

January 10, 1992
SCI 430.015

92 JAN 10 10:50

Mr. William Meckel
East Bay Municipal Utility District
Wastewater Department - MS59
P.O. Box 24055
Oakland, California

Quarterly Monitoring Report #6 (October 8, 1991
through January 10, 1992)
Wastewater Discharge Permit #001-00009
1330 Martin Luther King Jr. Way
Oakland, California

Dear Mr. Meckel:

This letter presents quarterly monitoring results from the groundwater treatment plant at 1330 Martin Luther King Jr. Way. Monitoring of treated effluent has been performed in accordance with criteria specified in the EBMUD wastewater discharge permit #001-00009, issued to the Oakland Redevelopment Agency for remediation of hydrocarbon contaminated groundwater.

During the seventh quarter of operation (October 8, 1991 through January 10, 1992) approximately 1,544,660 gallons of treated water were discharged into the EBMUD sanitary sewer system. Treatment plant performance remains excellent. The analytical results from 34 sampling events indicate that total volatile hydrocarbons (TVH), benzene, toluene, xylene, and ethylbenzene (BTXE) and volatile organic compounds (VOC) have been reduced to nondetectable concentrations before discharge into the EBMUD sanitary sewer. No indications of breakthrough have occurred in the primary carbon column. Results of the water quality data generated during the seventh quarter are presented in Table 1. Data from the 9/26/91 sampling event is reprinted because the 2nd and 3rd rows were transposed in our letter dated October 9, 1991. Analytical test reports and Chain-of-Custody documents are also attached.

Approximately 922,170 gallons of contaminated water from the adjacent Garage 2 site were treated during this quarter of operation. The water contained low concentrations of chlorinated hydrocarbons. For this reason, the monitoring program was modified to include testing for EPA 8010 chemicals. No detectible

■ Subsurface Consultants, Inc.

Mr. William Meckel
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concentration of chlorinated hydrocarbons were discharged into the EBMUD sewer.

The analytical test results indicate that biologic activity within the primary holding tank, which was documented in previous quarterly reports, is on-going. Hydrocarbon concentrations up to approximately 140 parts per billion (ppb) are entering the primary holding tank and not more than 18 ppb of hydrocarbons have been recorded leaving the tank before passing through the carbon treatment system during this quarter. Consequently, hydrocarbon loading of the carbon treatment system has been minimal.

If you have any questions, please call.

Yours very truly,

Subsurface Consultants, Inc.



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

SOC:JPB:vb

Attachments: Table 1 - Contaminant Concentrations in Water
Analytical Test Reports
Chain-of-Custody Documents

cc: Ms. Lois Parr
Oakland Redevelopment Agency, OEDE

✓ Mr. Paul Smith
ACHCSA

Mr. Eddy So
RWQCB

Mr. Donnell Choy
City of Oakland

Table 1. Contaminant Concentrations In Water

<u>Sample</u>	<u>Sampling Date</u>	<u>TVH¹ (ug/L)³</u>	<u>Benzene² (ug/L)</u>	<u>Toluene (ug/L)</u>	<u>Ethyl Benzene (ug/L)</u>	<u>Total Xylenes (ug/L)</u>	<u>EPA 8010</u>
WI ⁴ -32-1 ⁵	09/26/91	240	18	ND ⁷	3.4	4.9	NR ¹⁰
WI-32-2		180	5.3	0.9	2.0	6.8	NR
I ⁶ -32		ND	ND	ND	ND	ND	NR
B ⁸ -32		NR	ND	ND	ND	ND	NR
E ⁹ -32		NR	ND	ND	ND	ND	NR
WI-33-1	10/24/91	90	18	ND	ND	ND	NR
WI-33-2		ND	1.2	ND	ND	2.2	NR
I-33			ND	ND	ND	ND	NR
B-33			ND	ND	ND	ND	NR
E-33			ND	ND	ND	ND	NR
WI-34-1	11/18/91	140	7.9	ND	2.6	4.1	NR
WI-34-2		70	5.0	ND	2.9	0.7	NR
WI-34-G2 ¹²		ND	ND	ND	ND	ND	6.9 ¹¹
I-34			ND	ND	ND	ND	3.7 ¹³
B-34			ND	ND	ND	ND	15 ¹¹
E-34			ND	ND	ND	ND	ND

