: V = VOA, P = plastic, G = glass, T = brass tube, O = other (specify)

Notes to Laboratory:
-Notify SCI if there are any anomalous peaks on GC or other scans
-Questions/clarifications...contact SCI at (415) 268-0461

Subsurface Consultants & ANALYTICAL TEST REQUEST

Project Name: 13th + Jefferson

SCI Job Number: 430.006

Project Contact at SCI: Sean Carson

Sampled By: Jim Crowley

Analytical Laboratory: Curtis + Tompkins

Analytical Turnaround: Rapid

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
E@18	S	T	2/8/90		TEH	EPA 8015/3550
E@24						
W@6						
W@12						
W@18						
W@24						

* 6 Separate Tests

Released by: [signature] Date:

Released by Courier: Date:

Received by Laboratory: Date: 2/8/90 1700

Relinquished by Laboratory: Date:

Received by: Date:

[1] Sample Type: W = water, S = soil, O = other (specify)
[2] Container Type: V = VOA, P = plastic, G = glass, T = brass tube, O = other (specify)

Notes to Laboratory:
-Notify SCI if there are any anomalous peaks on GC or other scans
-Questions/clarifications...contact SCI at (415) 268-0461

Subsurface Consultants

CHAIN OF CUSTODY RECORD & ANALYTICAL TEST REQUEST

Project Name: Sump Remediation

SCI Job Number: 430.006

Project Contact at SCI: Sean Carson

Sampled By: Dennis Alexander

Analytical Laboratory: Curtis and Tompkins

Analytical Turnaround: RAPID

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
S2 @ 24'	S	T	2-14-90		TEH	8015 mod/3550
*	*	*	*	*	*	

Released by: Dennis Alexander Date: 2-14-90

Released by Courier: _____ Date: _____

Received by Laboratory: Nancy Wen Date: 2/14/90

Relinquished by Laboratory: _____ Date: _____

Received by: _____ Date: _____

[1] Sample Type: W = water, S = soil, O = other (specify)
[2] Container Type: V = VOA, P = plastic, G = glass, T = brass tube, O = other (specify)

Notes to Laboratory:
-Notify SCI if there are any anomalous peaks on GC or other scans
-Questions/clarifications...contact SCI at (415) 268-0461

VERBAL ADDITIONS / CANCELLATIONS TO ANALYSIS REQUEST SHEET

CLIENT: Subsurface Consultants DATE: 3-12-90

REQUESTED BY: Sean Carson TIME: ____ am 4:40 pm

RECORDED BY: map

Current Lab ID (Previous Lab ID)	Client ID	Circle matrix	Specify (add) or cancel	Analysis	Due date
19868-1 (19538-1)	Sump at 28	(soil) water other	Add	503E	3.15.90
19868-2 (19538-12)	Eat 24	(soil) water other	Add	503E	3.15.90
19868-3 (19538-16)	wat 24	(soil) water other	Add	503E	3.15.90
		soil water other			
		soil water other			
		soil water other			
		soil water other			
		soil water other			

Original in job jacket. Copies to analytical departments.

ANALYTICAL TEST REQUEST

Project Name: 13th + Jefferson

SCI Job Number: 430.006

Project Contact at SCI: Sean Carson

Sampled By: Jim Crowley

Analytical Laboratory: Curtis-Tompkins

Analytical Turnaround: Rapid

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
SOUPE28	S	T	2/8/90		TEH	EPA 8015/3550
N e 12	"	"	"	"	"	"
N e 18	"	"	"	"	"	"
N e 24	"	"	"	"	"	"
S e 6	"	"	"	"	"	"
S e 12	"	"	"	"	"	"
S e 18	"	"	"	"	"	"
S e 24	"	"	"	"	"	"
E e 6	"	"	"	"	"	"
E e 12	"	"	"	"	"	"

* * 10 separate tests * * * *

Released by: [signature] Date:

Released by Courier: Date:

Received by Laboratory: Date: 2/8/90 1700

Relinquished by Laboratory: Date:

Received by: Date:

[1] Sample Type: W = water, S = soil, O = other (specify)
[2] Container Type: V = VOA, P = plastic, G = glass, T = brass tube, O = other (specify)

Notes to Laboratory:
-Notify SCI if there are any anomalous peaks on GC or other scans
-Questions/clarifications...contact SCI at (415) 268-0461

& ANALYTICAL TEST REQUEST

Project Name: 13th + Jefferson

SCI Job Number: 430.006

Project Contact at SCI: Sean Carson

Sampled By: Jim Crowley

Analytical Laboratory: Curtis + Tompkins

Analytical Turnaround: Rapid

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
E@18	S	T	2/8/90		TEH	EPA 8015/3550
E@24						
W@6						
W@12						
W@18						
W@24						

