

May 13, 1993
SCI 727.001

5/13/93

Ms. Susan Hugo
Hazardous Materials Specialist
Alameda County Health Care Services Agency
80 Swan Way, Suite 200
Oakland, California

Project Update
Soil Remediation and
Groundwater Monitoring Event 3
Diesel Fuel Tank Area
722 Folger Avenue
Emeryville, California

Dear Ms. Hugo:

This letter summarizes site activities performed during the current phase of soil remediation and records the results of the third groundwater monitoring event for the referenced fuel leak site. The scope of these activities were presented in a work plan addendum dated November 24, 1992. A history of previous site activities is described in our report dated August 7, 1992 and briefly summarized below.

Background

In 1991, a 10,000 gallon underground diesel tank and approximately 350 cubic yards of diesel contaminated soils were removed from the site. Subsequent studies indicated that soils within a narrow band at the groundwater surface had been impacted by previous tank releases. Based on 1992 groundwater quality data, it appeared that groundwater in the tank vicinity had also been impacted by diesel releases. Further, it appeared that the plume may extend beneath Folger Avenue to the south, and the adjacent property to the east. Plume concentrations decreased to the north, indicating that it may not impact the Ashby Avenue right-of-way.

The 350 cubic yards of contaminated soils were successfully bioremediated on-site to an average concentration of less than 10 mg/kg of TEH as diesel. As such, the Alameda County Health Care Services Agency (ACHCSA) approved the reuse of the treated soil as on-site fill.

■ **Subsurface Consultants, Inc.**

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Soil Remediation

Beginning in February 1993 additional soil removal was conducted in an effort to remove the most highly contaminated soils adjacent to the initial tank pit excavation. An organic vapor meter (OVM) was used to segregate apparently "clean soils" from apparently contaminated soils. The excavation was extended to the practical limits. The excavation was widened on the average about 3 feet to the north, about 7 feet to the south, about 2 feet to the east and about 19 feet to the west. The excavation was extended to a depth of about 15 feet. Sidewall and bottom samples were obtained at the excavation limits and analyzed for Total Extractable Hydrocarbons (TEH) and BTEX. Test results are summarized in Table 1. Sample locations are presented on the Site Plan, Plate 1. Sampling and analytical testing protocol are described in Appendix A. Analytical test reports and Chain-of-Custody documents are presented in Appendix B.

Upon completion of overexcavation, the remediated soil from the initial tank removal operation was placed and compacted within the excavation limits. Prior to backfill placement, approximately 5,000 gallons of water were pumped out of the pit and placed into an above grade storage tank. The water placed into the tank and the water which recharged into the pit were sampled and analyzed for TEH and BTEX. Both water samples were found to contain elevated concentrations of diesel and toluene.

The current stockpiled contaminated soils have been mixed with a bacteria rich compost, stockpiled and covered with plastic. The apparently "clean soils" were analyzed and found to contain elevated levels of diesel, and as such have been added to the treatment pile. The stockpiles will be periodically checked to monitor the progress of bioremediation.

Quarterly Groundwater Monitoring

The third quarterly groundwater monitoring event was conducted on March 4, 1993. For this sampling event, all four on-site wells (MW-3, MW-4, MW-5 and MW-6) were sampled. Initially, the depth to groundwater and the presence of free product were checked with a steel tape, and water and petroleum product sensitive pastes. Groundwater level measurements are presented in Table 2. The wells were then purged of at least three well volumes of water. Water temperature, pH and conductivity were recorded at various intervals during the purge process. Well sampling forms are presented in Appendix C.

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The depth to water in each well was checked, following purging and before sampling, to assure that the wells had recharged to at least 80 percent of their initial volume. The wells were then sampled using new disposable bailers. The samples were retained in containers pre-cleaned by the supplier in accordance with EPA protocol. The samples were placed in an ice filled cooler and transmitted to Curtis & Tompkins, Ltd. The testing program for this event included the following analyses:

1. Total Extractable Hydrocarbons as diesel (TEH) (EPA 5030/8015), and
2. Benzene, toluene, ethylbenzene and xylene (BTEX) (EPA 5030/8020).

The results of all analytical testing events are presented in Table 3. Analytical test reports and Chain-of-Custody documents for the current event are presented in Appendix C.

Conclusions

A. Soil Contamination

Studies to date indicate that the contaminant of concern is a heavy petroleum hydrocarbon within the diesel range (C10 to C22). It appears that the contaminant exists within sandy and gravelly lenses and pockets situated below a depth of about 8 feet. Observations in the field indicate that the sandy and gravelly zones possess a strong hydrocarbon odor and characteristic hydrocarbon staining (greenish), where as the surrounding clayey soils possess mild to no hydrocarbon odors and were not stained. The permeable lenses and pockets did not appear as a continuous band. However, their presence near the groundwater surface is the likely source of groundwater contamination at the site.

B. Groundwater Contamination

Quarterly groundwater monitoring events continue to indicate that groundwater locally around the tank site has been impacted by previous diesel releases. The dissolved diesel plume may extend beneath Folger Avenue to the south and the adjacent property to the east. Free diesel product has not been observed in any of the wells to date. The groundwater direction has remained consistently toward the west-southwest.

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Alameda County Health Care Services Agency
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C. Recommendations

Excavation activities performed to date have removed contaminated soil up to the practical limits. Although contaminated soil still exists in permeable zones at the new extended limits, impacts to groundwater appear to be limited.

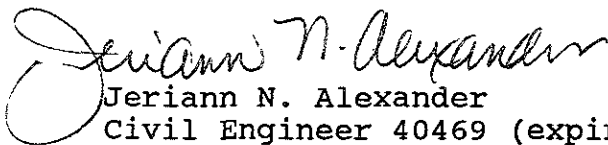
Originally, it was thought that the contaminated soil existed as a narrow band at the groundwater surface. However, observation of the excavation sidewalls indicates that the contamination exists in discontinuous units. As a result, the physical removal of contaminated materials would be very time consuming and costly. Since groundwater impacts appear to be minimal, we believe the most appropriate environmental response will be to leave the contaminated soil in-place and continue groundwater monitoring to assess future impacts.

The four on-site wells have been monitored three times since May 1992. The next monitoring event is scheduled for June 1993. This event will represent the completion of monitoring for one hydrogeologic cycle. We recommend that all the wells be monitored for the June 1993 event. Further, we recommend that future monitoring consist of semiannual sampling of MW-3, the side gradient well, and MW-6, the downgradient well.

If you have any questions regarding our services to date, please call.

Yours very truly,

Subsurface Consultants, Inc.


