



## **Subsurface Consultants, Inc.**

ENVIRONMENTAL  
PROTECTION  
08 JAN 22 AM 10:12

R. William Rudolph, P.E.  
President

January 16, 1998  
SCI 1039.006

Strough Family Trust of 1983  
c/o Mr. Don Strough  
Concord Honda/Pontiac  
1300 Concord Avenue  
Concord, California 94520

**Groundwater Monitoring Event and  
Free-Product Removal  
October 1997  
327 34th Street  
Oakland, California**

Dear Mr. Strough:

This letter records the results of a groundwater monitoring and free-product removal event performed by Subsurface Consultants, Inc. (SCI) on October 2, 1997, at the subject property located at 327 34th Street in Oakland, California. The location of the property is shown on the Vicinity Map, Plate 1. The site configuration is shown on the Site Plan, Plate 2. SCI's services were provided to the Strough Family Trust of 1983 (Strough), the site owner.

### **BACKGROUND**

#### **UST Closure and Preliminary Investigation**

On March 4 and 5, 1993, one 1,000-gallon underground storage tank (UST) containing unleaded gasoline and one 1,000-gallon UST containing waste oil were removed by KTW & Associates/Subsurface Environmental Corporation under the direction of Alameda County Health Care Services Agency (ACHCSA). Results of chemical analyses on soil samples collected beneath the ends of the gasoline UST indicated impacts by total petroleum hydrocarbons as gasoline (TPH-g) and toluene, ethylbenzene, and xylenes. Soil samples from the waste oil UST excavation showed only relatively low concentrations of TPH as diesel, ethylbenzene, and xylenes.

A soil and groundwater investigation was conducted by GeoPlexus, Inc. to assess impacts of petroleum hydrocarbons to groundwater. This included the installation and sampling of three groundwater monitoring wells (MW-1 through MW-3) hydraulically downgradient from the former USTs (Plate 2). Analytical testing of soil and groundwater samples revealed impacts from

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gasoline hydrocarbons at two wells (MW-2 and MW-3) located downgradient of the former gasoline UST. Separate-phase gasoline product (free-product) was not observed in MW-2. However, one-quarter inch of free product was apparently observed in well MW-3.

### **SCI Work Plan**

On August 1, 1997, SCI submitted a work plan to ACHCSA on behalf of Strough to conduct one monitoring event. On October 1, 1997, ACHCSA approved the work plan. This letter summarizes the activities performed and the results of the monitoring event.

### **Underground Storage Tank Cleanup Fund**

The State of California Underground Storage Tank Cleanup Fund (Fund) has issued a Letter of Commitment dated December 16, 1997 for reimbursement of costs associated with this UST site. The site is designated as Claim No. 9198.

### **GROUNDWATER MONITORING**

On October 2, 1997, SCI measured the depth-to-water and checked for the presence of free product in wells MW-1 through MW-3. Free product was found in wells MW-2 and MW-3, but was not detected in monitoring well MW-1. A summary of groundwater and free-product level measurements is presented in Table 1.

Prior to sampling, these wells were purged by removing water with disposable bailers. Purging continued until measurements of pH, temperature, and conductivity stabilized. After the wells recharged to within 80 percent of their initial level, groundwater samples were collected from wells MW-1 and MW-3 with disposable bailers. Because of the presence of approximately 5 inches of free-product in MW-2, no groundwater sample was collected from that well. A sample of the free-product in MW-2 was collected, however, for fuel fingerprinting analysis. Purge water was placed in a 55-gallon drum and left onsite for later disposal.

Samples were retained in pre-cleaned containers supplied by the analytical laboratory, placed in ice-filled coolers for storage, and transported to the laboratory under chain-of-custody for testing.

### **ANALYTICAL TESTING**

Analytical testing was performed by Curtis and Tompkins, Ltd., a laboratory certified by the State of California for hazardous waste and water testing. Groundwater samples from wells MW-1 and MW-3 were analyzed for the following:

- Total volatile hydrocarbons within the gasoline range (TVH, EPA 8015 modified),

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- Benzene, toluene, ethylbenzene, and xylenes (BTEX, EPA 8020), and
- Methyl tertiary butyl ether (MTBE, EPA 8020).

The free-product sample from well MW-2 was submitted to the laboratory for a fuel fingerprint analysis. Data are summarized in Table 2. Field sampling forms, analytical test reports (including chromatograms), and chain-of-custody documents are attached.

### **DISCUSSION OF RESULTS**

As shown in Table 1, free-product was measured in wells MW-2 and MW-3 at thicknesses of 0.43 and 0.03 feet, respectively. Groundwater was encountered at depths between 21.22 (MW-1) and 22.91 (MW-2) feet below ground surface. Based on an assumed elevation datum, the groundwater gradient and flow direction was calculated to be approximately 0.011 towards the west. This estimated groundwater flow direction may be inaccurate due to the influence of free-product in MW-2 and the relatively flat gradient. Based on the topography of the site and groundwater data gathered from nearby sites, SCI estimates that the groundwater flow direction may be toward the south-southwest.

Data indicate that TVH, BTEX, and MTBE were not detected in groundwater from MW-1 located south of the former waste oil UST. Results of the fuel fingerprint analysis for the free-product sample obtained from MW-2 indicate that the product resembles weathered gasoline. For the groundwater sample from MW-3, TVH was detected at 36,000 micrograms per liter ( $\mu\text{g/L}$ ), and benzene and MTBE were detected at 4,200 and 3,500  $\mu\text{g/L}$ , respectively. Comparison of the current data for MW-3 to the 1993 data indicate that concentrations of dissolved petroleum hydrocarbons have decreased by more than 50 percent since July of 1993.

### **RECOMMENDATIONS**

SCI recommends that an additional soil and groundwater investigation be performed to delineate the extent of free-product, dissolved petroleum hydrocarbons, and MTBE, in soil and groundwater. We also recommend that free-product be removed from site wells monthly by hand-bailing and that site wells be sampled quarterly. A Quarterly Technical Report (QTR) should be prepared and submitted to ACHCSA with the results of each monitoring event. Results of the additional soil and groundwater investigation should be incorporated into the QTR for the quarter in which the investigation is performed.

Enclosed is a work plan for these additional recommended activities. The work plan should be forwarded to Ms. Madullah Logan of ACHCSA for review and approval. Upon approval of the work plan by ACHCSA, SCI would be pleased to assist Strough with obtaining pre-approval of the estimated investigation, monitoring, and product removal costs from the Fund.

Strough Family Trust of 1983  
c/o Mr. Don Strough  
January 16, 1998  
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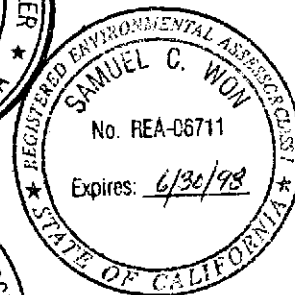
We trust that this report provides the required information. If you have any questions, please feel free to call.

