Subsurface Consultants, Inc.

Per McNar, CAP will be implemented soon.

March 10, 2000
SCI 838.006

Ms. Eva Chu
Hazardous Materials Specialist
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway #250
Alameda, California 94502-6577

ENVIRONMENTAL PROTECTION
00 MAR 13 PM 1:23

Groundwater Monitoring Event - December 1999
2801 MacArthur Boulevard
Oakland, California

Dear Ms. Chu:

This letter records the results of a semi-annual groundwater monitoring event performed by Subsurface Consultants, Inc. (SCI) at the above referenced property (herein referenced as the Site). The Site is situated at the west corner of the intersection of MacArthur Boulevard and Coolidge Avenue in Oakland, California (Plate 1).

Groundwater monitoring had been periodically conducted at the Site from October 1990 to November 1996. Monitoring had resumed on a semi-annual basis for one year in June 1999, as requested by Alameda County Health Care Services Agency (ACHCSA). The current program includes: 1) measuring groundwater levels and checking for the presence of free-product in all accessible wells and piezometers, and 2) obtaining groundwater samples from selected sampling points. The samples are to be analyzed for total volatile hydrocarbons as gasoline (TVHg), benzene, toluene, ethylbenzene and total xylenes (BTEX), and methyl tertiary butyl ether (MtBE).

BACKGROUND

The Site has been commercially developed since the early 1930s, and records indicate that the Site has a long history of use as a gasoline service station. In May 1989, three underground storage tanks (USTs) and associated fuel dispensing underground lines were removed from the Site. Approximately 435 cubic yards of gasoline impacted soil were subsequently excavated to a depth of 15 feet below ground surface (bgs), removed from the Site, and clean fill was placed into the resulting excavation. A 1,000 gallon waste oil tank was also removed from the Site in July 1989.

3736 Mt. Diablo Boulevard ▪ Suite 200 ▪ Lafayette, California 94549-3659 ▪ 925 299.7960 ▪ FAX 925 299 7970

171 – 12th Street ▪ Suite 202 ▪ Oakland, California 94607-4911 ▪ 510.268.0461 ▪ FAX 510 268 0137

Remnants of old underground fuel lines encountered during excavation activities were also removed at this time. The former service station building is currently being used by an auto repair business. No USTs are in use at the Site.

Numerous wells, piezometers, and borings have been installed to investigate the extent of soil and groundwater impacts on at the Site (Plate 2). Groundwater monitoring performed at the Site between 1990 and 1996 showed that gasoline constituents had migrated about 150 feet down gradient (to the southwest) from the apparent source area near the pump islands and former tank excavations.

GROUNDWATER MONITORING ACTIVITIES

Sampling

Wells M-2, M-4 M-5 and M-6, and piezometers P-2 and P-3 were purged and sampled during this semi-annual event. On December 8, 1999, depth-to-water and free product thicknesses were measured in all accessible Site wells and piezometers. Historic depth-to-water measurements and groundwater elevations are presented in Table 1. Wells and piezometers were then purged by removing water with new disposable bailers until measurements of pH, temperature, and conductivity had stabilized (approximately three well volumes). The purge water was placed in 55-gallon drums and remains onsite, pending later disposal by a waste removal subcontractor.

When water levels recharged to within 80 percent of their initial level, samples were obtained with new disposable bailers. Groundwater samples were decanted into pre-cleaned containers supplied by the analytical laboratory. The samples were stored in ice-filled coolers until delivery to the laboratory. Chain-of-custody records accompanied the samples. Field activities are summarized on the attached well sampling forms.

Analytical Testing

Curtis & Tompkins, Ltd., a state-certified chemical testing laboratory, performed chemical analyses on selected groundwater samples. Samples were analyzed using the following methods:

Analysis	Sample Preparation Method	Analysis Method
Total Volatile Hydrocarbons (TVHg)	EPA 5030	EPA 8015M
Benzene, Toluene, Ethylbenzene, Total Xylenes (BTEX)	EPA 5030	EPA 8021
Methyl Tertiary Butyl Ether (MtBE)	EPA 5030	EPA 8260A

A summary of the current and previous analytical test results is presented in Table 2. Field sampling forms, analytical test reports, and chain-of-custody documents for this event are also attached.

DISCUSSION

Groundwater Levels & Flow Direction

Groundwater levels measured during the December 1999 event are generally consistent with those obtained from previous events (Table 1). The groundwater level data indicates that the groundwater flow direction is toward the southwest at a gradient of approximately 8 percent. The groundwater flow direction has been consistently to the south to southwest at gradients varying from approximately 2 to 10 percent throughout the monitoring program. Groundwater contours for this event are shown on Plate 3.

Free Product

No free product was encountered during this event in any of the wells or piezometers located onsite.

Sample Well Test Results

TVHg

Analyses detected TVHg in groundwater samples from all wells and piezometers sampled during this event, except for M-5, at concentrations ranging from 120 micrograms per liter (ug/L) in sample M-6 to 32,000 ug/L in sample P-2. No TVHg has been detected in M-5 for the last six sampling events (dating back to August 1994). Detected TVHg concentrations are generally consistent with those detected during previous monitoring events. Concentrations have historically fluctuated seasonally.

BTEX

Analyses detected BTEX in groundwater samples from all wells and piezometers sampled during this event, except for M-5. No BTEX has been detected in M-5 for the last six sampling events (dating back to August 1994). Detected benzene concentrations in groundwater samples ranged from 3.7 ug/L in M-6 to 3,700 ug/L in P-3. Detected BTEX concentrations are generally consistent with those detected during previous monitoring events. Concentrations have historically fluctuated seasonally.

MtBE

Analyses detected no MtBE concentrations at or above the analytical reporting limit, in any of the groundwater samples tested.

CONCLUSION

Based on the historical and current groundwater monitoring data, it appears that the gasoline constituent concentrations detected in groundwater samples during this event are consistent with those observed in the past. Higher concentrations have historically detected during the winter when water levels are elevated. This phenomenon may be explained by capillary fringe hydrocarbons becoming mobilized by vertical water table fluctuation during winter.

We trust this provides the information required at this time. If you have any questions, please contact either of the undersigned.

Yours very truly,

Subsurface Consultants, Inc.