Jeriann N. Alexander

Civil Engineer 40469 (expires 3/31/95)

JNA:RWR:egh

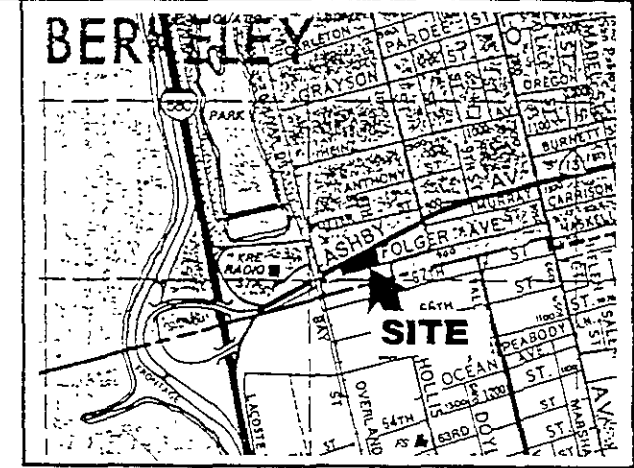
Ms. Susan Hugo
Alameda County Health Care Services Agency
SCI 727.001
May 13, 1993
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Attachments: Site Plan
Table 1 - TEH and BTEX Concentrations
in Excavation Soil Samples
Table 2 - Groundwater Elevation Data
Table 3 - TEH and BTEX Concentrations in Groundwater
Appendix A - Sampling and Analytical Testing Program
Appendix B - Soil and Excavation Pit Water Sampling
Analytical Test Reports and
Chain-of-Custody Documents
Appendix C - Quarterly Monitoring Event
Sampling Forms
Analytical Test Reports and
Chain-of-Custody Documents

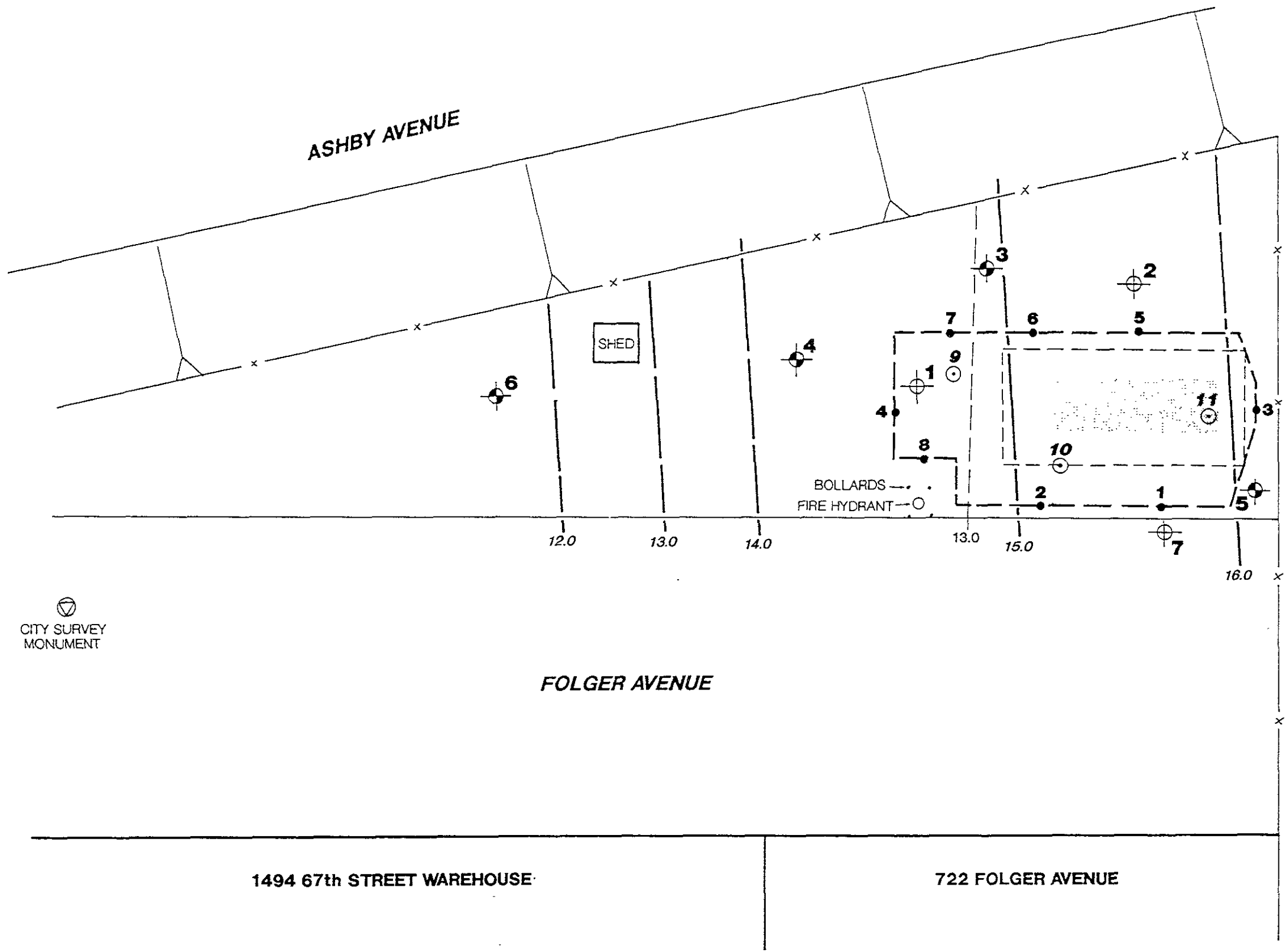
cc: Ms. Susan Hugo
Hazardous Materials Specialist
Alameda County Health Care Services Agency
80 Swan Way, Suite 200
Oakland, California

Mr. Dante A. Sambajon
Plant Engineer
Coulter Steel & Forge Company
1494 - 67th Street
Emeryville, California 94662-0901

Mr. Rich Heitt
Regional Water Quality Control Board
2101 Webster Street, Suite 500
Oakland, California 94612

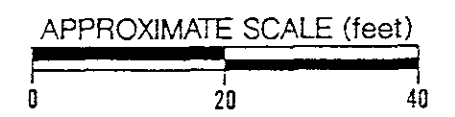


VICINITY MAP



CITY SURVEY MONUMENT

- TEST BORING
- MONITORING WELL
- '92 LIMIT OF EXCAVATION
- '93 LIMIT OF EXCAVATION
- FENCE
- PREVIOUS TANK LOCATION
- SCI SIDEWALL SAMPLE
- SCI BOTTOM SAMPLE
- GROUNDWATER FLOW CONTOURS (feet) 3/93