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- 1 TVH = Total volatile hydrocarbons, EPA 8015/5030
2 BTEX, Analyses by EPA 8020/5030
3 ug/L = micrograms per liter or parts per billion (ppb)
4 WI = Well Influent, i.e. wastewater from well prior to discharge
into the primary holding tank
5 -1 indicates sample from Extraction Well #1
6 I = Influent at primary carbon vessel
7 ND = None detected, chemicals not present at concentrations above
the detection limits; see test reports for detection limits
8 B = Between carbon vessels
9 E = Effluent
10 NR = Test not requested
11 as Methylene Chloride
12 G2 indicates sample from Garage 2
13 as 1-2 dichloroethane (DCA)



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

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

DATE RECEIVED: 11/15/91
DATE REPORTED: 11/21/91


LABORATORY NUMBER: 105808

CLIENT: SUBSURFACE CONSULTANTS

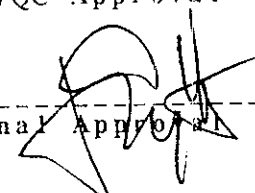
PROJECT ID: 430.015

LOCATION: MLK GW EXTRACTION

RESULTS: SEE ATTACHED



QA/QC Approval



Final Approval

Berkeley

Wilmington

Los Angeles

LABORATORY NUMBER: 105808
 CLIENT: SUBSURFACE CONSULTANTS
 PROJECT ID: 430.015
 LOCATION: MLK GW EXTRACTION

DATE RECEIVED: 11/15/91
 DATE ANALYZED: 11/15,16/91
 DATE REPORTED: 11/21/91

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

LAB ID	SAMPLE ID	TVH AS GASOLINE (ug/L)	BENZENE (ug/L)	TOLUENE (ug/L)	ETHYL BENZENE (ug/L)	TOTAL XYLENES (ug/L)
105808-1	WI-33-1	90	18	ND(0.5)	ND(0.5)	ND(0.5)
105808-2	WI-33-2	ND(50)	1.2	ND(0.5)	ND(0.5)	2.2

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

QA/QC SUMMARY

RPD, %	1
RECOVERY, %	90

LABORATORY NUMBER: 105808
 CLIENT: SUBSURFACE CONSULTANTS
 PROJECT ID: 430.015
 LOCATION: MLK GW EXTRACTION

DATE RECEIVED: 11/15/91
 DATE ANALYZED: 11/16/91
 DATE REPORTED: 11/21/91

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)
105808-3	I-33	ND	ND	ND	ND	0.5
105808-4	B-33	ND	ND	ND	ND	0.5
105808-5	E-33	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, %	90



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

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

DATE RECEIVED: 11/18/91
DATE REPORTED: 11/26/91

LABORATORY NUMBER: 105814

CLIENT: SUBSURFACE CONSULTANTS

PROJECT ID: 430.015

LOCATION: MLK GW EXTRACTION

RESULTS: SEE ATTACHED

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QA/QC Approval
[Signature]

Final Approval

LABORATORY NUMBER: 105814
 CLIENT: SUBSURFACE CONSULTANTS
 PROJECT ID: 430.015
 LOCATION: MLK GW EXTRACTION

DATE RECEIVED: 11/18/91
 DATE ANALYZED: 11/20/91
 DATE REPORTED: 11/26/91

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

LAB ID	SAMPLE ID	TVH AS GASOLINE (ug/L)	BENZENE (ug/L)	TOLUENE (ug/L)	ETHYL BENZENE (ug/L)	TOTAL XYLENES (ug/L)
105814-1	WI-34-1	140	7.9	ND(0.5)	2.6	4.1
105814-2	WI-34-2	70	5.0	ND(0.5)	2.9	0.7
105814-3	WI-34-G2	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, % 2
 RECOVERY, % 87

LABORATORY NUMBER: 105814
 CLIENT: SUBSURFACE CONSULTANTS
 PROJECT ID: 430.015
 LOCATION: MLK GW EXTRACTION

DATE RECEIVED: 11/18/91
 DATE ANALYZED: 11/20/91
 DATE REPORTED: 11/26/91

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)
105814-4	I-34	ND	ND	ND	ND	0.5
105814-5	B-34	ND	ND	ND	ND	0.5
105814-6	E-34	ND	ND	ND	ND	0.5

ND = Not detected at or above reporting limit.

* Reporting Limit applies to all analytes.