Gene Y. Ng
Staff Engineer

Jeriann N. Alexander
Civil Engineer 40469 (expires 3/03)
Registered Environmental Assessor 03130 (expires 6/00)

GYN: JNA: rm: 838.006/GWMNTG_12_99.doc

Attachments:
Table 1 - Summary of Groundwater Elevation Data
Table 2 - Summary of Groundwater Analytical Results
Plate 1 - Site Location Map
Plate 2 - Site Plan
Plate 3 - Groundwater Elevation Contours, December 1999
Well Sampling Forms
Analytical Test Reports
Chain-of-Custody Records

cc: 2 copies
Ms. Aniko Molnar
Environmental Consultant
7 Morning Sun Avenue
Mill Valley, California 94941

1 copy
APA Fund Ltd.
c/o Mr. Nicholas Molnar
1904 Franklin Street, Suite 501
Oakland, California 94612

Table 1
Summary of Groundwater Elevation Data
2801 MacArthur Boulevard
Oakland, California

Well	TOC[1] Elevation (feet)	Date	Groundwater Depth (feet)	Groundwater Elevation (feet)
M-1	1000	10/24/90	36.1	963.9
		10/25/90	36.1	963.9
		11/2/90	36.4	963.6
		11/6/90	36.8	963.2
		11/16/90	36.8	963.2
		11/23/90	36.9	963.1
		11/28/90	37.0	963.0
		12/5/90	37.2	962.8
		3/18/91	35.8	964.2
		3/29/91	32.4	967.6
		4/3/91	31.9	968.1
		4/9/91	31.6	968.4
		4/16/91	31.2	968.8
		1/23/92	35.5	964.5
		3/9/93	29.1	970.9
		6/1/93	27.5	972.5
		12/13/93	33.9	966.1
		3/7/94	32.3	967.7
		8/23/94	32.3	967.7
		10/11/94	34.1	965.9
		4/26/95	24.4	975.6
		10/27/95	31.3	968.7
		1/22/96	31.1	968.9
		4/15/96	25.6	974.4
		7/10/96	27.7	972.3
		12/1/98	--	paved over
M-2	999.6	4/30/91	31.1	968.5
		5/7/91	31.3	968.3
		1/16/92	35.1	964.5
		3/9/93	33.6	966.0
		5/17/93	27.2	972.4
		6/1/93	27.6	972.0
		8/17/93	30.4	969.2

Table 1
Summary of Groundwater Elevation Data
2801 MacArthur Boulevard
Oakland, California

Well	TOC[1] Elevation (feet)	Date	Groundwater Depth (feet)	Groundwater Elevation (feet)
M-2 (cont.)		12/13/93	34.0	965.6
		3/7/94	30.1	969.5
		8/23/94	32.3	967.3
		10/11/94	34.2	965.4
		4/26/95	24.4	975.2
		10/27/95	31.4	968.2
		1/22/96	31.2	968.4
		4/15/96	25.6	974.0
		7/10/96	27.8	971.8
		12/1/98	30.9	968.7
		6/23/99	27.3	972.4
		12/8/99	33.7	965.9
M-3	992.8	5/17/93	22.2	970.6
		6/1/93	23.3	969.5
		8/17/93	25.0	967.8
		12/13/93	25.8	967.0
		3/7/94	23.1	969.7
		8/23/94	25.8	967.0
		10/11/94	27.4	965.4
		4/26/95	19.6	973.2
		10/27/95	25.4	967.4
		1/22/96	24.2	968.6
		4/15/96	20.9	971.9
		7/10/96	22.9	969.9
		12/1/98	23.5	969.3
		12/8/99	26.3	966.5
M-4	999.6	5/17/93	33.8	965.8
		6/1/93	32.5	967.1
		12/13/93	36.8	962.8
		3/7/94	33.0	966.6
		8/23/94	35.4	964.2
		10/11/94	37.1	962.5

Table 1
Summary of Groundwater Elevation Data
2801 MacArthur Boulevard
Oakland, California

Well	TOC[1] Elevation (feet)	Date	Groundwater Depth (feet)	Groundwater Elevation (feet)
M-4 (cont.)		4/26/95	29.8	969.8
		10/27/95	34.2	965.4
		1/22/96	30.1	969.5
		4/15/96	30.1	969.5
		7/10/96	32.0	967.6
		12/1/98	34.5	965.1
		6/23/99	31.8	967.8
		12/8/99	35.4	964.3
M-5	992.9	8/23/94	31.8	961.1
		10/11/94	33.6	959.3
		4/26/95	20.5	972.4
		10/27/95	31.5	961.4
		1/22/96	25.6	967.3
		4/15/96	21.7	971.2
		7/10/96	26.8	966.1
		12/1/98	28.8	964.1
		6/23/99	26.5	966.4
		12/8/99	32.1	960.9
M-6	997.7	8/23/94	41.2	956.5
		10/11/94	38.2	959.5
		4/26/95	27.8	969.9
		10/27/95	34.9	962.8
		1/22/96	22.0	975.7
		4/15/96	28.5	969.2
		7/10/96	32.6	965.1
		12/1/98	--	inaccessible
		6/23/99	31.7	966.0
		12/8/99	36.3	961.4
P-1	999.6	10/24/90	37.9	961.7
		10/25/90	38.0	961.6
		11/2/90	38.4	961.2

Table 1
Summary of Groundwater Elevation Data
2801 MacArthur Boulevard
Oakland, California

Well	TOC[1] Elevation (feet)	Date	Groundwater Depth (feet)	Groundwater Elevation (feet)
P-1		11/6/90	38.7	960.9
(cont.)		11/16/90	38.3	961.3
		11/23/90	38.1	961.5
		11/28/90	38.3	961.3
		12/5/90	38.2	961.4
		3/18/91	37.8	961.8
		3/29/91	36.9	962.7
		4/3/91	36.8	962.8
		4/9/91	36.9	962.7
		4/16/91	36.7	962.9
		4/18/91	36.8	962.8
		4/30/91	36.3	963.3
		5/7/91	36.2	963.4
		1/16/92	36.6	963.0
		3/9/93	32.8	966.8
		6/1/93	30.0	969.6
		12/13/93	33.7	965.9
		3/7/94	32.6	967.0
		8/23/94	32.7	966.9
		10/11/94	33.5	966.1
		4/26/95	27.6	972.0
		10/27/95	31.8	967.8
		1/22/96	33.3	966.3
		4/15/96	28.2	971.4
		7/10/96	29.3	970.3
		12/1/98	31.9	967.7
		12/8/99	32.7	967.0
P-2	997.8	10/24/90	41.1	956.7
		10/25/90	40.6	957.2
		11/2/90	38.4	959.4
		11/6/90	37.0	960.8
		11/16/90	37.4	960.4
		11/23/90	35.9	961.9