1494 67th STREET WAREHOUSE

722 FOLGER AVENUE

SITE PLAN

Subsurface Consultants

722 FOLGER AVENUE - BERKELEY, CA

JOB NUMBER
727.001

DATE
2/17/93

APPROVED

PLATE
1

TABLE 1.
TEH and BTEX Concentrations in
Excavation Soil Samples

<u>Sample Designation</u>	<u>TEH¹ mg/kg²</u>	<u>Benzene ug/kg³</u>	<u>Toluene ug/kg</u>	<u>Ethyl Benzene ug/kg</u>	<u>Total Xylenes ug/kg</u>
<u>Sidewall Samples</u>					
1 @ 8.5'	1,000	<5.0 ⁴	<5.0	18	<5.0
2 @ 9.5'	2,400	<10.0	<10.0	110	210
3 @ 12.0'	450	<5.0	<5.0	<5.0	<5.0
4 @ 8.5'	7,000	<40.0	<40.0	500	2,100
5 @ 10.0'	12,000	<10.0	<10.0	120	<10.0
6 @ 8.0'	8,100	<10.0	<10.0	490	<10.0
7 @ 9.0'	11,000	<10.0	<10.0	180	340
8 @ 10.0'	8,400	<10.0	<10.0	560	1300
<u>Bottom Samples</u>					
9 @ 14.5'	240	<5.0	<5.0	<5.0	<5.0
10 @ 14.5'	200	<5.0	<5.0	<5.0	<5.0
11 @ 15.5'	910	<5.0	<5.0	<5.0	<5.0

¹ TEH = Total Extractable Hydrocarbons
² mg/kg = milligrams per kilogram, parts per million
³ ug/kg = micrograms per kilogram, parts per billion
⁴ < = Chemical not present at a concentration greater than analytical reporting limit stated

Table 2.
Groundwater Elevation Data

<u>Well</u>	<u>TOC Elevation¹ (feet)</u>	<u>Date</u>	<u>Groundwater Depth² (feet)</u>	<u>Groundwater Elevation (feet)</u>
MW-3	24.70	5/15/92	11.15	13.55
		7/01/92	11.60	13.10
		8/18/92	12.00	12.70
		3/04/93	9.79	14.91
MW-4	23.92	5/15/92	10.00	13.92
		7/01/92	11.26	12.66
		8/18/92	11.58	12.34
		3/04/93	9.39	14.53
MW-5	23.85	5/15/92	10.52	13.33
		7/01/92	9.93	13.92
		8/18/92	9.24	14.61
		3/05/93	7.72	16.15
MW-6	22.98	5/15/92	12.46	10.52
		7/01/92	12.96	10.02
		8/18/92	13.42	9.56
		3/04/93	11.60	11.38

¹ Reference datum is City of Berkeley Survey Monument on Folger Avenue as shown on Site Plan

² Measured below top of casing

Table 3.
TEH and BTEX Concentrations in Groundwater

<u>Sample</u>	<u>Date</u>	<u>TEH</u> <u>ug/l¹</u>	<u>B</u> <u>ug/l</u>	<u>T</u> <u>ug/l</u>	<u>E</u> <u>ug/l</u>	<u>X</u> <u>ug/l</u>
MW-3	5/18/92	100	<0.5	<0.5	<0.5	2.5
	8/18/92	<50	<0.5	<1.0	<0.5	<0.5
	3/04/93	<50	<0.5	<0.5	<0.5	<0.5
MW-4	5/18/92	10,000	<0.5	<0.5	<0.5	4.0
	8/18/92	300	<0.5	<1.0	<0.5	<0.5
	3/04/93	<50	<0.5	<0.5	<0.5	<0.5
MW-5	5/18/92	510	<0.5	<1.0	<0.5	<0.5
	8/18/92	<50	<0.5	<1.0	<0.5	<0.5
	3/05/93	1,400	<0.5	<0.5	<0.5	<0.5
MW-6	5/18/92	<50	<0.5	<0.5	<0.5	2.0
	8/18/92	<50	<0.5	<1.0	<0.5	<0.5
	3/04/93	<50	<0.5	<0.5	<0.5	<0.5
Water Removed from Pit	2/05/93	8000	<0.5	<0.5	<0.5	<0.5
Excavation Pit Water (Recharged)	2/05/93	13000	<0.5	<0.5	<0.5	0.7

¹ ug/l= micrograms per liter, parts per billion

APPENDIX A
SAMPLING AND ANALYTICAL TESTING PROTOCOL

APPENDIX A

SAMPLING AND ANALYTICAL TESTING PROTOCOL

A. Excavation Sampling

Soil samples from the sidewalls and bottom of the excavation were obtained using a backhoe bucket. Once the bucket was brought to rest at the ground surface, approximately 3 inches of soil was scraped away and a clean 2-inch-diameter brass liner was driven into the material with a mallet. The liner was withdrawn and Teflon sheeting was placed over the liner ends. The ends were then capped and sealed with duct tape. The samples were refrigerated on-site and remained refrigerated until delivery to the analytical laboratory.

Water pumped from the excavation pit into the above grade storage tank and the water which recharged into the pit were also sampled. The water samples were obtained by lowering a new disposable bailer into the storage tank and pit to retrieve the samples. The samples were placed into precleaned containers and refrigerated on-site.

B. Analytical Testing

Analytical testing was provided by Curtis & Tompkins, Ltd. Excavation sidewall and bottom soil samples, excavation pit water

samples, well samples and "clean" stockpile samples were individually analyzed for the following:

1. Total extractable hydrocarbons, (TEH California DOHS method), and
2. Benzene, toluene, ethylbenzene and xylenes (BTEX, EPA 8020).

Analytical test reports and Chain-of-Custody Documents for soil and excavation pit water samples are presented in Appendix B. Test reports and Chain-of-Custody documents for the quarterly monitoring event are presented in Appendix C.

APPENDIX B
SOIL AND EXCAVATION PIT WATER SAMPLES
ANALYTICAL TEST REPORTS
AND CHAIN-OF-CUSTODY DOCUMENTS



Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

DATE RECEIVED: 02/05/93

DATE REPORTED: 02/18/93


LABORATORY NUMBER: 110008

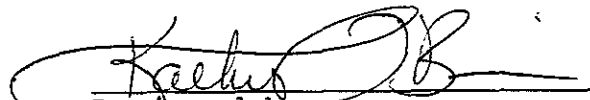
CLIENT: SUBSURFACE CONSULTANTS

PROJECT ID: 727.001

LOCATION: COULTER STEEL

RESULTS: SEE ATTACHED


Reviewed by


Reviewed by

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LABORATORY NUMBER: 110008
 CLIENT: SUBSURFACE CONSULTANTS
 PROJECT ID: 727.001
 LOCATION: COULTER STEEL

DATE SAMPLED: 02/05/93
 DATE RECEIVED: 02/05/93
 DATE EXTRACTED: 02/08/93
 DATE ANALYZED: 02/10-11/93
 DATE REPORTED: 02/18/93

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

LAB ID	SAMPLE ID	KEROSENE RANGE (mg/Kg)	DIESEL RANGE (mg/Kg)	REPORTING LIMIT* (mg/Kg)
110008-1	1-SW @ 8.5'	**	1,000	10
110008-2	2-SW @ 9.5'	**	2,400	10
110008-3	3-EW @ 12'	**	450	10
110008-4	4-WW @ 8.5'	**	7,000	100
110008-5	5-NW @ 10'	**	12,000	100
110008-6	6-NW @ 8'	**	8,100	100

** Quantitated as diesel range.

ND = Not Detected at or above reporting limit.