Yours very truly,

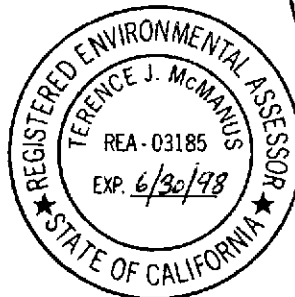
Subsurface Consultants, Inc.



Samuel C. Won PE, REA  
Project Engineer



Terence J. McManus, REA  
Associate Environmental Scientist



SCW:TJM:ly 1039.006\1097rpt.doc

- Attachments: Table 1 - Groundwater and Product Elevation Data  
Table 2 - Summary of Contaminant Concentrations in Groundwater  
Plate 1 - Vicinity Map  
Plate 2 - Site Plan  
Field Forms  
Analytical Test Reports  
Chain-of-Custody Documents

Enclosure: Work Plan- Investigation of Downgradient Extent of Groundwater Contamination

cc: Jonathan Redding, Esq.  
Fitzgerald, Abbott and Beardsley, LLP  
1221 Broadway, 21st Floor  
Oakland, CA 94612

Ms. Madullah Logan  
Alameda County Health Care Services Agency  
1131 Harbor Bay Parkway, 2nd Floor  
Alameda, CA 94502

**TABLE 1**  
**GROUNDWATER ELEVATION DATA**  
**327 34TH STREET**  
**OAKLAND, CALIFORNIA**

<b>Monitoring Well</b>	<b>Date</b>	<b>Elevation<sup>1</sup></b>	<b>Depth to Groundwater (feet)</b>	<b>Product Thickness (feet)</b>	<b>Groundwater Elevation (feet)</b>	<b>Product Elevation (feet)</b>
MW-1	7/27/93	98.43	20.79 <sup>2</sup>	--	77.64	--
	10/2/97		21.22	--	77.21	--
MW-2	7/27/93	99.68	22.10 <sup>2</sup>	--	77.58	--
	10/2/97		22.91	0.43	76.77	77.20
MW-3	7/27/93	99.72	22.28 <sup>2</sup>	0.02	77.46	77.48
	10/2/97		22.71	0.03	77.01	77.04

<sup>1</sup> Elevations are referenced to an assumed datum, as described in the Preliminary Characterization Report dated August 19, 1993 prepared by KTW & Associates/GeoPlexus, Inc.

<sup>2</sup> Measurements by others

-- Product not observed or not applicable

**TABLE 2**  
**SUMMARY OF CONTAMINANT CONCENTRATIONS IN GROUNDWATER**  
**327 34TH STREET**  
**OAKLAND, CALIFORNIA**

<u>Location</u>	<u>Date</u>	<u>TVH</u> <u>(<math>\mu\text{g/l}</math>)</u>	<u>TEH</u> <u>(<math>\mu\text{g/l}</math>)</u>	<u>Benzene</u> <u>(<math>\mu\text{g/l}</math>)</u>	<u>Toluene</u> <u>(<math>\mu\text{g/l}</math>)</u>	<u>Ethyl-</u> <u>benzene</u> <u>(<math>\mu\text{g/l}</math>)</u>	<u>Total</u> <u>Xylenes</u> <u>(<math>\mu\text{g/l}</math>)</u>	<u>MTBE</u> <u>(<math>\mu\text{g/l}</math>)</u>	<u>Oil &amp;</u> <u>Grease</u> <u>(<math>\text{mg/l}</math>)</u>
MW-1	7/27/93	<50	<50	<0.5	<0.5	<0.5	<0.5	--	<5
	10/2/97	<50	--	<0.5	<0.5	<0.5	<0.5	<2	--
MW-2	7/27/93	120,000	--	10,000	27,000	2,900	20,000	--	--
	10/2/97	*	--	*	*	*	*	*	*
MW-3	7/27/93	330,000	--	9,100	24,000	5,300	33,000	--	--
	10/2/97	36,000	--	4,200	11,000	1,800	10,600	3,500	--