Table 1
Summary of Groundwater Elevation Data
2801 MacArthur Boulevard
Oakland, California

Well	TOC[1] Elevation (feet)	Date	Groundwater Depth (feet)	Groundwater Elevation (feet)
P-2 (cont.)		11/28/90	35.4	962.4
		2/5/90	35.0	962.8
		3/18/91	31.4	966.4
		3/29/91	28.2	969.6
		4/3/91	26.8	971.0
		4/9/91	26.5	971.3
		4/16/91	26.5	971.3
		4/18/91	26.5	971.3
		4/30/91	26.7	971.1
		5/7/91	27.0	970.8
		1/16/92	33.7	964.1
		3/9/93	23.6	974.2
		5/17/93	23.7	974.1
		6/1/93	24.4	973.4
		8/17/93	28.3	969.5
		12/13/93	31.0	966.8
		3/7/94	25.4	972.4
		8/23/94	30.3	967.5
		10/11/94	32.3	965.5
		4/26/95	19.9	977.9
		10/27/95	29.6	968.2
		1/22/96	27.4	970.4
		4/15/96	21.3	976.5
		7/10/96	25.0	972.8
		12/1/98	28.2	969.6
		6/23/99	24.8	973.0
		12/8/99	31.2	966.6
P-3	999.1	3/29/91	24.7	974.4
		4/3/91	25.1	974.0
		4/9/91	25.9	973.2
		4/16/91	26.2	972.9
		4/18/91	26.2	972.9
		4/30/91	26.8	972.3

Table 1
Summary of Groundwater Elevation Data
2801 MacArthur Boulevard
Oakland, California

Well	TOC[1] Elevation (feet)	Date	Groundwater Depth (feet)	Groundwater Elevation (feet)
P-3		5/7/91	27.4	971.7
(cont.)		1/23/92	32.5	966.6
		3/9/93	24.8	974.3
		6/4/93	23.9	975.2
		8/17/93	28.5	970.6
		12/13/93	29.3	969.8
		3/7/94	25.0	974.1
		8/23/94	30.1	969.0
		10/11/94	32.0	967.1
		4/26/95	20.5	978.6
		10/27/95	27.8	971.3
		1/22/96	26.7	972.4
		4/15/96	21.4	977.7
		7/10/96	25.1	974.0
		12/1/98	27.2	971.9
		6/23/99	24.5	974.6
		12/8/99	31.3	967.8

ıpecific datum. Temporary Bench Mark No. 1,
of northernmost pump island. Assumed elevation
= 1,000.0 feet.

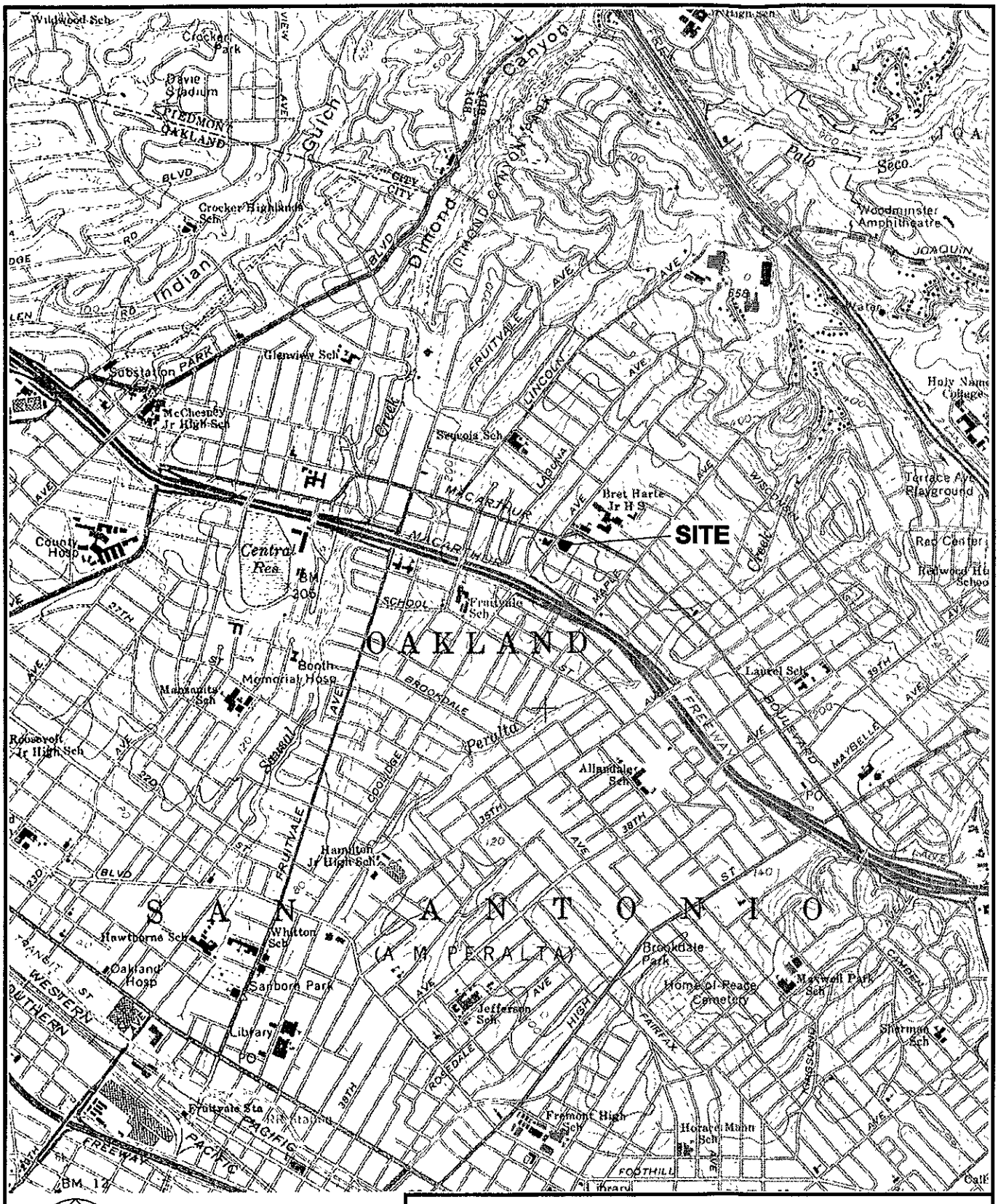
Table 2
Summary of Groundwater Analytical Results
2801 MacArthur Boulevard
Oakland, California