* Reporting limit applies to all analytes.

QA/QC SUMMARY: Laboratory Control Sample

RECOVERY, %

94



LABORATORY NUMBER: 110008
 CLIENT: SUBSURFACE CONSULTANTS
 PROJECT ID: 727.001
 LOCATION: COULTER STEEL

DATE SAMPLED: 02/05/93
 DATE RECEIVED: 02/05/93
 DATE ANALYZED: 02/11/93
 DATE REPORTED: 02/18/93

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

LAB ID	SAMPLE ID	BENZENE (ug/Kg)	TOLUENE (ug/Kg)	ETHYL BENZENE (ug/Kg)	TOTAL XYLENES (ug/Kg)	REPORTING LIMIT * (ug/Kg)
110008-1	1-SW @ 8.5'	ND	ND	18	ND	5
110008-2	2-SW @ 9.5'	ND	ND	110	210	10
110008-3	3-EW @ 12'	ND	ND	ND	ND	5
110008-4	4-WW @ 8.5'	ND	ND	500	2,100	40
110008-5	5-NW @ 10'	ND	ND	120	ND	10
110008-6	6-NW @ 8'	ND	ND	490	ND	10

ND = Not detected at or above reporting limit.

* Reporting Limit applies to all analytes.

QA/QC SUMMARY

RPD, %	4
RECOVERY, %	102



LABORATORY NUMBER: 110008
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 727.001
LOCATION: COULTER STEEL

DATE SAMPLED: 02/05/93
DATE RECEIVED: 02/05/93
DATE EXTRACTED: 02/10/93
DATE ANALYZED: 02/11/93
DATE REPORTED: 02/18/93

Extractable Petroleum Hydrocarbons in Aqueous Solutions
California DOHS Method
LUFT Manual October 1989

LAB ID	CLIENT ID	KEROSENE RANGE (ug/L)	DIESEL RANGE (ug/L)	REPORTING LIMIT* (ug/L)
110008-7	EXCAVATION WATER #2	**	13,000	50

** Quantitated as diesel range.

ND = Not detected at or above reporting limit.

* Reporting limit applies to all analytes.

QA/QC SUMMARY

RPD, %	8
RECOVERY, %	120



LABORATORY NUMBER: 110008
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 727.001
LOCATION: COULTER STEEL

DATE SAMPLED: 02/05/93
DATE RECEIVED: 02/05/93
DATE ANALYZED: 02/12/93
DATE REPORTED: 02/18/93

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

LAB ID	CLIENT ID	BENZENE (ug/L)	TOLUENE (ug/L)	ETHYL BENZENE (ug/L)	TOTAL XYLENES (ug/L)	REPORTING LIMIT * (ug/L)
110008-7	EXCAVATION WATER #2	ND	ND	ND	0.7	0.5

ND = Not detected at or above reporting limit.

* Reporting Limit applies to all analytes.

QA/QC SUMMARY

RPD, %	9
RECOVERY, %	97

CHAIN OF CUSTODY FORM

PROJECT NAME: Coultter steel
 OB NUMBER: 727-001 LAB: Curtis & Tompkins
 PROJECT CONTACT: Jeri Alexander TURNAROUND: Normal
 SAMPLED BY: Dennis Alexander REQUESTED BY: Jeri Alexander

ANALYSIS REQUESTED											

LABORATORY I.D. NUMBER	SCI SAMPLE NUMBER	MATRIX						CONTAINERS				METHOD PRESERVED					SAMPLING DATE				NOTES				
		WATER	SOIL	WASTE	AIR			VOA	LITER	PINT	TUBE					HCL	H2SO4	HNO3	ICE	NONE		MONTH	DAY	YEAR	TIME
W0008-1	1-SW@ 8.5'		X															X			02	05	93	1400	TEH TVH/DIXE
	2-SW@ 9.5'		X														X							1415	
	3-EW@ 12'		X														X							1420	
	4-WW@ 8.5'		X														X							1445	
	5-NW@ 10'		X														X							1515	
	6-NW@ 8'		X														X							1545	
	(Excavation Water #2 (Recharged))		X													X		X			02	05	93	1130	

COMMENTS & NOTES:
 No: Tail ASP in Jew.

CHAIN OF CUSTODY RECORD			
RELEASED BY: (Signature) <i>Dennis Alexander</i>	DATE/TIME 7/5/93 3:50 p.m.	RECEIVED BY: (Signature) <i>Norman</i>	DATE/TIME 2/5/93 3:50
RELEASED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
RELEASED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME

Subsurface Consultants, Inc.
 171 12TH STREET, SUITE 201, OAKLAND, CALIFORNIA 94607
 (510) 268-0461 • FAX: 510-268-0137



Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

2323 Fifth Street, Berkeley, CA 94710. Phone (510) 486-0900

DATE RECEIVED: 02/05/93
DATE REPORTED: 02/08/93
DATE REISSUED: 03/04/93

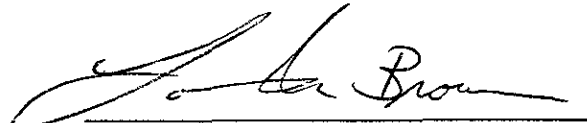
LABORATORY NUMBER: 109983

CLIENT: SUBSURFACE CONSULTANTS, INC.

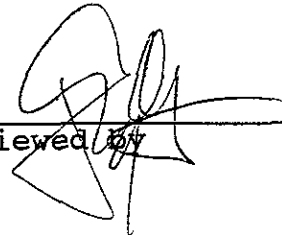
PROJECT ID: 727.001

LOCATION: COULTER STEEL

RESULTS: SEE ATTACHED



Reviewed by



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LABORATORY NUMBER: 109983
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 727.001
LOCATION: COULTER STEEL

DATE SAMPLED: 02/05/93
DATE RECEIVED: 02/05/93
DATE ANALYZED: 02/06/93
DATE REPORTED: 02/08/93
DATE REISSUED: 03/04/93

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

LAB ID	CLIENT ID	BENZENE (ug/L)	TOLUENE (ug/L)	ETHYL BENZENE (ug/L)	TOTAL XYLENES (ug/L)	REPORTING LIMIT * (ug/L)
109983-1	EXCAVATION WATER	ND	ND	ND	ND	0.5

ND = Not detected at or above reporting limit.