TVH = Total volatile hydrocarbons as gasoline

TEH = Total extractable hydrocarbons as diesel

MTBE= Methyl tertiary butyl ether

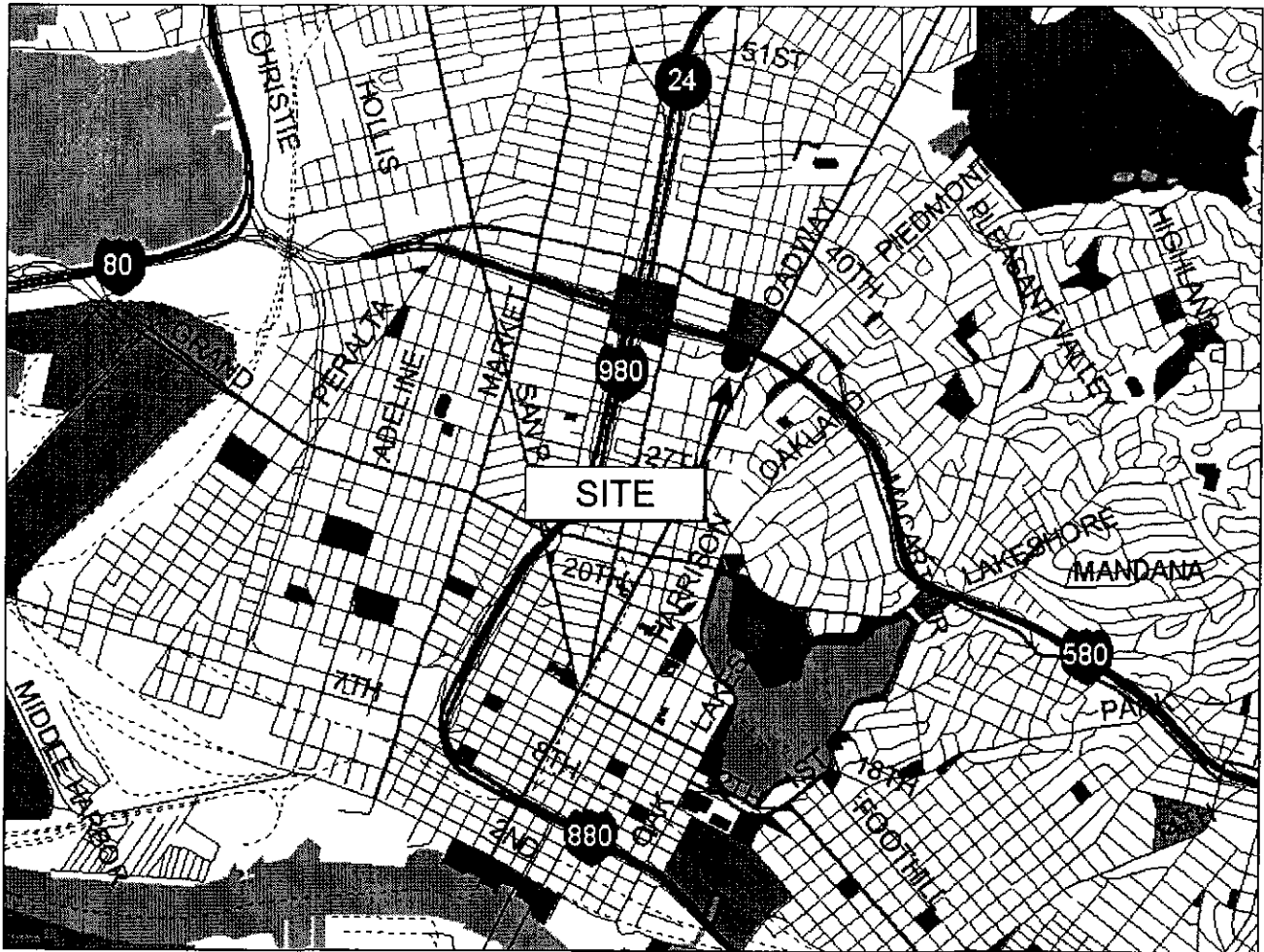
-- = Not analyzed

mg/l = milligrams per liter

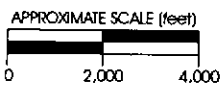
$\mu\text{g/l}$  = micrograms per liter

ND = Not detected at concentrations above reporting limits

\* = This sample contained free-product and was found to resemble weathered gasoline through the fuel fingerprint analysis.



© 1995 Thomas Bros. Maps



### VICINITY MAP

VAL STROUGH CHEVEROLET  
327 34TH STREET, OAKLAND, CALIFORNIA

PLATE

**1**

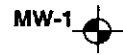
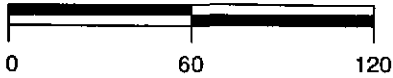
JOB NUMBER  
1039.006

DATE  
5/20/97

APPROVED  
*sw*

**SCI** Subsurface Consultants, Inc.  
Geotechnical & Environmental Engineers

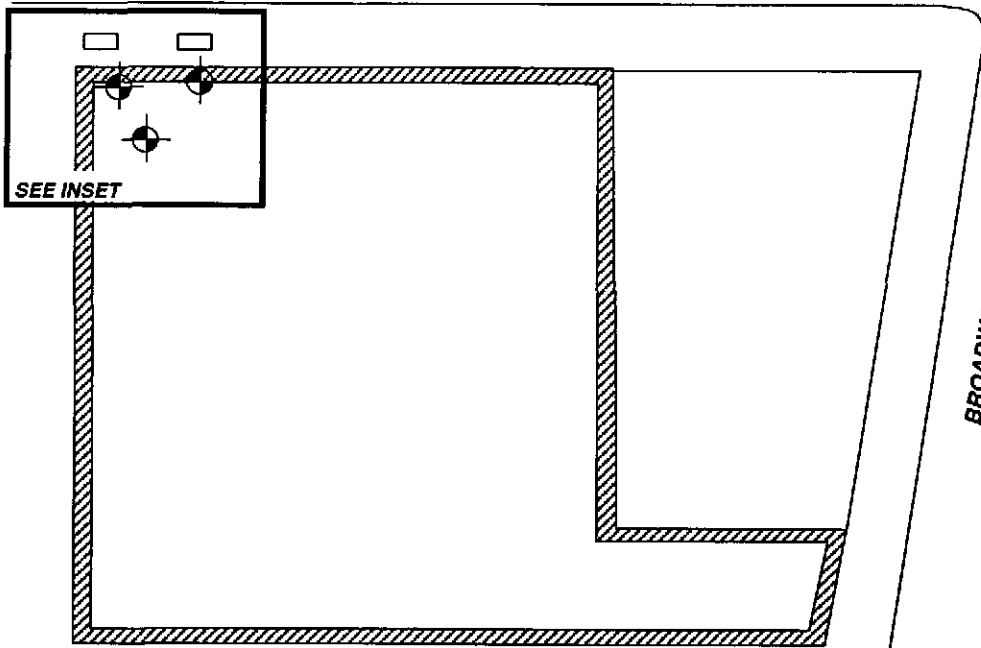
APPROXIMATE SCALE IN FEET



GROUNDWATER MONITORING WELL

34TH STREET

PARKING AREA



BROADWAY

SEE INSET

DETAIL

FORMER GASOLINE UST

FORMER WASTE OIL UST



MW-2



MW-1

MW-3



APPROXIMATE SCALE IN FEET



SITE PLAN



Subsurface Consultants, Inc.  
Geotechnical & Environmental Engineers

VAL STROUGH CHEVROLET  
327 34TH STREET, OAKLAND, CALIFORNIA

JOB NUMBER  
1039.006

DATE  
1/7/98

APPROVED  
*Sw*

PLATE

2



# WELL SAMPLING FORM

Project Name: 34th St. Well Number: MW-1  
 Job No.: 447.068 Well Casing Diameter: 2 inch  
 Sampled By: DWA Date: 10/2/97  
 TOC Elevation: \_\_\_\_\_ Weather: Sunny

Depth to Casing Bottom (below TOC) 30.60 feet  
 Depth to Groundwater (below TOC) 21.22 feet  
 Feet of Water in Well 9.38 feet  
 Depth to Groundwater When 80% Recovered 23.10 feet  
 Casing Volume (feet of water x Casing DIA<sup>2</sup> x 0.0408) 1.6 gallons  
 Depth Measurement Method Tape & Paste Electronic Sounder Other \_\_\_\_\_  
 Free Product NONE  
 Purge Method disposable bailer

*fast recharge*

## FIELD MEASUREMENTS

Gallons Removed	pH	Temp (°C)	Conductivity (micromhos/cm)	Salinity S%	Comments
<u>1</u>	<u>6.77</u>	<u>19.5</u>	<u>1175</u>	_____	<u>mucky/no odor</u>
<u>2</u>	<u>6.47</u>	<u>19.5</u>	<u>1125</u>	_____	<u>decreasing turbidity</u>
<u>3</u>	<u>6.40</u>	<u>19.5</u>	<u>1125</u>	_____	_____
<u>4</u>	<u>6.37</u>	<u>19.5</u>	<u>1125</u>	_____	_____
<u>5</u>	<u>6.35</u>	<u>19.0</u>	<u>1100</u>	_____	_____

Total Gallons Purged 5 gallons  
 Depth to Groundwater Before Sampling (below TOC) 22.70 feet  
 Sampling Method disposable bailer  
 Containers Used 4 \_\_\_\_\_ liter \_\_\_\_\_ pint  
40 ml

**Subsurface Consultants**

JOB NUMBER

DATE

APPROVED

PLATE

## WELL SAMPLING FORM

Project Name: 34th St. Well Number: MW-2  
 Job No.: 447.068 Well Casing Diameter: 2 inch  
 Sampled By: DWA Date: 10/2/97  
 TOC Elevation: \_\_\_\_\_ Weather: Sunny