Sample Location	Sample Date	Groundwater Elevation (feet)	TVHg (ug/l)	Benzene (ug/l)	Toluene (ug/l)	Ethyl-benzene (ug/l)	Total Xylenes (ug/l)	MTBE (ug/l)
P-1	1/16/92	963.0	6,700	500	4.4	80	40	--
	3/9/93	966.8	5,600	1,100	29	63	120	--
P-2	11/6/90	960.4	33,000	4,700	2,100	380	630	--
	1/16/92	964.1	99,000	6,500	12,000	2,000	16,000	--
	3/9/93	974.2	70,000	5,900	11,000	2,100	12,000	--
	5/17/93	974.1	87,000	6,600	13,000	2,200	13,000	--
	8/17/93	969.5	80,000	5,800	12,000	2,000	12,000	--
	12/13/93	966.8	100,000	5,600	12,000	2,200	14,000	--
	3/7/94	972.4	77,000	5,100	11,000	2,000	12,000	--
	8/23/94	967.5	70,000	3,800	8,700	1,500	9,900	--
	4/27/95	977.5	44,000	3,600	8,500	1,500	9,300	--
	10/30/95	968.2	66,000	4,600	11,000	2,100	13,600	--
	4/17/96	976.5	58,000	4,800	9,900	1,900	12,900	--
	6/23/99	973.0	57,000	1,800	4,700	1,300	9,300	<25
	12/9/99	966.6	32,000	1,500	3,200	700	5,100	<0.5
P-3	8/17/93	970.6	900	180	65	10	93	--
	10/30/95	971.3	2000	650	45	31	156	--
	6/23/99	974.6	14,000	3,300	190	140	756	<10
	12/9/99	967.8	1,500	3,700	52	57	210	<0.5
M-2	5/7/91	968.3	16,000	1,300	950	170	890	--
	1/16/92	964.5	22,000	960	570	370	1,800	--
	3/9/93	966.0	27,000	1,100	970	490	1,400	--
	5/17/93	972.4	17,000	1,200	770	480	1,300	--
	8/17/93	969.2	20,000	1,700	910	540	1,400	--
	12/13/93	965.6	51,000	2,200	1,400	700	2,600	--
	3/7/94	969.5	28,000	1,400	900	640	1,800	--
	8/23/94	967.3	21,000	1,600	540	520	1,100	--
	4/26/95	975.2	14,000	1,200	510	490	870	--
	10/30/95	968.2	16,000	1,700	830	470	1,120	--
	4/17/96	974.0	10,000	1,300	610	380	810	--
	6/23/99	972.4	1,900	150	19	32	24.8	410
	12/9/99	965.9	11,000	560	130	240	265	<0.5
M-3	5/17/93	970.6	<50	<0.5	<0.5	<0.5	<0.5	--
	8/17/93	967.8	<50	<0.5	<0.5	<0.5	<0.5	--
	12/13/93	967.0	<50	<0.5	<0.5	<0.5	<0.5	--
	3/7/94	969.7	<50	<0.5	<0.5	<0.5	<0.5	--
	8/23/94	967.0	<50	<0.5	<0.5	<0.5	<0.5	--
	4/27/95	973.2	<50	<0.5	<0.5	<0.5	<0.5	--
M-4	5/17/93	965.8	7,500	1,200	230	11	350	--
	8/17/93	--	13,000	3,000	330	130	700	--
	12/13/93	962.8	11,000	2,700	190	90	360	--
	3/7/94	966.6	3,800	980	33	49	140	--
	8/23/94	964.2	19,000	5,800	200	460	630	--
	4/27/95	969.8	2,300	510	40	69	120	--

Table 2
Summary of Groundwater Analytical Results
2801 MacArthur Boulevard
Oakland, California

Sample Location	Sample Date	Groundwater Elevation (feet)	TVHg (ug/l)	Benzene (ug/l)	Toluene (ug/l)	Ethyl-benzene (ug/l)	Total Xylenes (ug/l)	MTBE (ug/l)
M-4	11/1/95	965.4	1,100	470	14	23	26	--
(cont.)	4/17/96	969.5	550*	330	<2.5	5.9	16.1	--
	6/23/99	967.8	4,000	<0.5	69	190	195	<0.5
	12/9/99	964.3	1,500	2,500	32	140	88	<0.5
M-5	8/23/94	961.1	<50	<0.5	<0.5	<0.5	<0.5	--
	4/27/95	972.4	<50	<0.5	<0.5	<0.5	<0.5	--
	11/1/95	961.4	<50	<0.5	<0.5	<0.5	<0.5	--
	4/17/96	971.2	<50	<0.5	<0.5	<0.5	<0.5	--
	6/23/99	966.4	<50	<0.5	<0.5	<0.5	<0.5	<0.5
	12/9/99	960.9	<50	<0.5	<0.5	<0.5	<0.5	<0.5
M-6	10/11/94	959.5	3,600	340	27	65	240	--
	4/26/95	969.9	150	9.3	<0.5	5.6	1.7	--
	11/1/95	962.8	170	0.6	<0.5	<0.5	0.6	--
	1/22/96	975.7	<50	<0.5	<0.5	<0.5	<0.5	--
	4/17/96	969.2	<50	<0.5	<0.5	<0.5	1	--
	7/12/96	965.1	<50	<0.5	<0.5	<0.5	<0.5	--
	11/7/96	--	<50	<0.5	<0.5	<0.5	<0.5	--
	6/23/99	966.0	340	14	<0.5	19	<0.5	<0.5
	12/9/99	961.4	120	3.7	<0.5	<0.5	<0.5	<0.5

TVH = Total volatile hydrocarbonsin the gasoline range.
ug/l = Micrograms per liter = parts per billion.
<50 = Analyte not present at a concentration above the stated detection limit.
* = Sample exhibits a fuel pattern which does not resemble the standard.
-- = Sample not analyzed for analyte.