* Reporting Limit applies to all analytes.

QA/QC SUMMARY

RPD, %	<1
RECOVERY, %	116



LABORATORY NUMBER: 109983
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 727.001
LOCATION: COULTER STEEL

DATE SAMPLED: 02/05/93
DATE RECEIVED: 02/05/93
DATE EXTRACTED: 02/05/93
DATE ANALYZED: 02/05/93
DATE REPORTED: 02/08/93
DATE REISSUED: 03/04/93

Extractable Petroleum Hydrocarbons in Aqueous Solutions
California DOHS Method
LUFT Manual October 1989

LAB ID	CLIENT ID	KEROSENE RANGE (ug/L)	DIESEL RANGE (ug/L)	REPORTING LIMIT* (ug/L)
109983-1	EXCAVATION WATER	**	8,000	50

* Reporting limit applies to all analytes.

QA/QC SUMMARY

RPD, %	4
RECOVERY, %	95

CHAIN OF CUSTODY FORM

PROJECT NAME: Coulter Steel
 JOB NUMBER: 727.001 LAB: Curtis & Tompkins
 PROJECT CONTACT: Jeri Alexander TURNAROUND: Rapid 24 hr.
 SAMPLED BY: Dennis Alexander REQUESTED BY: Jeri Alexander

ANALYSIS REQUESTED											
TEH	TVH/BTK										
X	X										

LABORATORY I.D. NUMBER	SCI SAMPLE NUMBER	MATRIX				CONTAINERS			METHOD PRESERVED					SAMPLING DATE				NOTES		
		WATER	SOIL	WASTE	AIR	VOA	LITER	PINT	TUBE	HCL	H2SO4	HNO3	ICE	NONE	MONTH	DAY	YEAR		TIME	
109983-1	Excavation water	X				2	1			X			X		0	2	05	9:30	7:30	

COMMENTS & NOTES:
 2/1/13 per Jeri Alexander - Does not need TVH.

CHAIN OF CUSTODY RECORD			
RELEASED BY: (Signature) <u>Dennis Alexander</u>	DATE/TIME <u>2/5/13 9:25am</u>	RECEIVED BY: (Signature) <u>Dennis Alexander</u>	DATE/TIME <u>2/5/13 9:25</u>
RELEASED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
RELEASED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME



Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

DATE RECEIVED: 02/11/93

DATE REPORTED: 02/23/93


LABORATORY NUMBER: 110055

CLIENT: SUBSURFACE CONSULTANTS

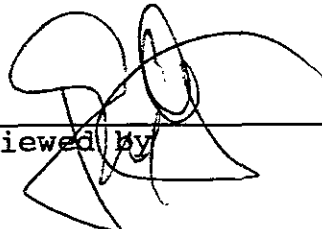
PROJECT ID: 727.001

LOCATION: COULTER STEEL

RESULTS: SEE ATTACHED



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LABORATORY NUMBER: 110055
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 727.001
LOCATION: COULTER STEEL

DATE SAMPLED: 02/10/93
DATE RECEIVED: 02/11/93
DATE EXTRACTED: 02/12/93
DATE ANALYZED: 02/17-18/93
DATE REPORTED: 02/23/93

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

LAB ID	SAMPLE ID	KEROSENE RANGE (mg/Kg)	DIESEL RANGE (mg/Kg)	REPORTING LIMIT* (mg/Kg)
110055-1	7-NW @ 9'	**	11,000	100
110055-2	8-SW @ 10'	**	8,400	100
110055-3	9-B @ 14.5'	**	240	1
110055-4	10-B @ 14.5'	**	200	1
110055-5	11-B @ 15.5'	**	910	10
110055-6	SP-11	**	140	1
110055-7	SP-12	**	120	1

* Reporting limit applies to all analytes.

** Quantitated as diesel range.

QA/QC SUMMARY

RPD, %	9
RECOVERY, %	85

LABORATORY NUMBER: 110055
 CLIENT: SUBSURFACE CONSULTANTS
 PROJECT ID: 727.001
 LOCATION: COULTER STEEL

DATE SAMPLED: 02/10/93
 DATE RECEIVED: 02/11/93
 DATE ANALYZED: 02/17-18/93
 DATE REPORTED: 02/23/93

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

LAB ID	SAMPLE ID	BENZENE (ug/Kg)	TOLUENE (ug/Kg)	ETHYL BENZENE (ug/Kg)	TOTAL XYLENES (ug/Kg)	REPORTING LIMIT (ug/Kg)
110055-1	7-NW @ 9'	ND	ND	180	340*	10
110055-2	8-SW @ 10'	ND	ND	560	1300*	10
110055-3	9-B @ 14.5'	ND	ND	ND	ND	5
110055-4	10-B @ 14.5'	ND	ND	ND	ND	5
110055-5	11-B @ 15.5'	ND	ND	ND	ND	5
110055-6	SP-11	ND	ND	ND	ND	5
110055-7	SP-12	ND	ND	ND	ND	5

* Presence of this compound confirmed by second column; however, the confirmation concentration differed from the reported result by more than a factor of two.

ND = Not detected at or above reporting limit.

Reporting Limit applies to all analytes.

QA/QC SUMMARY

RPD, %	2
RECOVERY, %	96

CHAIN OF CUSTODY FORM

PROJECT NAME: Coulter Steel
 JOB NUMBER: 727.001 LAB: Curtis & Tompkins
 PROJECT CONTACT: Jeri Alexander TURNAROUND: Normal (5 day)
 SAMPLED BY: Dennis Alexander REQUESTED BY: Jeri Alexander

ANALYSIS REQUESTED											

LABORATORY I.D. NUMBER	SCI SAMPLE NUMBER	MATRIX				CONTAINERS				METHOD PRESERVED					SAMPLING DATE				NOTES		
		WATER	SOIL	WASTE	AIR	VOA	LITER	PINT	TUBE	HCL	H ₂ SO ₄	HNO ₃	ICE	NONE	MONTH	DAY	YEAR	TIME			
110055-	7-NW@9'		X						X						0	2	1	093		TEH BTXE	
-2	8-SW@10'		X						X												X
-3	9-B@14.5'		X						X												X
-4	10-B@14.5'		X						X												X
-5	11-B@15.5'		X						X												X
-6	SP-10		X						X												X
-7	SP-12		X						X												X

CHAIN OF CUSTODY RECORD			
RELEASED BY: (Signature) <u>Dennis Alexander</u>	DATE / TIME <u>2/11/93 10:20 a.m.</u>	RELEASED BY: (Signature) <u>Received By: [Signature]</u>	DATE / TIME <u>2/11/93 10:20</u>
RELEASED BY: (Signature)	DATE / TIME	RELEASED BY: (Signature)	DATE / TIME
RELEASED BY: (Signature)	DATE / TIME	RELEASED BY: (Signature)	DATE / TIME
RELEASED BY: (Signature)	DATE / TIME	RELEASED BY: (Signature)	DATE / TIME

COMMENTS & NOTES:

Subsurface Consultants, Inc.