* 6 Separate Tests

Released by: L. Thomas Pelt Date:

Released by Courier: Date:

Received by Laboratory: Date: 2/8/90 1700

Relinquished by Laboratory: Date:

Received by: Date:

Sample Type: W = water, S = soil, O = other (specify)
Container Type: V = VOA, P = plastic, G = glass, T = brass tube, O = other (specify)

Notes to Laboratory:
-Notify SCI if there are any anomalous peaks on GC or other scans
-Questions/clarifications...contact SCI at (415) 268-0461

Subsurface Consultants & ANALYTICAL TEST REQUEST

Project Name: 13th + Jefferson Sump

SCI Job Number: 430,006

Project Contact at SCI: Sean Carson

Sampled By: Mark Kawakami

Analytical Laboratory: Curtis + Tompkins

Analytical Turnaround: Rapid

Sample ID	Sample Type[1]	Container Type[2]	Sampling Date	Hold	Analysis	Analytical Method
48	W	3 x V	7/18/90		TVH/BTXE	8015/~~5030~~/602
		2 x G	7/18/90		TEH, O+G	8015/3550, SMWW5520E

* * * * * *

Released by: Sean O Carson Date: 7/19/90

Released by Courier: Date:

Received by Laboratory: Date:

Relinquished by Laboratory: Date:

Received by: Date:

[1] Sample Type: W = water, S = soil, O = other (specify)
[2] Container Type: V = VOA, P = plastic, G = glass, T = brass tube, O = other (specify)

Notes to Laboratory:
-Notify SCI if there are any anomalous peaks on GC or other scans
-Questions/clarifications...contact SCI at (415) 268-0461

WASTE MANIFEST

Generators' Name and Address:

City of Oakland

Office of Economic Development and Employment

1417 Clay Street, Oakland, California 94612 Attention: Lois Parr

Phone No.: (415) 273-3692

Transporter Company Name: Stameo

Designated Disposal Facility Name and Address:

West Contra Costa Sanitary Landfill

P.O. Box 5006

Richmond, California 94805 (415) 236-8000

Description of Waste: Soil containing less than 100 parts per million of kerosene

Estimated Quantity of Waste: 22 cu. yds

Special Handling Instructions: wear gloves

Generator/Representative:

Dennis Alexander (for city of Oakland)	Dennis Alexander	11-8-89
(Name)	(Signature)	(Date)

Transporter's Acknowledged Receipt of Material:

Thom Fox	Thom Fox	11-8-89
(Name)	(Signature)	(Date)

Disposal Facility Acknowledged Receipt of Material:

L. Mode	Linda Mode	11/8/89
(Name)	(Signature)	(Date)

WASTE MANIFEST

Generators' Name and Address:

City of Oakland

Office of Economic Development and Employment

1417 Clay Street, Oakland, California 94612 Attention: Lois Parr

Phone No.: (415) 273-3692

Transporter Company Name: Stanco

Designated Disposal Facility Name and Address:

West Contra Costa Sanitary Landfill

P.O. Box 5006

Richmond, California 94805 (415) 236-8000

Description of Waste: Soil containing less than 100 parts per million of kerosene

Estimated Quantity of Waste: 30 cu. yds.

Special Handling Instructions: wear gloves

RECEIVED
DEC 15 1989
AM 7|8|9|10|11|12|1|2|3|4|5|6 PM

Generator/Representative:

Dennis Alexander (For City of Oakland)	Dennis Alexander	11-8-89
(Name)	**(Signature)**	**(Date)**

Transporter's Acknowledged Receipt of Material:

Thom Fox	Thom Fox	11-8-89
(Name)	**(Signature)**	**(Date)**

Disposal Facility Acknowledged Receipt of Material:

(Name)	**(Signature)**	**(Date)**

WASTE MANIFEST

Generators' Name and Address:

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Office of Economic Development and Employment

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Transporter Company Name: Stamco

Designated Disposal Facility Name and Address:

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P.O. Box 5006

Richmond, California 94805 (415) 236-8000

Description of Waste: Soil containing less than 100 parts per million of kerosene

Estimated Quantity of Waste: 22 cu yds

Special Handling Instructions: wear gloves

Generator/Representative:

Dennis Alexander (For city of Oakland)	Dennis Alexander	11-8-89
(Name)	**(Signature)**	**(Date)**

Transporter's Acknowledged Receipt of Material:

James Hutchison	James Hutchison	11-8-89
(Name)	**(Signature)**	**(Date)**

Disposal Facility Acknowledged Receipt of Material:

D. Modic	D. Modic	11/8/89
(Name)	**(Signature)**	**(Date)**