Depth to Casing Bottom (below TOC) 32.50 feet  
 Depth to Groundwater (below TOC) 22' 10 7/8" feet  
 Feet of Water in Well 9' 7 1/8" feet  
 Depth to Groundwater When 80% Recovered \_\_\_\_\_ feet  
 Casing Volume (feet of water x Casing DIA <sup>2</sup> x 0.0408) \_\_\_\_\_ gallons  
 Depth Measurement Method Tape & Paste / Electronic Sounder / Other  
 Free Product Top of Product - 22' 5 3/4" (product thickness = 5 1/8") 1 1/2" visible in bailer w/ strong odor and heavy sheen  
 Purge Method disposable bailer

*very fast recharge*

### FIELD MEASUREMENTS

Gallons Removed	pH	Temp (°c)	Conductivity (micromhos/cm)	Salinity S%	Comments
1	6.12	18.5	280		musty / strong odor
3	5.91	18.5	380		↓
5	5.91	18.5	410		↓
7	5.96	18.5	455		↓

Total Gallons Purged 7 gallons  
 Depth to Groundwater Before Sampling (below TOC) 22.90 feet  
 Sampling Method disposable bailer  
 Containers Used 4 40 ml \_\_\_\_\_ liter \_\_\_\_\_ pint

Subsurface Consultants	JOB NUMBER	DATE	APPROVED	PLATE

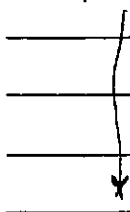
## WELL SAMPLING FORM

Project Name: 34th St. Well Number: MW-3  
 Job No.: 447.068 Well Casing Diameter: 2 inch  
 Sampled By: DWA Date: 10/2/97  
 TOC Elevation: \_\_\_\_\_ Weather: Sunny

Depth to Casing Bottom (below TOC) 33.00 feet  
 Depth to Groundwater (below TOC) 22' 8 1/2" feet  
 Feet of Water in Well 10' 3 1/2" feet  
 Depth to Groundwater When 80% Recovered \_\_\_\_\_ feet  
 Casing Volume (feet of water x Casing DIA<sup>2</sup> x 0.0408) 2.0 gallons  
 Depth Measurement Method Tape & Paste / Electronic Sounder / Other  
 Free Product top of product = 22' 8 1/2" (product thickness = 3/8") *no visible product but heavy sheen/odor*  
 Purge Method disposable bailer

*very fast recharge*

### FIELD MEASUREMENTS

Gallons Removed	pH	Temp (°C)	Conductivity (micromhos/cm)	Salinity S%	Comments
1	6.45	19.0	525		<i>mainly / strong odor</i> 
2	6.41	18.5	650		
3	6.42	18.5	650		
4	6.29	18.5	650		
6	6.31	18.5	650		

Total Gallons Purged 6 gallons  
 Depth to Groundwater Before Sampling (below TOC) 22.76 feet  
 Sampling Method disposable bailer  
 Containers Used 4 \_\_\_\_\_ liter \_\_\_\_\_ pint  
40 ml

Subsurface Consultants			PLATE
	JOB NUMBER	DATE	APPROVED



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

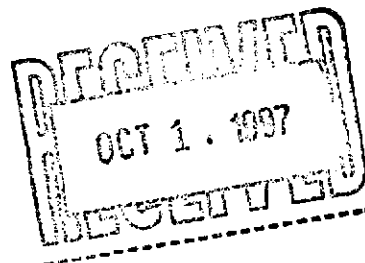
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

A N A L Y T I C A L   R E P O R T

Prepared for:

Subsurface Consultants  
3736 Mt. Diablo Blvd.  
Suite 200  
Lafayette, CA 94549

Date: 15-OCT-97  
Lab Job Number: 130869  
Project ID: N/A  
Location: 34th St.



Reviewed by: 

Reviewed by: 

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Curtis & Tompkins, Ltd.

Laboratory Number: 130869  
Client: **Subsurface Consultants**  
Site: 34th St.

Sample Date:10/02/97  
Receipt Date:10/02/97

**FINGERPRINT - TVH**

Client Sample I.D

Curtis & Tompkins I.D

MW-2

130869-002

On 10/14/97, the above sample was analyzed by EPA 8015M. The chromatogram for this sample was then compared to our Gasoline fuel standard for TVH analysis. The sample chromatogram resembles that of the Gasoline standard, although some of the earlier peaks in the standard do not appear in the sample. This is probably an indication of the effects of weathering over time. Enclosed you will find the chromatograms for the sample and the Gasoline standard chromatogram that the sample was compared with.