171 12TH STREET, SUITE 201, OAKLAND, CALIFORNIA 94607
 (510) 268-0461 • FAX: 510-268-0137



Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

DATE RECEIVED: 02/08/93

DATE REPORTED: 02/12/93

LABORATORY NUMBER: 110011

CLIENT: SUBSURFACE CONSULTANTS

PROJECT ID: 727.001

LOCATION: COULTER STEEL

RESULTS: SEE ATTACHED

Reviewed by

Reviewed by

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LABORATORY NUMBER: 110011
 CLIENT: SUBSURFACE CONSULTANTS
 PROJECT ID: 727.001
 LOCATION: COULTER STEEL

DATE SAMPLED: 02/08/93
 DATE RECEIVED: 02/08/93
 DATE EXTRACTED: 02/08/93
 DATE ANALYZED: 02/09-10/93
 DATE REPORTED: 02/12/93

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

LAB ID	SAMPLE ID	KEROSENE RANGE (mg/Kg)	DIESEL RANGE (mg/Kg)	REPORTING LIMIT* (mg/Kg)
110011-1	SP-1	**	47	1
110011-2	SP-2	**	85	1
110011-3	SP-3	**	67	1
110011-4	SP-4	**	170	1
110011-5	SP-5	**	63	1
110011-6	SP-6	**	19	1
110011-7	SP-7	**	220	1
110011-8	SP-8	**	73	1
110011-9	SP-9	**	51	1
110011-10	SP-10	**	56	1

* Reporting limit applies to all analytes.

QA/QC SUMMARY

LCS RECOVERY, %

94

LABORATORY NUMBER: 110011
 CLIENT: SUBSURFACE CONSULTANTS
 PROJECT ID: 727.001
 LOCATION: COULTER STEEL

DATE SAMPLED: 02/08/93
 DATE RECEIVED: 02/08/93
 DATE ANALYZED: 02/10/93
 DATE REPORTED: 02/12/93

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

LAB ID	SAMPLE ID	BENZENE (ug/Kg)	TOLUENE (ug/Kg)	ETHYL BENZENE (ug/Kg)	TOTAL XYLENES (ug/Kg)	REPORTING LIMIT * (ug/Kg)
110011-1	SP-1	ND	ND	ND	ND	5
110011-2	SP-2	ND	ND	ND	ND	5
110011-3	SP-3	ND	ND	ND	ND	5
110011-4	SP-4	ND	ND	ND	ND	5
110011-5	SP-5	ND	ND	ND	ND	5
110011-6	SP-6	ND	ND	ND	ND	5
110011-7	SP-7	ND	ND	ND	ND	5
110011-8	SP-8	ND	ND	ND	ND	5
110011-9	SP-9	ND	ND	ND	ND	5
110011-10	SP-10	ND	ND	ND	ND	5

ND = Not detected at or above reporting limit.

* Reporting Limit applies to all analytes.

QA/QC SUMMARY

RPD, %	5
RECOVERY, %	97

CHAIN OF CUSTODY FORM

PAGE _____ OF _____

PROJECT NAME: Coulter Steel

JOB NUMBER: 727.001 LAB: Curtis & Tompkins

PROJECT CONTACT: Jeri Alexander TURNAROUND: Normal (5 day)

SAMPLED BY: Dennis Alexander REQUESTED BY: Jeri Alexander

ANALYSIS REQUESTED									

LABORATORY I.D. NUMBER	SCI SAMPLE NUMBER	MATRIX				CONTAINERS				METHOD PRESERVED					SAMPLING DATE				NOTES		
		WATER	SOIL	WASTE	AIR	VOA	LITER	PINT	TUBE	HCL	H2SO4	HNO3	ICE	NONE	MONTH	DAY	YEAR	TIME			
110011	-1		X					X				X		02	08	93	10	00	00	TEH BTXE	
	-2		X				X				X										X
	-3		X				X				X										X
	-4		X				X				X										X
	-5		X				X				X										X
	-6		X				X				X										X
	-7		X				X				X										X
	-8		X				X				X										X
	-9		X				X				X										X
	-10		X				X				X			02	08	93	10	00	00		X

COMMENTS & NOTES:
need results by Fri if possible

CHAIN OF CUSTODY RECORD			
RELEASED BY: (Signature) <i>Dennis Alexander</i>	DATE/TIME <i>2/8/93 10:55 a.m.</i>	RECEIVED BY: (Signature)	DATE/TIME
RELEASED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
RELEASED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature) <i>Teresa K. Morrison</i>	DATE/TIME <i>10:55</i>

2/8/93

Subsurface Consultants, Inc.
 171 12TH STREET, SUITE 201, OAKLAND, CALIFORNIA 94607
 (510) 268-0461 • FAX: 510-268-0137



Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

2323 Fifth Street, Berkeley, CA 94710. Phone (510) 486-0900

DATE RECEIVED: 02/05/93
DATE REPORTED: 02/08/93

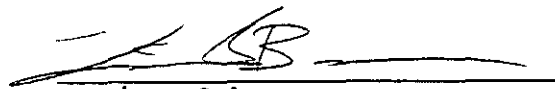
LABORATORY NUMBER: 109983

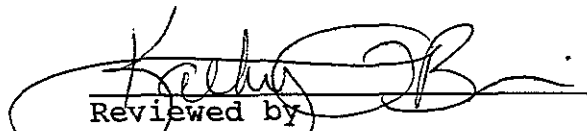
CLIENT: SUBSURFACE CONSULTANTS, INC.

PROJECT ID: 727.001

LOCATION: COULTER STEEL

RESULTS: SEE ATTACHED


Reviewed by


Reviewed by

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LABORATORY NUMBER: 109983
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 727.001
LOCATION: COULTER STEEL

DATE SAMPLED: 02/05/93
DATE RECEIVED: 02/05/93
DATE ANALYZED: 02/06/93
DATE REPORTED: 02/08/93

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

LAB ID	CLIENT ID	BENZENE (ug/L)	TOLUENE (ug/L)	ETHYL BENZENE (ug/L)	TOTAL XYLENES (ug/L)	REPORTING LIMIT * (ug/L)
109983-1	EXCAVATION WATER	ND	ND	ND	ND	0.5

ND = Not detected at or above reporting limit.