QA/QC SUMMARY

RPD, %	2
RECOVERY, %	87

LABORATORY NUMBER: 105814-3
 CLIENT: SUBSURFACE CONSULTANTS
 PROJECT ID: 430.015
 LOCATION: MLK GW EXTRACTION
 SAMPLE ID: WI-34-G2

DATE RECEIVED: 11/18/91
 DATE ANALYZED: 11/20/91
 DATE REPORTED: 11/26/91

EPA 8010
 Purgeable Halocarbons in Water

Compound	Result ug/L	Reporting Limit ug/L
Chloromethane	ND	2.0
Bromomethane	ND	2.0
Vinyl chloride	ND	2.0
Chloroethane	ND	2.0
Methylene chloride	6.9	1.0
Trichlorofluoromethane	ND	1.0
1,1-Dichloroethene	ND	1.0
1,1-Dichloroethane	ND	1.0
cis-1,2-Dichloroethene	ND	1.0
trans-1,2-Dichloroethene	ND	1.0
Chloroform	ND	1.0
Freon 113	ND	1.0
1,2-Dichloroethane	ND	1.0
1,1,1-Trichloroethane	ND	1.0
Carbon tetrachloride	ND	1.0
Bromodichloromethane	ND	1.0
1,2-Dichloropropane	ND	1.0
cis-1,3-Dichloropropene	ND	1.0
Trichloroethylene	ND	1.0
1,1,2-Trichloroethane	ND	1.0
trans-1,3-Dichloropropene	ND	1.0
Dibromochloromethane	ND	1.0
2-Chloroethylvinyl ether	ND	2.0
Bromoform	ND	1.0
Tetrachloroethene	ND	1.0
1,1,2,2-Tetrachloroethane	ND	1.0
Chlorobenzene	ND	1.0
1,3-Dichlorobenzene	ND	1.0
1,2-Dichlorobenzene	ND	1.0
1,4-Dichlorobenzene	ND	1.0

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

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Surrogate Recovery, %

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106

LABORATORY NUMBER: 105814-4
 CLIENT: SUBSURFACE CONSULTANTS
 PROJECT ID: 430.015
 LOCATION: MLK GW EXTRACTION
 SAMPLE ID: 1-34

DATE RECEIVED: 11/18/91
 DATE ANALYZED: 11/20/91
 DATE REPORTED: 11/26/91

EPA 8010
 Purgeable Halocarbons in Water

Compound	Result ug/L	Reporting Limit ug/L
Chloromethane	ND	2.0
Bromomethane	ND	2.0
Vinyl chloride	ND	2.0
Chloroethane	ND	2.0
Methylene chloride	ND	1.0
Trichlorofluoromethane	ND	1.0
1,1-Dichloroethene	ND	1.0
1,1-Dichloroethane	ND	1.0
cis-1,2-Dichloroethene	ND	1.0
trans-1,2-Dichloroethene	ND	1.0
Chloroform	ND	1.0
Freon 113	ND	1.0
1,2-Dichloroethane	3.7	1.0
1,1,1-Trichloroethane	ND	1.0
Carbon tetrachloride	ND	1.0
Bromodichloromethane	ND	1.0
1,2-Dichloropropane	ND	1.0
cis-1,3-Dichloropropene	ND	1.0
Trichloroethylene	ND	1.0
1,1,2-Trichloroethane	ND	1.0
trans-1,3-Dichloropropene	ND	1.0
Dibromochloromethane	ND	1.0
2-Chloroethylvinyl ether	ND	2.0
Bromoform	ND	1.0
Tetrachloroethene	ND	1.0
1,1,2,2-Tetrachloroethane	ND	1.0
Chlorobenzene	ND	1.0
1,3-Dichlorobenzene	ND	1.0
1,2-Dichlorobenzene	ND	1.0
1,4-Dichlorobenzene	ND	1.0

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

Surrogate Recovery, %	104
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LABORATORY NUMBER: 105814-5
 CLIENT: SUBSURFACE CONSULTANTS
 PROJECT ID: 430.015
 LOCATION: MLK GW EXTRACTION
 SAMPLE ID: B-34