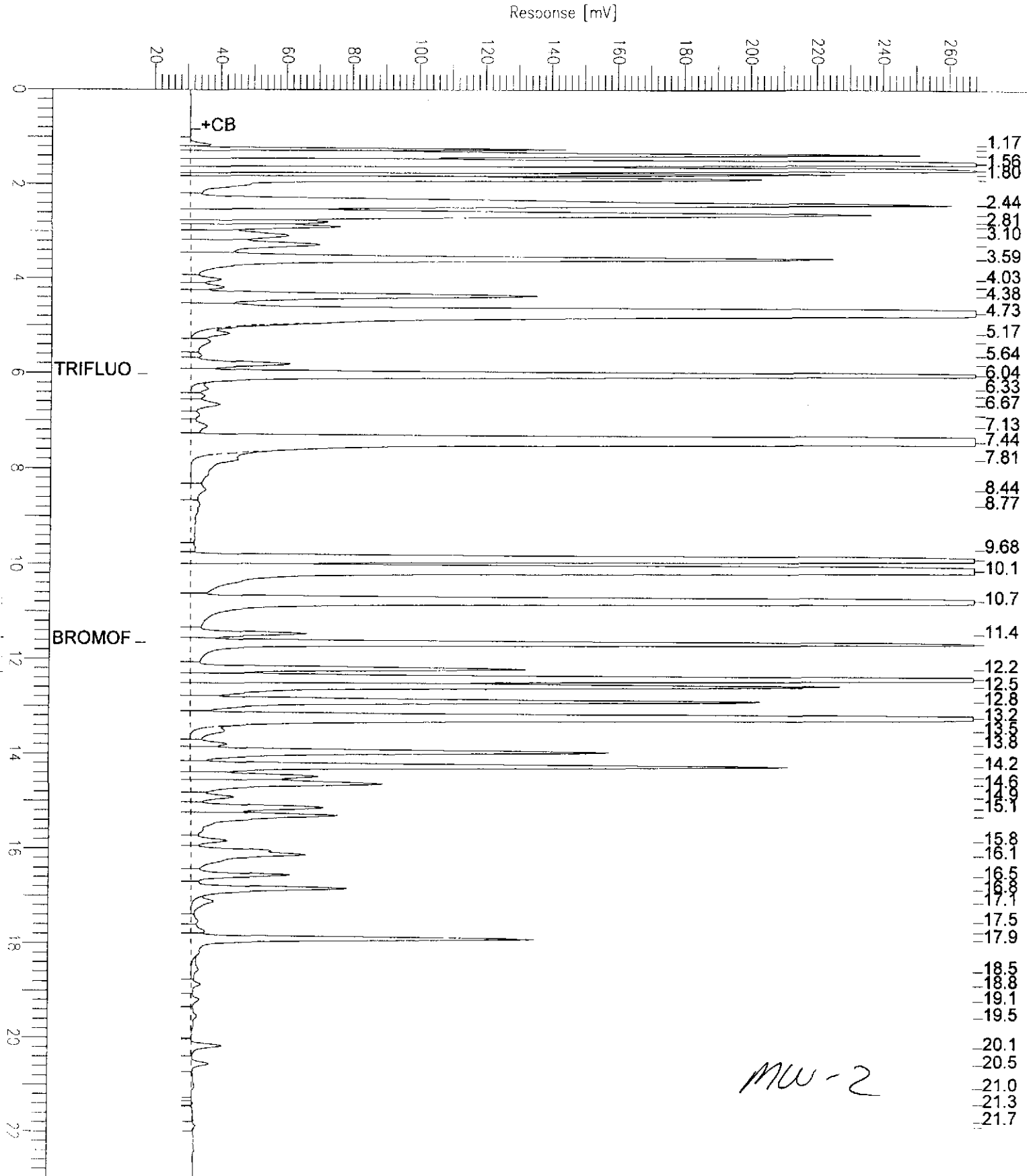
# GC07 TVH 'F' Data File RTX-1

Sample Name : RR,D,130869-002,36866,  
 FileName : G:\GC07\DATA\286F020.raw  
 Method : TVHBTXE  
 Start Time : 0.00 min  
 Scale Factor : -1.0

End Time : 23.00 min  
 Plot Offset : 18 mV

Sample # :  
 Date : 10/14/97 03:22 AM  
 Time of Injection: 10/14/97 02:59 AM  
 Low Point : 18.09 mV  
 High Point : 268.09 mV  
 Plot Scale: 250.0 mV

Page 1 of 1

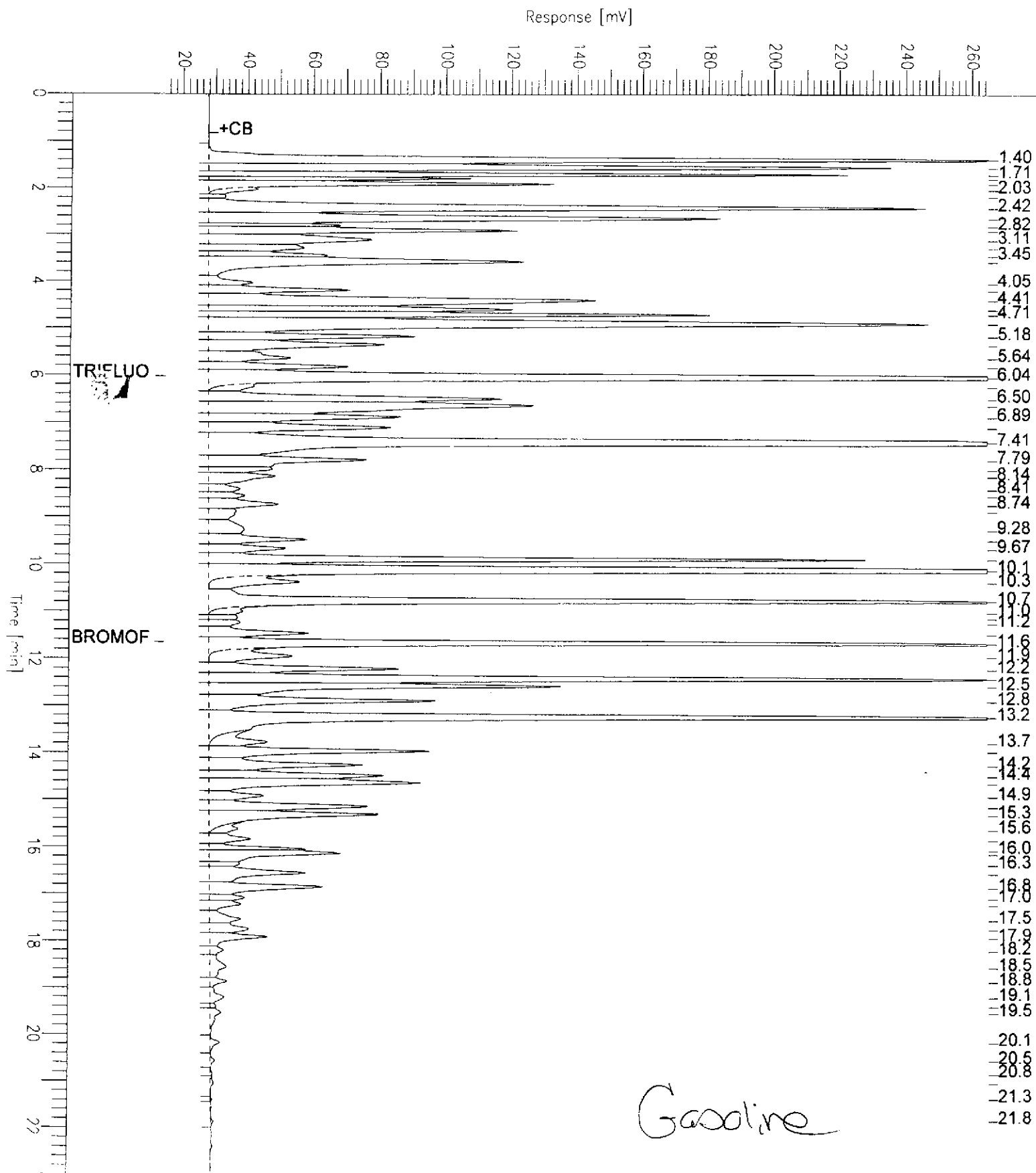


# GC07 TVH 'F' Data File RTX-1

Sample Name : BS.QC56375,97WS4844,36866,  
 FileName : G:\GC07\DATA\286F014.raw  
 Method : TVHBTXE  
 Start Time : 0.00 min  
 Scale Factor: -1.0

End Time : 23.00 min  
 Plot Offset: 15 mV

Sample #: GAS  
 Date : 10/14/97 12:34 AM  
 Time of Injection: 10/14/97 12:11 AM  
 Low Point : 15.11 mV  
 High Point : 265.11 mV  
 Plot Scale: 250.0 mV



## TVH-Total Volatile Hydrocarbons

Client: Subsurface Consultants	Analysis Method: TVH
Location: 34th St.	Prep Method: EPA 5030

Sample #	Client ID	Batch #	Sampled	Extracted	Analyzed	Moisture
130869-001	MW-1	36754	10/02/97	10/08/97	10/08/97	
130869-003	MW-3	36866	10/02/97	10/14/97	10/14/97	

Matrix: Water

Analyte	Units	130869-001	130869-003
Diln Fac:		1	10
Gasoline C7-C12	ug/L	<50	36000
Surrogate			
Bromofluorobenzene	%REC	107	118