* Reporting Limit applies to all analytes.

QA/QC SUMMARY

RPD, %	<1
RECOVERY, %	116



LABORATORY NUMBER: 109983
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 727.001
LOCATION: COULTER STEEL

DATE SAMPLED: 02/05/93
DATE RECEIVED: 02/05/93
DATE EXTRACTED: 02/05/93
DATE ANALYZED: 02/05/93
DATE REPORTED: 02/08/93

Extractable Petroleum Hydrocarbons in Aqueous Solutions
California DOHS Method
LUFT Manual October 1989

LAB ID	CLIENT ID	KEROSENE RANGE (ug/L)	DIESEL RANGE (ug/L)	REPORTING LIMIT* (ug/L)
109983-1	EXCAVATION WATER	**	8,000	50

* Reporting limit applies to all analytes.

QA/QC SUMMARY

RPD, %	4
RECOVERY, %	95

APPENDIX C

QUARTERLY MONITORING EVENT

SAMPLING FORMS, ANALYTICAL TEST REPORTS,

AND CHAIN-OF-CUSTODY DOCUMENTS

WELL SAMPLING FORM

Project Name: Coulter Street Well Number: MW-3
 Job No.: 727.001 Well Casing Diameter: 2 inch
 Sampled By: DWA Date: 3/4/93
 TOC Elevation: _____ Weather: Sunny

Depth to Casing Bottom (below TOC) 29.90 feet
 Depth to Groundwater (below TOC) 9.79 feet
 Feet of Water in Well 20.11 feet
 Depth to Groundwater When 80% Recovered 13.80 feet
 Casing Volume (feet of water x Casing DIA² x 0.0408) 3.28 gallons
 Depth Measurement Method Tape & Paste / **Electronic Sounder** / Other
 Free Product N/A.
 Purge Method BAILER (disposable)

FIELD MEASUREMENTS

Gallons Removed	pH	Temp (°F)	Conductivity (micromhos/cm)	Salinity S%	Comments
<u>0</u>	<u>7.81</u>	<u>69.7</u>	<u>1025</u>	<u>N/A</u>	<u>clear / no odor</u>
<u>2</u>	<u>7.73</u>	<u>65.0</u>	<u>999</u>		<u>semi-clean</u>
<u>5</u>	<u>7.47</u>	<u>63.8</u>	<u>995</u>		<u>mucky / slight odor</u>
<u>8</u>	<u>7.57</u>	<u>66.0</u>	<u>1034</u>		
<u>10</u>	<u>7.51</u>	<u>65.0</u>	<u>1016</u>	↓	↓

Total Gallons Purged 10 gallons
 Depth to Groundwater Before Sampling (below TOC) 13.67 feet
 Sampling Method BAILER
 Containers Used 2 40 ml 1 liter _____ pint

Subsurface Consultants

JOB NUMBER

DATE

APPROVED

PLATE

WELL SAMPLING FORM

Project Name: Coulter Street Well Number: MW-4
 Job No.: 727.001 Well Casing Diameter: 2 inch
 Sampled By: DWA Date: 3/4/93
 TOC Elevation: _____ Weather: Sunny

Depth to Casing Bottom (below TOC) 21.20 feet
 Depth to Groundwater (below TOC) 9.39 feet
 Feet of Water in Well 11.81 feet
 Depth to Groundwater When 80% Recovered 11.70 feet
 Casing Volume (feet of water x Casing DIA² x 0.0408) 2 gallons
 Depth Measurement Method Tape & Paste / Electronic Sounder / Other
 Free Product N/A
 Purge Method BAILER (1000 gal)

FIELD MEASUREMENTS

Gallons Removed	pH	Temp (°F)	Conductivity (micromhos/cm)	Salinity S%	Comments
<u>0</u>	<u>8.22</u>	<u>67.0</u>	<u>500</u>	<u>N/A</u>	<u>clear</u>
<u>4</u>	<u>8.36</u>	<u>67.5</u>	<u>515</u>		<u>murky/moderate color</u>
<u>8</u>	<u>7.92</u>	<u>69.1</u>	<u>613</u>		
<u>12</u>	<u>7.95</u>	<u>70.9</u>	<u>699</u>		
<u>16</u>	<u>8.00</u>	<u>68.5</u>	<u>815</u>	<u>↓</u>	<u>↓</u>

Total Gallons Purged 16 gallons
 Depth to Groundwater Before Sampling (below TOC) 9.25 (3/8/93 @ 10:30 a.m.) feet
 Sampling Method BAILER
 Containers Used 2 40 ml 1 liter _____ pint

Subsurface Consultants

JOB NUMBER

DATE

APPROVED

PLATE

WELL SAMPLING FORM

Project Name: Coulter Steel Well Number: MW-5
 Job No.: 727.001 Well Casing Diameter: 2 inch
 Sampled By: DWA Date: 3/5/93
 TOC Elevation: _____ Weather: SUNNY

Depth to Casing Bottom (below TOC) 19.29 feet
 Depth to Groundwater (below TOC) 7.72 feet
 Feet of Water in Well 11.57 feet
 Depth to Groundwater When 80% Recovered 9.99 feet
 Casing Volume (feet of water x Casing DIA² x 0.0408) 1.87 gallons
 Depth Measurement Method Tape & Paste / Electronic Sounder / Other
 Free Product N/A
 Purge Method BAILER (dispositional)

FIELD MEASUREMENTS

Gallons Removed	pH	Temp (°F)	Conductivity (micromhos/cm)	Salinity S%	Comments
<u>0</u>	<u>7.42</u>	<u>59.4</u>	<u>1206</u>	<u>N/A</u>	<u>clean / no odor</u>
<u>1</u>	<u>7.37</u>	<u>59.4</u>	<u>1219</u>	<u> </u>	<u>1 slight/moderate</u>
<u>3</u>	<u>7.40</u>	<u>60.8</u>	<u>1228</u>	<u> </u>	<u>odor</u>
<u>5</u>	<u>7.15</u>	<u>62.0</u>	<u>1242</u>	<u> </u>	<u> </u>
<u>6</u>	<u>7.05</u>	<u>62.6</u>	<u>1266</u>	<u>↓</u>	<u>↓ ↓</u>

Total Gallons Purged 6 gallons
 Depth to Groundwater Before Sampling (below TOC) 7.99' (3/8/93 @ 10:00 a.m.) feet
 Sampling Method BAILER
 Containers Used 2 40 ml 1 liter _____ pint