SITE LOCATION MAP

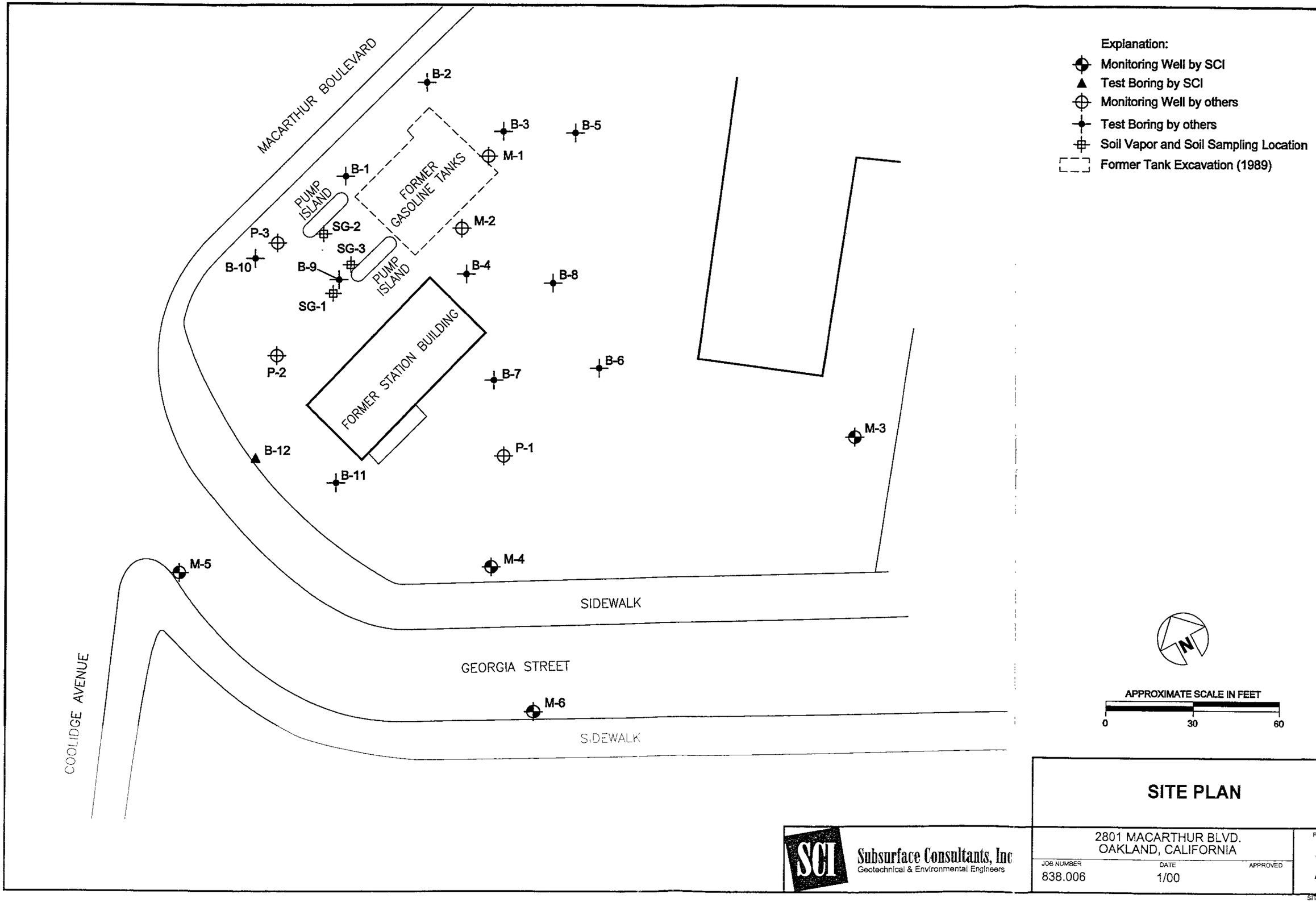
Subsurface Consultants, Inc.
Geotechnical & Environmental Engineers