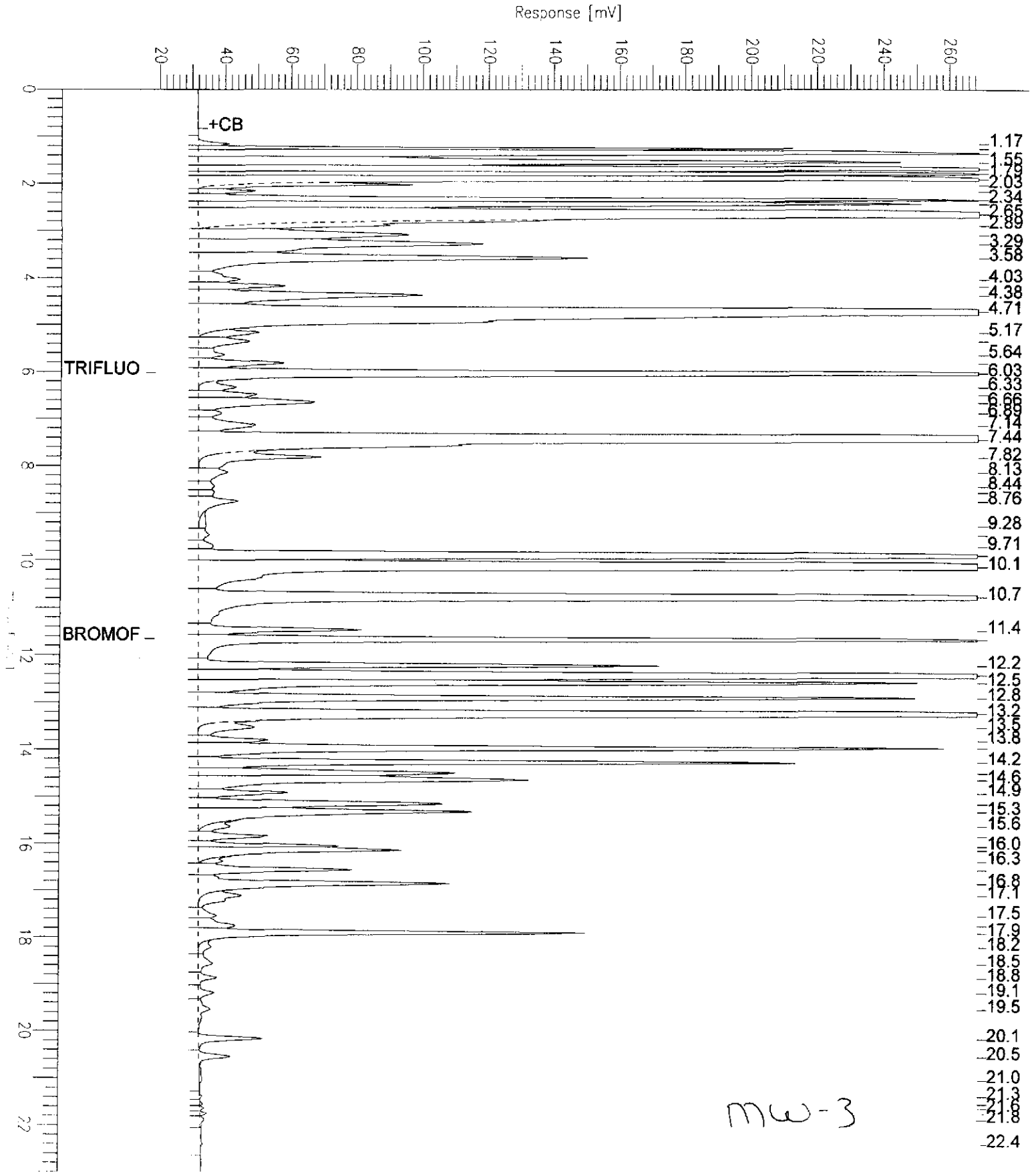


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Sample Name : RR,D,130869-003,36866,  
 FileName : G:\GC07\DATA\286F022.raw  
 Method : TVHBTXE  
 Start Time : 0.00 min  
 Scale Factor: -1.0

End Time : 23.00 min  
 Plot Offset: 19 mV

Sample #: Page 1 of 1  
 Date : 10/14/97 04:18 AM  
 Time of Injection: 10/14/97 03:55 AM  
 Low Point : 19.02 mV High Point : 269.02 mV  
 Plot Scale: 250.0 mV