Subsurface Consultants

JOB NUMBER

DATE

APPROVED

PLATE

WELL SAMPLING FORM

Project Name: Coulter Steel Well Number: MW-6
 Job No.: 727.001 Well Casing Diameter: 2 inch
 Sampled By: DWA Date: 3/4/93
 TOC Elevation: _____ Weather: SUNNY

Depth to Casing Bottom (below TOC) 28.30' feet
 Depth to Groundwater (below TOC) 11.60 feet
 Feet of Water in Well 16.70 feet
 Depth to Groundwater When 80% Recovered 14.94 feet
 Casing Volume (feet of water x Casing DIA² x 0.0408) 2.73 gallons
 Depth Measurement Method Tape & Paste / Electronic Sounder / Other
 Free Product N/A
 Purge Method BAILER

FIELD MEASUREMENTS

Gallons Removed	pH	Temp (°F)	Conductivity (micromhos/cm)	Salinity S%	Comments
<u>0</u>	<u>8.12</u>	<u>64.9^F</u>	<u>1100</u>	<u>N/A</u>	<u>clear/no odor</u>
<u>2</u>	<u>7.86</u>	<u>67.5</u>	<u>1130</u>	<u> </u>	<u>murky</u>
<u>4</u>	<u>7.78</u>	<u>67.8</u>	<u>1111</u>	<u> </u>	<u> </u>
<u>6</u>	<u>7.85</u>	<u>68.3</u>	<u>1109</u>	<u> </u>	<u> </u>
<u>9</u>	<u>7.94</u>	<u>69.7</u>	<u>1067</u>	<u>↓</u>	<u>↓</u>

Total Gallons Purged 9 gallons
 Depth to Groundwater Before Sampling (below TOC) 15.13' feet
 Sampling Method BAILER
 Containers Used 2 40 ml 1 liter _____ pint

Subsurface Consultants			PLATE
	JOB NUMBER	DATE	APPROVED



Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

DATE RECEIVED: 03/05/93

DATE REPORTED: 03/12/93

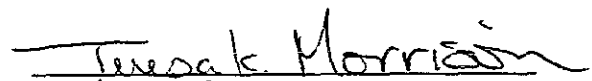
LABORATORY NUMBER: 110241

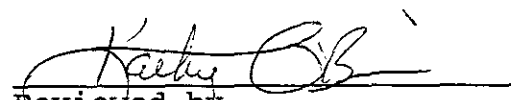
CLIENT: SUBSURFACE CONSULTANTS

PROJECT ID: 727.001

LOCATION: COULTER STEEL

RESULTS: SEE ATTACHED


Reviewed by


Reviewed by

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LABORATORY NUMBER: 110241
 CLIENT: SUBSURFACE CONSULTANTS
 PROJECT ID: 727.001
 LOCATION: COULTER STEEL

DATE SAMPLED: 03/04/93
 DATE RECEIVED: 03/05/93
 DATE EXTRACTED: 03/09/93
 DATE ANALYZED: 03/10/93
 DATE REPORTED: 03/12/93

Extractable Petroleum Hydrocarbons in Aqueous Solutions
 California DOHS Method
 LUFT Manual October 1989

LAB ID	CLIENT ID	KEROSENE RANGE (ug/L)	DIESEL RANGE (ug/L)	REPORTING LIMIT* (ug/L)
110241-1	MW-3	ND	ND	50
110241-2	MW-6	ND	ND	50

ND = Not detected at or above reporting limit.

* Reporting limit applies to all analytes.

QA/QC SUMMARY

RPD, %	4
RECOVERY, %	117

LABORATORY NUMBER: 110241
 CLIENT: SUBSURFACE CONSULTANTS
 PROJECT ID: 727.001
 LOCATION: COULTER STEEL

DATE SAMPLED: 03/04/93
 DATE RECEIVED: 03/05/93
 DATE ANALYZED: 03/11/93
 DATE REPORTED: 03/12/93

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

LAB ID	CLIENT ID	BENZENE (ug/L)	TOLUENE (ug/L)	ETHYL BENZENE (ug/L)	TOTAL XYLENES (ug/L)	REPORTING LIMIT (ug/L)
110241-1	MW-3	ND	ND	ND	ND	0.5
110241-2	MW-6	ND	ND	ND	ND	0.5

ND = Not detected at or above reporting limit.

Reporting Limit applies to all analytes.

QA/QC SUMMARY

RPD, %	8
RECOVERY, %	98



Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878

2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

DATE RECEIVED: 03/08/93
DATE REPORTED: 03/15/93

LABORATORY NUMBER: 110259

CLIENT: SUBSURFACE CONSULTANTS

PROJECT ID: 727.001

LOCATION: COULTER STEEL

RESULTS: SEE ATTACHED

Teresa K. Morrison
Reviewed by

[Signature]
Reviewed by

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LABORATORY NUMBER: 110259
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 727.001
LOCATION: COULTER STEEL

DATE SAMPLED: 03/08/93
DATE RECEIVED: 03/08/93
DATE EXTRACTED: 03/09/93
DATE ANALYZED: 03/10/93
DATE REPORTED: 03/15/93

Extractable Petroleum Hydrocarbons in Aqueous Solutions
California DOHS Method
LUFT Manual October 1989

LAB ID	CLIENT ID	KEROSENE RANGE (ug/L)	DIESEL RANGE (ug/L)	REPORTING LIMIT* (ug/L)
110259-1	MW-4	**	ND	50
110259-2	MW-5	**	1,400+	50

+ Pattern does not match standard.

ND = Not detected at or above reporting limit.

* Reporting limit applies to all analytes.

** Quantitated as diesel range.

QA/QC SUMMARY

RPD, %	4
RECOVERY, %	117

LABORATORY NUMBER: 110259
 CLIENT: SUBSURFACE CONSULTANTS
 PROJECT ID: 727.001
 LOCATION: COULTER STEEL

DATE SAMPLED: 03/08/93
 DATE RECEIVED: 03/08/93
 DATE ANALYZED: 03/11/93
 DATE REPORTED: 03/15/93

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

LAB ID	CLIENT ID	BENZENE (ug/L)	TOLUENE (ug/L)	ETHYL BENZENE (ug/L)	TOTAL XYLENES (ug/L)	REPORTING LIMIT (ug/L)
110259-1	MW-4	ND	ND	ND	ND	0.5
110259-2	MW-5	ND	ND	ND	ND	0.5

ND = Not detected at or above reporting limit.

Reporting Limit applies to all analytes.

QA/QC SUMMARY

RPD, %	8
RECOVERY, %	98