DATE RECEIVED: 11/18/91
 DATE ANALYZED: 11/20/91
 DATE REPORTED: 11/26/91

EPA 8010
 Purgeable Halocarbons in Water

Compound	Result ug/L	Reporting Limit ug/L
Chloromethane	ND	2.0
Bromomethane	ND	2.0
Vinyl chloride	ND	2.0
Chloroethane	ND	2.0
Methylene chloride	15	1.0
Trichlorofluoromethane	ND	1.0
1,1-Dichloroethene	ND	1.0
1,1-Dichloroethane	ND	1.0
cis-1,2-Dichloroethene	ND	1.0
trans-1,2-Dichloroethene	ND	1.0
Chloroform	ND	1.0
Freon 113	ND	1.0
1,2-Dichloroethane	ND	1.0
1,1,1-Trichloroethane	ND	1.0
Carbon tetrachloride	ND	1.0
Bromodichloromethane	ND	1.0
1,2-Dichloropropane	ND	1.0
cis-1,3-Dichloropropene	ND	1.0
Trichloroethylene	ND	1.0
1,1,2-Trichloroethane	ND	1.0
trans-1,3-Dichloropropene	ND	1.0
Dibromochloromethane	ND	1.0
2-Chloroethylvinyl ether	ND	2.0
Bromoform	ND	1.0
Tetrachloroethene	ND	1.0
1,1,2,2-Tetrachloroethane	ND	1.0
Chlorobenzene	ND	1.0
1,3-Dichlorobenzene	ND	1.0
1,2-Dichlorobenzene	ND	1.0
1,4-Dichlorobenzene	ND	1.0

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

Surrogate Recovery, %	103
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LABORATORY NUMBER: 105814-6
CLIENT: SUBSURFACE CONSULTANTS
PROJECT ID: 430.015
LOCATION: MLK GW EXTRACTION
SAMPLE ID: E-34

DATE RECEIVED: 11/18/91
DATE ANALYZED: 11/20/91
DATE REPORTED: 11/26/91

EPA 8010
Purgeable Halocarbons in Water

Compound	Result ug/L	Reporting Limit ug/L
Chloromethane	ND	2.0
Bromomethane	ND	2.0
Vinyl chloride	ND	2.0
Chloroethane	ND	2.0
Methylene chloride	ND	1.0
Trichlorofluoromethane	ND	1.0
1,1-Dichloroethene	ND	1.0
1,1-Dichloroethane	ND	1.0
cis-1,2-Dichloroethene	ND	1.0
trans-1,2-Dichloroethene	ND	1.0
Chloroform	ND	1.0
Freon 113	ND	1.0
1,2-Dichloroethane	ND	1.0
1,1,1-Trichloroethane	ND	1.0
Carbon tetrachloride	ND	1.0
Bromodichloromethane	ND	1.0
1,2-Dichloropropane	ND	1.0
cis-1,3-Dichloropropene	ND	1.0
Trichloroethylene	ND	1.0
1,1,2-Trichloroethane	ND	1.0
trans-1,3-Dichloropropene	ND	1.0
Dibromochloromethane	ND	1.0
2-Chloroethylvinyl ether	ND	2.0
Bromoform	ND	1.0
Tetrachloroethene	ND	1.0
1,1,2,2-Tetrachloroethane	ND	1.0
Chlorobenzene	ND	1.0
1,3-Dichlorobenzene	ND	1.0
1,2-Dichlorobenzene	ND	1.0
1,4-Dichlorobenzene	ND	1.0

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

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Surrogate Recovery, %

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106

LABORATORY NUMBER: 105814
 CLIENT: SUBSURFACE CONSULTANTS
 PROJECT ID: 430.015
 LOCATION: MLK GW EXTRACTION
 SAMPLE ID: METHOD BLANK

DATE ANALYZED: 11/20/91
 DATE REPORTED: 11/26/91

EPA 8010
 Purgeable Halocarbons in Water

Compound	Result ug/L	Reporting Limit ug/L
Chloromethane	ND	2.0
Bromomethane	ND	2.0
Vinyl chloride	ND	2.0
Chloroethane	ND	2.0
Methylene chloride	1.1	1.0
Trichlorofluoromethane	ND	1.0
1,1-Dichloroethene	ND	1.0
1,1-Dichloroethane	ND	1.0
cis-1,2-Dichloroethene	ND	1.0
trans-1,2-Dichloroethene	ND	1.0
Chloroform	ND	1.0
Freon 113	ND	1.0
1,2-Dichloroethane	ND	1.0
1,1,1-Trichloroethane	ND	1.0
Carbon tetrachloride	ND	1.0
Bromodichloromethane	ND	1.0
1,2-Dichloropropane	ND	1.0
cis-1,3-Dichloropropene	ND	1.0
Trichloroethylene	ND	1.0
1,1,2-Trichloroethane	ND	1.0
trans-1,3-Dichloropropene	ND	1.0
Dibromochloromethane	ND	1.0
2-Chloroethylvinyl ether	ND	2.0
Bromoform	ND	1.0
Tetrachloroethene	ND	1.0
1,1,2,2-Tetrachloroethane	ND	1.0
Chlorobenzene	ND	1.0
1,3-Dichlorobenzene	ND	1.0
1,2-Dichlorobenzene	ND	1.0
1,4-Dichlorobenzene	ND	1.0

ND = Not detected at or above reporting limit.