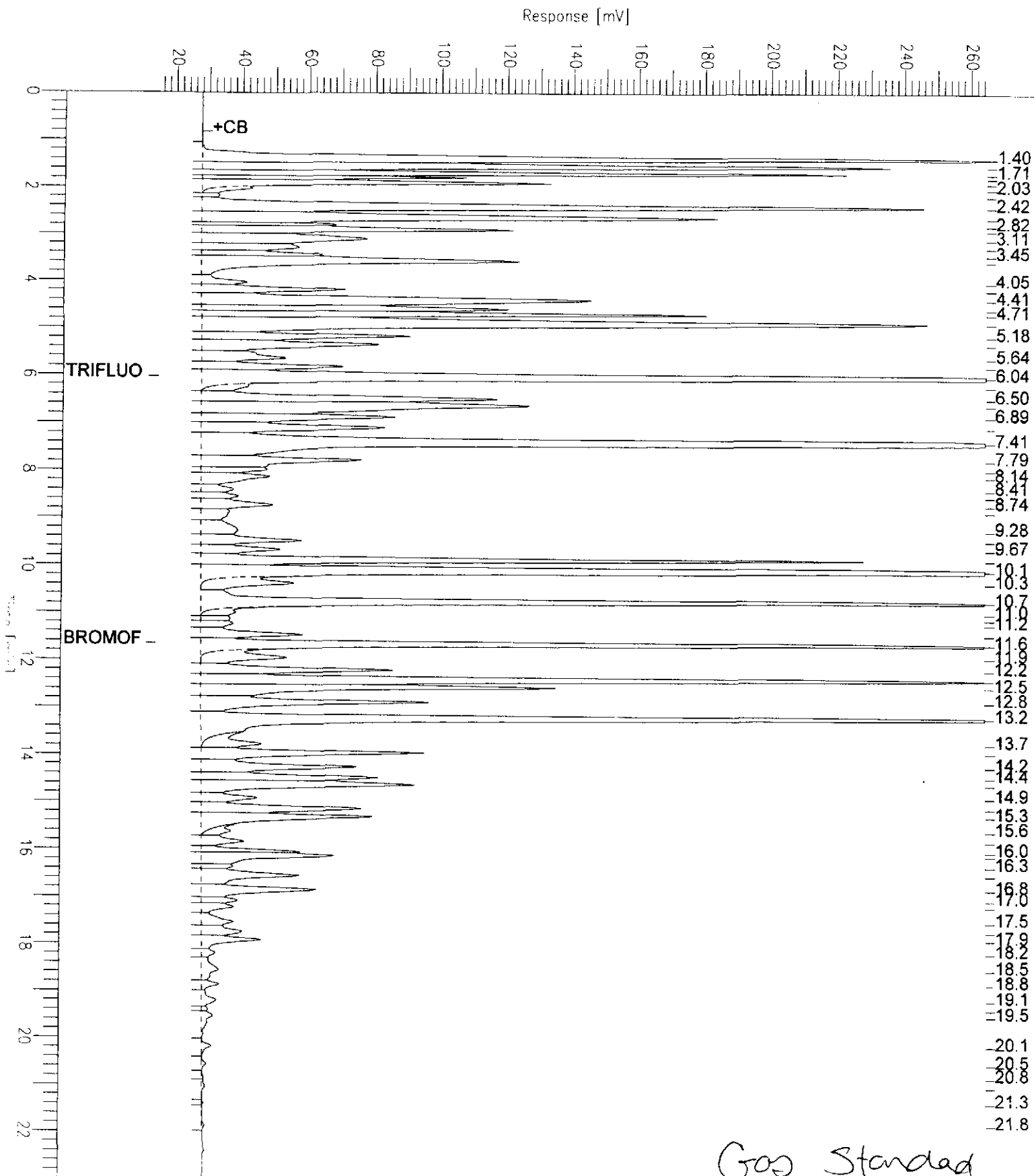


mw-3

# GC07 TVH 'F' Data File RTX-1

Sample Name : BS, QC56375, 97WS4844, 36866,  
 FileName : G:\GC07\DATA\286F014.raw  
 Method : TVHBTXE  
 Start Time : 0.00 min  
 Scale Factor : -1.0

Sample #: GAS  
 Date : 10/14/97 12:34 AM  
 Time of Injection: 10/14/97 12:11 AM  
 Low Point : 15.11 mV  
 High Point : 265.11 mV  
 End Time : 23.00 min  
 Plot Offset: 15 mV  
 Plot Scale: 250.0 mV



Gas Standard.

Lab #: 130869

BATCH QC REPORT



Curtis & Joseph, Inc.  
Page 1 of 1

TVH-Total Volatile Hydrocarbons

Client: Subsurface Consultants  
Location: 34th St.

Analysis Method: TVH  
Prep Method: EPA 5030

METHOD BLANK

Matrix: Water  
Batch#: 36754  
Units: ug/L  
Diln Fac: 1

Prep Date: 10/08/97  
Analysis Date: 10/08/97

MB Lab ID: QC55970

Analyte	Result	
Gasoline C7-C12	<50	
Surrogate	%Rec	Recovery Limits
Bromofluorobenzene	96	65-135

Lab #: 130869

BATCH QC REPORT



Curtis & Tompkins, Inc. Page 1 of 1

TVH-Total Volatile Hydrocarbons

Client: Subsurface Consultants  
Location: 34th St.

Analysis Method: TVH  
Prep Method: EPA 5030

METHOD BLANK

Matrix: Water  
Batch#: 36866  
Units: ug/L  
Diln Fac: 1

Prep Date: 10/13/97  
Analysis Date: 10/13/97

MB Lab ID: QC56374

Analyte	Result	
Gasoline C7-C12	<50	
Surrogate	%Rec	Recovery Limits
Bromofluorobenzene	104	65-135

Lab #: 130869

BATCH QC REPORT



Curtis & Jenkins Ltd

TVH-Total Volatile Hydrocarbons

Client: Subsurface Consultants  
Location: 34th St.

Analysis Method: TVH  
Prep Method: EPA 5030

LABORATORY CONTROL SAMPLE

Matrix: Water  
Batch#: 36754  
Units: ug/L  
Diln Fac: 1

Prep Date: 10/08/97  
Analysis Date: 10/08/97

LCS Lab ID: QC55968

Analyte	Result	Spike Added	%Rec #	Limits
Gasoline C7-C12	2006	2000	100	75-125
Surrogate	%Rec	Limits		
Bromofluorobenzene	122	65-135		

# Column to be used to flag recovery and RPD values with an asterisk

\* Values outside of QC limits

Spike Recovery: 0 out of 1 outside limits

Lab #: 130869

BATCH QC REPORT



TVH-Total Volatile Hydrocarbons			
Client: Subsurface Consultants	Analysis Method: TVH		
Location: 34th St.	Prep Method: EPA 5030		
BLANK SPIKE/BLANK SPIKE DUPLICATE			
Matrix: Water	Prep Date: 10/14/97		
Batch#: 36866	Analysis Date: 10/14/97		
Units: ug/L			
Diln Fac: 1			

BS Lab ID: QC56375

Analyte	Spike Added	BS	%Rec #	Limits
Gasoline C7-C12	2000	2023	101	75-125
Surrogate	%Rec	Limits		
Bromofluorobenzene	114	65-135		

BSD Lab ID: QC56376

Analyte	Spike Added	BSD	%Rec #	Limits	RPD #	Limit
Gasoline C7-C12	2000	2018	101	75-125	0	35
Surrogate	%Rec	Limits				
Bromofluorobenzene	111	65-135				

# Column to be used to flag recovery and RPD values with an asterisk

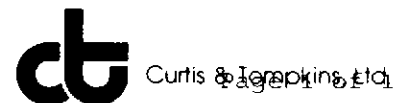
\* Values outside of QC limits

RPD: 0 out of 1 outside limits

Spike Recovery: 0 out of 2 outside limits

Lab #: 130869

BATCH QC REPORT



TVH-Total Volatile Hydrocarbons	
Client: Subsurface Consultants	Analysis Method: TVH
Location: 34th St.	Prep Method: EPA 5030
MATRIX SPIKE/MATRIX SPIKE DUPLICATE	
Field ID: ZZZZZZ	Sample Date: 09/24/97
Lab ID: 130841-007	Received Date: 09/26/97
Matrix: Water	Prep Date: 10/08/97
Batch#: 36754	Analysis Date: 10/08/97
Units: ug/L	
Diln Fac: 1	

MS Lab ID: QC55971

Analyte	Spike Added	Sample	MS	%Rec #	Limits
Gasoline C7-C12	2000	18000	2024	101	75-125
Surrogate	%Rec	Limits			
Bromofluorobenzene	130	65-135			

MSD Lab ID: QC55972

Analyte	Spike Added	MSD	%Rec #	Limits	RPD #	Limit
Gasoline C7-C12	2000	2065	103	75-125	2	35
Surrogate	%Rec	Limits				
Bromofluorobenzene	126	65-135				

# Column to be used to flag recovery and RPD values with an asterisk

\* Values outside of QC limits

RPD: 0 out of 1 outside limits

Spike Recovery: 0 out of 2 outside limits



Aromatic Volatile Organics  
EPA 8020 Analyte List

Client: Subsurface Consultants	Analysis Method: EPA 8260
Location: 34th St.	Prep Method: EPA 5030
Field ID: MW-1	Sampled: 10/02/97
Lab ID: 130869-001	Received: 10/02/97
Matrix: Water	Extracted: 10/13/97
Batch#: 36840	Analyzed: 10/13/97
Units: ug/L	
Diln Fac: 1	

Analyte	Result	Reporting Limit
MTBE	ND	2.0
Benzene	ND	0.5
Toluene	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5