2801 MACARTHUR BLVD.
OAKLAND, CALIFORNIA

JOB NUMBER	DATE	APPROVED
838.006	1/00	

PLATE
1

LOCATION.DWG



SITE PLAN

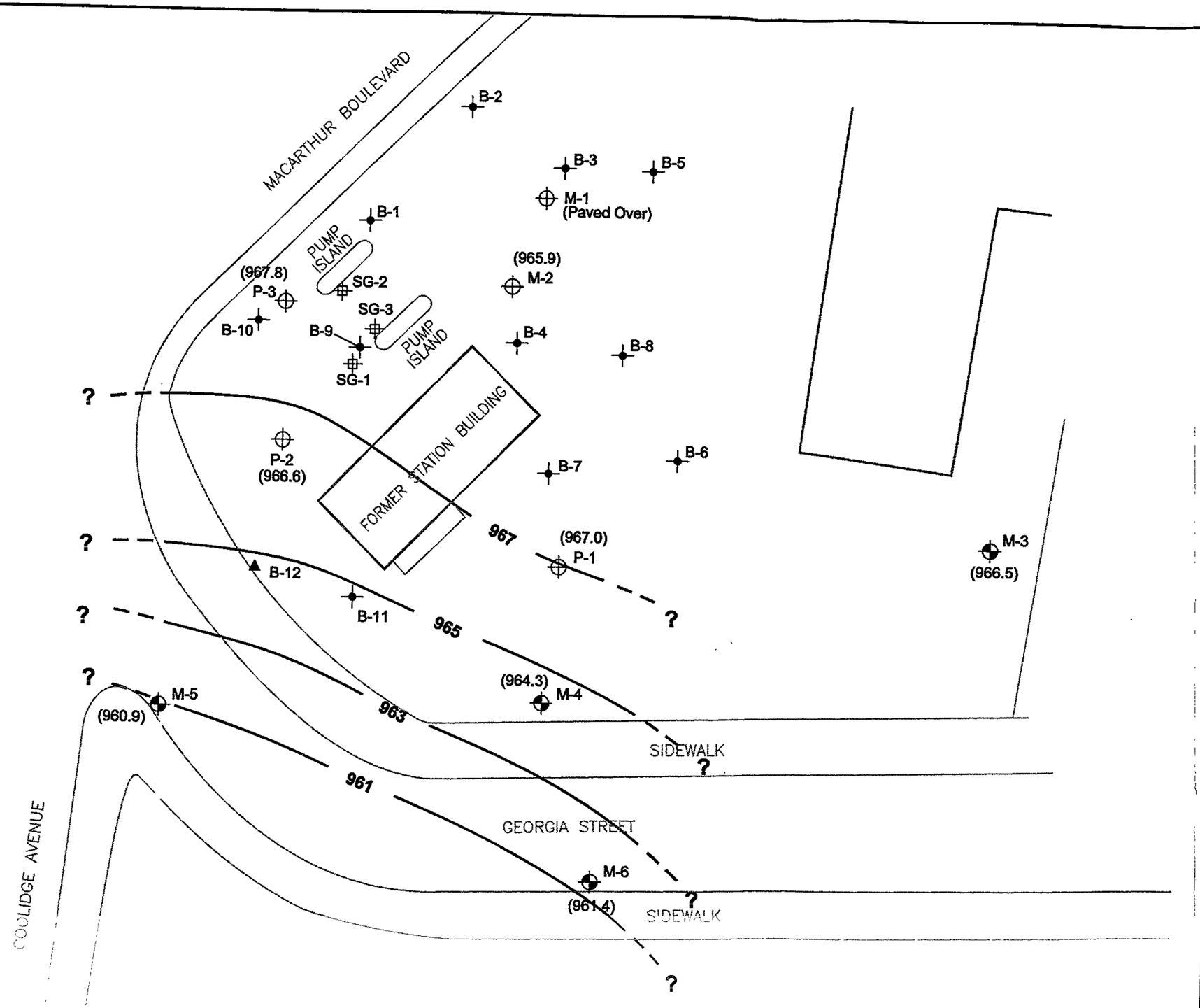
Subsurface Consultants, Inc
Geotechnical & Environmental Engineers

2801 MACARTHUR BLVD.
OAKLAND, CALIFORNIA

JOB NUMBER	DATE	APPROVED
838.006	1/00	

PLATE
2

SITEPLAN.DWG



Explanation:

- Monitoring Well by SCI
- Test Boring by SCI
- Monitoring Well by others
- Test Boring by others
- Soil Vapor and Soil Sampling Location
- (966.5) Groundwater Elevation, 12/9/99

N

APPROXIMATE SCALE IN FEET

0 30 60

GROUNDWATER ELEVATION CONTOURS, DECEMBER 1999

Subsurface Consultants, Inc.
Geotechnical & Environmental Engineers

2801 MACARTHUR BLVD.
OAKLAND, CALIFORNIA

JOB NUMBER	DATE	APPROVED	PLATE
838.006	1/00		3

SITEPLAN.DWG

GROUNDWATER DEPTHS

Project Name: APA-Fuel, 2801 McArthur Blvd.
Job No.: 838.006
Measured by: Stewart Dalie

Well	Date	Time	Groundwater Depth (feet)	Comments
P-1	12/8/99	12:45	32.65'	Slight hydrocarbon odor / clear
P-2	12/8	15:00	31.37'	Very strong hydrocarbon odor / clear
P-3	12/8	14:00	31.34'	Very strong hydrocarbon odor / sheen
M-2	12/8	13:05	33.68'	No odor, bailed strong odor, FP evacuated during purging
M-3	12/8	12:55	26.34'	No odor /
M-4	12/8	10:45	35.35'	No odor, over bailed strong hydrocarbon odor
M-5	12/8	12:00	32.05'	No odor, ok
M-6	12/8	16:00	36.29'	Nt odor, Clear ok

WELL SAMPLING FORM

Project Name: ApA fuel

Job No.: 838.006

Sampled By: Stw

TOC Elevation: —

Well Number: P-2

Well Casing Diameter: 2 inch

Date: 12/8/99

Weather: Clear cool

Depth to Casing Bottom (below TOC) 42.02 feet

Depth to Groundwater (below TOC) 31.17 feet

Feet of Water in Well 10.85 feet

Depth to Groundwater When 80% Recovered 35.34 feet

Casing Volume (feet of water x Casing DIA ^{2} x 0.0408) 5.3 gallons

Depth Measurement Method Tape & Paste / Electronic Sounder / Other

Free Product NA

Purge Method disposable bailer

FIELD MEASUREMENTS

Gallons Removed	pH	Temp (°c)	Conductivity (micromhos/cm)	DO/TDS/ORP (~~Salinity S%~~)	Comments
Ø dewhole	9.87	19.15	411	/6.64/.304/89.3	Very strong hydrocarbon odor
1	10.29	19.55	448	/5.01/.324/70.8/	clear. strong H odor
3	10.31	19.84	452	5.68/.325/55.3/	same
5 !	10.38	19.90	454.0/	4.28/.327/36.4/	slightly cloudy very strong odor + note pH (10+)
			/	/ /	/

Total Gallons Purged 5' gallons

Depth to Groundwater Before Sampling (below TOC) 12/8 40.05 - almost Dry overnight recharge 12/9 @ 33.35' bgs feet

Sampling Method disposable bailer

Containers Used 5 VOA HCl 40 ml ______ liter ______ pint

BTEX 8021
MTBE 8260
TPHg 8015M

Subsurface Consultants

JOB NUMBER 838.006 DATE 12/8/99 APPROVED PLATE

WELL SAMPLING FORM

Project Name: APA Fuel

Job No.: 838.006

Sampled By: Stu

TOC Elevation: —

Well Number: P-3

Well Casing Diameter: 2 inch

Date: 12/8/99

Weather: Clear Cool

Depth to Casing Bottom (below TOC) 45.60' feet

Depth to Groundwater (below TOC) 31.34 feet

Feet of Water in Well 14.26 feet

Depth to Groundwater When 80% Recovered 34.2' feet

Casing Volume (feet of water x Casing DIA ^{2} x 0.0408) 6.9 gallons

Depth Measurement Method (Tape & Paste) / (Electronic Sounder) / Other
not deep enough!