QA/QC SUMMARY

Surrogate Recovery, %	105
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BS/BSD SUMMARY SHEET FOR EPA 8010(8020)
 INSTRUMENT: HP-5890 COLUMN: RESTEK 502.2 DETECTORS: HALL/PID

Operator: AV Spike file: 323W/X014
 Analysis date: 11/19/91 Spike dup file: 323W\X015
 Sample type: WATER Instrument: GC12
 Sequence name NOV 19

8010 BS/BSD DATA (spiked at 20 ppb) Ave Rec= 106 %

SPIKE COMPOUNDS	READING	RECOVERY	STATUS	LIMITS
1,1-Dichloroethene	20.50	103 %	OK	61 - 145
Trichloroethene	21.43	107 %	OK	71 - 120
Chlorobenzene	20.72	104 %	OK	75 - 130
SPIKE DUP COMPOUNDS				
1,1-Dichloroethene	21.44	107 %	OK	61 - 145
Trichloroethene	22.16	111 %	OK	71 - 120
Chlorobenzene	21.25	106 %	OK	75 - 130
SURROGATES				
BROMOBENZENE (BS)	104.00	104 %	OK	75 - 120
BROMOBENZENE (BSD)	106.00	106 %	OK	75 - 120

8020 BS/BSD DATA (spiked at 20 ppb) Ave Rec= 102 %

SPIKE COMPOUNDS	READING	RECOVERY	STATUS	LIMITS
Benzene	20.74	104 %	OK	76 - 127
Toluene	20.72	104 %	OK	76 - 125
Chlorobenzene	20.17	101 %	OK	75 - 130
SPIKE DUP COMPOUNDS				
Benzene	20.55	103 %	OK	76 - 127
Toluene	20.52	103 %	OK	76 - 125
Chlorobenzene	19.93	100 %	OK	75 - 130
SURROGATES				
BROMOBENZENE (BS)	100.00	100 %	OK	75 - 120
BROMOBENZENE (BSD)	100.00	100 %	OK	75 - 120

RPD DATA 8010 RPD= 3.5 % 8020 RPD= 1.0 %

8010 COMPOUNDS	SPIKE	SPIKE DUP	RPD	STATUS	LIMITS
1,1-Dichloroethene	20.50	21.44	4 %	OK	< 14
Trichloroethene	21.43	22.16	3 %	OK	< 14
Chlorobenzene	20.72	21.25	3 %	OK	< 13
8020 COMPOUNDS					
Benzene	20.74	20.55	1 %	OK	< 11
Toluene	20.72	20.52	1 %	OK	< 13
Chlorobenzene	20.17	19.93	1 %	OK	< 13

REVIEWED BY: Neel C. De



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

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

DATE RECEIVED: 09/26/91

DATE REPORTED: 09/30/91


LABORATORY NUMBER: 105275


CLIENT: SUBSURFACE CONSULTANTS

PROJECT ID: 430.015

LOCATION: MLK GW EXTRACTION

RESULTS: SEE ATTACHED



QA/QC Approval


Final Approval

LABORATORY NUMBER: 105275
 CLIENT: SUBSURFACE CONSULTANTS
 PROJECT ID: 430.015
 LOCATION: MLK GW EXTRACTION

DATE RECEIVED: 09/26/91
 DATE ANALYZED: 09/28/91
 DATE REPORTED: 09/30/91

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)
105275-3	I-32	ND	ND	ND	ND	0.5
105275-4	B-32	ND	ND	ND	ND	0.5
105275-5	E-32	ND	ND	ND	ND	0.5

ND = Not detected at or above reporting limit.

* Reporting Limit applies to all analytes.

QA/QC SUMMARY

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RPD, %                                4
RECOVERY, %                            112
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LABORATORY NUMBER: 105275
 CLIENT: SUBSURFACE CONSULTANTS
 PROJECT ID: 430.015
 LOCATION: MLK GW EXTRACTION

DATE RECEIVED: 09/26/91
 DATE ANALYZED: 09/28/91
 DATE REPORTED: 09/30/91

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

LAB ID	SAMPLE ID	TVH AS GASOLINE (ug/L)	BENZENE (ug/L)	TOLUENE (ug/L)	ETHYL BENZENE (ug/L)	TOTAL XYLENES (ug/L)
105275-1	WI-32-1	240	18	ND(0.5)	3.4	4.9
105275-2	WI-32-2	180	5.3	0.9	2.0	6.8

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

QA/QC SUMMARY

RPD, % 4
 RECOVERY, % 112