Surrogate	%Recovery	Recovery Limits
Toluene-d8	99	92-107
Bromofluorobenzene	95	80-121
1,2-Dichloroethane-d4	96	87-121



Aromatic Volatile Organics  
EPA 8020 Analyte List

Client: Subsurface Consultants	Analysis Method: EPA 8260
Location: 34th St.	Prep Method: EPA 5030
Field ID: MW-3	Sampled: 10/02/97
Lab ID: 130869-003	Received: 10/02/97
Matrix: Water	Extracted: 10/13/97
Batch#: 36840	Analyzed: 10/13/97
Units: ug/L	
Diln Fac: 100	

Analyte	Result	Reporting Limit
MTBE	3500	200
Benzene	4200	50
Toluene	11000	50
Ethylbenzene	1800	50
m,p-Xylenes	7600	50
o-Xylene	3000	50

Surrogate	%Recovery	Recovery Limits
Toluene-d8	99	92-107
Bromofluorobenzene	94	80-121
1,2-Dichloroethane-d4	93	87-121


 Purgeable Aromatics by GC/MS  
 EPA 8020 Analyte List

 Client: Subsurface Consultants  
 Location: 34th St.

 Analysis Method: EPA 8260  
 Prep Method: EPA 5030

## LABORATORY CONTROL SAMPLE

 Matrix: Water  
 Batch#: 36840  
 Units: ug/L  
 Diln Fac: 1

 Prep Date: 10/13/97  
 Analysis Date: 10/13/97

LCS Lab ID: QC56275

Analyte	Result	Spike Added	%Rec #	Limits
Benzene	52.15	50	104	86-116
Toluene	54.91	50	110	83-118
Surrogate	%Rec	Limits		
Toluene-d8	101	92-107		
Bromofluorobenzene	92	80-121		
1,2-Dichloroethane-d4	96	87-121		

# Column to be used to flag recovery and RPD values with an asterisk

\* Values outside of QC limits

Spike Recovery: 0 out of 2 outside limits

Lab #: 130869

BATCH QC REPORT



Curtis & Tompkins, Ltd.  
Page 1 of 1

Purgeable Aromatics by GC/MS  
EPA 8020 Analyte List

Client: Subsurface Consultants  
Location: 34th St.

Analysis Method: EPA 8260  
Prep Method: EPA 5030

METHOD BLANK

Matrix: Water  
Batch#: 36840  
Units: ug/L  
Diln Fac: 1

Prep Date: 10/13/97  
Analysis Date: 10/13/97

MB Lab ID: QC56276

Analyte	Result	Reporting Limit
MTBE	ND	2.0
Benzene	ND	0.5
Toluene	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5

Surrogate	%Rec	Recovery Limits
Toluene-d8	101	92-107
Bromofluorobenzene	95	80-121
1,2-Dichloroethane-d4	90	87-121



Purgeable Aromatics by GC/MS  
EPA 8020 Analyte List

Client: Subsurface Consultants  
Location: 34th St.

Analysis Method: EPA 8260  
Prep Method: EPA 5030

## METHOD BLANK

Matrix: Water  
Batch#: 36840  
Units: ug/L  
Diln Fac: 1

Prep Date: 10/13/97  
Analysis Date: 10/13/97

MB Lab ID: QC56288

Analyte	Result	Reporting Limit
MTBE	ND	2.0
Benzene	ND	0.5
Toluene	ND	0.5
Ethylbenzene	ND	0.5
m,p-Xylenes	ND	0.5
o-Xylene	ND	0.5
Surrogate	%Rec	Recovery Limits
Toluene-d8	102	92-107
Bromofluorobenzene	94	80-121
1,2-Dichloroethane-d4	91	87-121

Purgeable Aromatics by GC/MS  
 EPA 8020 Analyte List

 Client: Subsurface Consultants  
 Location: 34th St.

 Analysis Method: EPA 8260  
 Prep Method: EPA 5030

## MATRIX SPIKE/MATRIX SPIKE DUPLICATE

 Field ID: ZZZZZZ  
 Lab ID: 130989-001  
 Matrix: Water  
 Batch#: 36840  
 Units: ug/L  
 Diln Fac: 1

 Sample Date: 10/10/97  
 Received Date: 10/11/97  
 Prep Date: 10/13/97  
 Analysis Date: 10/13/97

MS Lab ID: QC56285

Analyte	Spike Added	Sample	MS	%Rec #	Limits
Benzene	50	<0.5	50.24	100	81-114
Toluene	50	<0.5	51.45	103	78-114
Surrogate	%Rec	Limits			
Toluene-d8	99	92-107			
Bromofluorobenzene	92	80-121			
1,2-Dichloroethane-d4	96	87-121			

MSD Lab ID: QC56286

Analyte	Spike Added	MSD	%Rec #	Limits	RPD #	Limit
Benzene	50	50.65	101	81-114	1	5
Toluene	50	54.45	109	78-114	6 *	5
Surrogate	%Rec	Limits				
Toluene-d8	104	92-107				
Bromofluorobenzene	93	80-121				
1,2-Dichloroethane-d4	90	87-121				

# Column to be used to flag recovery and RPD values with an asterisk

\* Values outside of QC limits

RPD: 1 out of 2 outside limits

Spike Recovery: 0 out of 4 outside limits

# CHAIN OF CUSTODY FORM

30869

PROJECT NAME: 34th St.  
 JOB NUMBER: 447.068 LAB: Curtisa Tompkins  
 PROJECT CONTACT: Samuel Won TURNAROUND: Normal  
 SAMPLED BY: Dennis Alexander REQUESTED BY: Samuel Won

ANALYSIS REQUESTED									

LABORATORY I.D. NUMBER	SCI SAMPLE NUMBER	MATRIX					CONTAINERS				METHOD PRESERVED					SAMPLING DATE				NOTES	T/H	B/E	M/B
		WATER	SOIL	WASTE	AIR		VOA	LITER	PINT	TUBE		HCL	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	ICE	NONE	MONTH	DAY	YEAR				
	MW-1	X					4				X		X			10	02	97	1345	X	X	X	
	MW-2	X					4				X		X			10	02	97	1530*	X	X	X	
	MW-3	X					4				X		X			10	02	97	1445*	X	X	X	

CHAIN OF CUSTODY RECORD			
RELEASED BY: (Signature)	DATE / TIME	RECEIVED BY: (Signature)	DATE / TIME
<u>Dennis Alexander</u>	<u>10/2/97 10:00</u>	<u>[Signature]</u>	<u>10/2/97 16:00</u>
RELEASED BY: (Signature)	DATE / TIME	RECEIVED BY: (Signature)	DATE / TIME
RELEASED BY: (Signature)	DATE / TIME	RECEIVED BY: (Signature)	DATE / TIME
RELEASED BY: (Signature)	DATE / TIME	RECEIVED BY: (Signature)	DATE / TIME

COMMENTS & NOTES: \* These samples came from wells with product in them. Possible high concentrations!  
 as total -> MW-2  
 MW-3 wait/further action

**Subsurface Consultants, Inc.**  
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