Free Product

Purge Method disposable bailer

FIELD MEASUREMENTS

Gallons Removed	pH	Temp (°c)	Conductivity (micromhos/cm)	DO/TDS/ORP (~~Salinity S%~~)	Comments
∅ dischole	6.46	19.23	1,037.0	6.34/.765/5.0	hydrocarbon odor
1	6.67	19.75	1,086.0	5.56/.785/-12.1	very strong odor sheen, cloudy turbid
3	6.72	19.69	1,096.0	4.37/.796/-16.2	grey, turbid sheen, H. odor
5	6.74	19.80	1,105.0	4.09/.797/-17.1	same
7	6.73	19.86	1,109.0	3.93/.800/-19.5	grayish black very strong odor very turbid, sheen

Total Gallons Purged 7' gallons

Depth to Groundwater Before Sampling (below TOC) 12/8 44.4 - 1/4 bailer - dry overnight recharge
12/9 @ 33.33' feet

Sampling Method disposable bailer

Containers Used 5 VOA w/HCl 40 ml ____ liter ____ pint

BTEX 8021
MTBE 8260
TVH-g 8021

Subsurface Consultants	JOB NUMBER 838.006	DATE 12/8/99	APPROVED	PLATE

WELL SAMPLING FORM

Project Name: ApA Fwd, Well Number: MW

Job No.: 838.006 Well Casing Diameter: 2 w inch

Sampled By: STO Date: 12/8/99

TOC Elevation: / Weather: clear cool

Depth to Casing Bottom (below TOC) 45.00 feet

Depth to Groundwater (below TOC) 33.68 feet

Feet of Water in Well 11.32 feet

Depth to Groundwater When 80% Recovered 36.0' feet

Casing Volume (feet of water x Casing DIA ^{2} x 0.0408) 5.54' gallons

Depth Measurement Method (Tape & Paste) / (Electronic Sounder) / Other

Free Product ~~NONE~~ - beads - yes!

Purge Method disposable bailer

FIELD MEASUREMENTS

Gallons Removed	pH	Temp (°c)	Conductivity (micromhos/cm)	DO / ~~Salinity~~ S%	TDS / ORP	Comments
Ø dry hole	6.41	19.39	819.0	4.35	.598 / 44.7	No odor
1	6.49	19.96	1,156.0	3.08	.832 / 19.1	Mild Hydrocarbon odor cloudy, slight sheen
3	6.67	19.64	1,120.0	3.48	.813 / 31.2	beads, Free product evidenced
5	6.67	19.59	1123.0	3.14	.814 / 29.1	Strong hydrocarbon odor
5.5	6.67	19.59	1,123.0	3.14	.814 / 32.2	Same, cloudy ~~clear~~ odor, sheen beads

Total Gallons Purged 5.5 gallons

Depth to Groundwater Before Sampling (below TOC) ~~12/8 @ 34.14'~~ 12/8 @ 42.2' curwright refuge feet

Sampling Method disposable bailer?

Containers Used 5 VOA w/ HCl (40 ml) liter pint

BTEX 8020
MTBE 8260
TVHg 8015m

Subsurface Consultants

JOB NUMBER 838.006 DATE 12/8/99 APPROVED

PLATE

WELL SAMPLING FORM

Project Name: ApA fuel

Well Number: M-4

Job No.: 838.006

Well Casing Diameter: 2" inch

Sampled By: Stu

Date: 12/8/99

TOC Elevation: –

Weather: clear cool

Depth to Casing Bottom (below TOC) 45.00 feet

Depth to Groundwater (below TOC) 35.35 feet

Feet of Water in Well 9.65 feet

Depth to Groundwater When 80% Recovered 37.28 feet

Casing Volume (feet of water x Casing DIA ^{2} x 0.0408) x 3 4.7 gallons

Depth Measurement Method Tape & Paste / Electronic Sounder / Other

Free Product N/A

Purge Method disposable bailer

FIELD MEASUREMENTS

Gallons Removed	pH	Temp (°c)	Conductivity (micromhos/cm)	DO/TDS/ORP ~~Salinity S%~~			Comments
Ø down hole	5.93	19.91	454.0	4.73	.326	12.3	no odor
1	6.24	20.00	484.0	4.07	.348	-2.1	strong hydrocarbon odor clear
3	6.68	19.36	502.0	5.19	.361	-3.9	odor, clear
5	6.41	19.85	521.0	4.35	.417	-11.6	Hydrocarbon odor clear

1/2 bailer

Total Gallons Purged 5 gallons

Depth to Groundwater Before Sampling (below TOC) 12/8 @ 44.6' - bailed dry 12/9 overnight recharge @ 36.23' feet

Sampling Method disposable bailer

Containers Used 5 VOA w/ HCl 40 ml ___ liter ___ pint

TVHg 8015 m
BTEX 8021
MTBE 8260

Subsurface Consultants

JOB NUMBER	DATE	APPROVED	PLATE
838.006	12/8/99	[signature]	

WELL SAMPLING FORM

Project Name: A&A fuel

Job No.: 838.006

Sampled By: Stu

TOC Elevation: —

Well Number: ~~M-~~ M-5

Well Casing Diameter: 2 inch

Date: 12/8/99

Weather: Clear cool

Depth to Casing Bottom (below TOC) 38.00 feet

Depth to Groundwater (below TOC) 32.05 feet

Feet of Water in Well 5.95 feet

Depth to Groundwater When 80% Recovered 33.24 feet

Casing Volume (feet of water x Casing DIA ² x 0.0408) x 3 2.9 gal gallons

Depth Measurement Method (Tape & Paste) / (Electronic Sounder) / Other

Free Product N/A

Purge Method disposable bailer

FIELD MEASUREMENTS

Gallons Removed	pH	Temp (°c)	Conductivity (micromhos/cm)	DO / TDS / ORP (~~Salinity S%~~)	Comments
Ø discharge	6.19	19.21	578.0 / 5.24 /	.423 / 175.3 /	clear, no odor
1	6.41	19.45	577.0 / 5.99 /	.419 / 213.3 /	" "
3	6.45	19.51	578.0 / 6.01 /	.420 / 237.0 /	cloudy no odor last bailer-full
			/	/ /	/
			/	/ /	/

bailer 1/4 full

Total Gallons Purged 3 gallons

Depth to Groundwater Before Sampling (below TOC) 12/8 37.25 - bailed dry! overnight, 12/9 @ 32.10 feet

Sampling Method disposable bailer

Containers Used 5 VOA w/ HCl 40 ml ____ liter ____ pint

BTEX 8021
MTBE 8260
TPHg 8015 m

Subsurface Consultants

JOB NUMBER	DATE	APPROVED	PLATE
838.006	12/8	[signature]	

WELL SAMPLING FORM

Project Name: APA fund

Well Number: M-6

Job No.: 838.006

Well Casing Diameter: 2 inch

Sampled By: Stu

Date: 12/8/99

TOC Elevation: /

Weather: Clear cool

Depth to Casing Bottom (below TOC) 47.00 feet

Depth to Groundwater (below TOC) 36.29 feet

Feet of Water in Well 10.71 feet

Depth to Groundwater When 80% Recovered 38.5 feet

Casing Volume (feet of water x Casing DIA ^{2} x 0.0408) 5.21 gallons

Depth Measurement Method Tape & Paste / ~~Electronic Sounder~~ (circled) / Other

Free Product N/A

Purge Method d. bailer

FIELD MEASUREMENTS

Gallons Removed	pH	Temp (°c)	Conductivity (micromhos/cm)	DO / ORP / TDS ~~Salinity S%~~	Comments
0 dewtrile	7.15	18.74	558.0	5.75 / -57.7 / .415	no odor
1	7.03	18.65	517.0	4.81 / -27.9 / .390	~~slight odor~~ clear suspended particles
3	7.11	19.03	545.0	4.65 / -16.7 / .401	grey, slight odor turbid, cloudy
5	7.11	19.09	554.0	5.04 / -12.9 / .406	same
				/ / /	same mild no moderate odor

Total Gallons Purged overnight recharge gallons

Depth to Groundwater Before Sampling (below TOC) 12/8 43.4' - 12/9 @ 36.55' bgs feet

Sampling Method d. bailer

Containers Used 5 VOA HCl 40 ml — liter — pint

BTEX 8021
MTBE 8260
TPH-g 8015 m

Subsurface Consultants

JOB NUMBER 838.006 DATE 12/8/99 APPROVED PLATE

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900, Fax (510) 486-0532

ANALYTICAL REPORT

Prepared for:

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

Date: 20-DEC-99
Lab Job Number: 142930
Project ID: 838.006
Location: APA Fund Task-1

Reviewed by:

Reviewed by:

142930

PAGE 1 OF 1

CHAIN OF CUSTODY FORM

PROJECT NAME: APA fund, 2801 McArthur Blvd
JOB NUMBER: 838.006
PROJECT CONTACT: gene
SAMPLED BY: SW
LAB: C&T
TURNAROUND: Standard
REQUESTED BY: SW

LABORATORY I.D. NUMBER	SCI SAMPLE NUMBER	MATRIX: WATER	SOIL	WASTE	AIR	CONTAINERS: VOA	LITER	PINT	TUBE	METHOD PRESERVED: HCL	H_2SO_4	HNO_3	ICE	NONE	SAMPLING DATE: MONTH	DAY	YEAR	TIME	NOTES	ANALYSIS REQUESTED: TPH (8015 M)	BTEX (8020)	MTBE (8210)
1	M-2	X				3				X					12	09	99	0900		X	X	X
2	M-4	X				3				X					12	09	99	0800		X	X	X
3	M-5	X				3				X					12	09	99	0830		X	X	X
4	M-6	X				3				X					12	09	99	0815		X	X	X
5	P-2	X				3				X					12	09	99	0845		X	X	X
6	P-3	X				3				X					12	09	99	0915		X	X	X

Second
12/9/99

CHAIN OF CUSTODY RECORD

RELEASED BY: (Signature)	DATE / TIME	RECEIVED BY: (Signature)	DATE / TIME
	12/9/99 11:30		12/9/99 11:30
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:

Subsurface Consultants, Inc.
171 - 12th Street, Suite 202, Oakland, CA 94607
(510) 268-0461 - FAX: (510) 268-0137
3736 Mt. Diablo Blvd., Ste. 200, Lafayette, CA 94549
(925) 299-7960 - (925) 299-7970

Curtis & Tompkins, Ltd.

Gasoline by GC/FID CA LUFT

Lab #:	142930	Location:	APA Fund Task-1
Client:	Subsurface Consultants	Analysis Method:	EPA 8015M
Project#:	838.006	Prep Method:	EPA 5030
Matrix:	Water	Sampled:	09-DEC-1999
Units:	ug/L	Received:	09-DEC-1999

Field ID:	M-2	Batch#:	52539
Type:	SAMPLE	Prepared:	09-DEC-1999
Lab ID:	142930-001	Analyzed:	10-DEC-1999
Diln Fac:	10.00		

Analyte	Result	RL
Gasoline C7-C12	11,000	500

Surrogate	%REC	Limits
Trifluorotoluene	108	53-150
Bromofluorobenzene	111	53-149

Field ID:	M-4	Batch#:	52539
Type:	SAMPLE	Prepared:	09-DEC-1999
Lab ID:	142930-002	Analyzed:	09-DEC-1999
Diln Fac:	1.000		

Analyte	Result	RL
Gasoline C7-C12	1,500	50

Surrogate	%REC	Limits
Trifluorotoluene	104	53-150
Bromofluorobenzene	104	53-149

Field ID:	M-5	Batch#:	52539
Type:	SAMPLE	Prepared:	09-DEC-1999
Lab ID:	142930-003	Analyzed:	09-DEC-1999
Diln Fac:	1.000		

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene	100	53-150
Bromofluorobenzene	104	53-149

Field ID:	M-6	Batch#:	52539
Type:	SAMPLE	Prepared:	09-DEC-1999
Lab ID:	142930-004	Analyzed:	09-DEC-1999
Diln Fac:	1.000		

Analyte	Result	RL
Gasoline C7-C12	120	50

Surrogate	%REC	Limits
Trifluorotoluene	99	53-150
Bromofluorobenzene	108	53-149

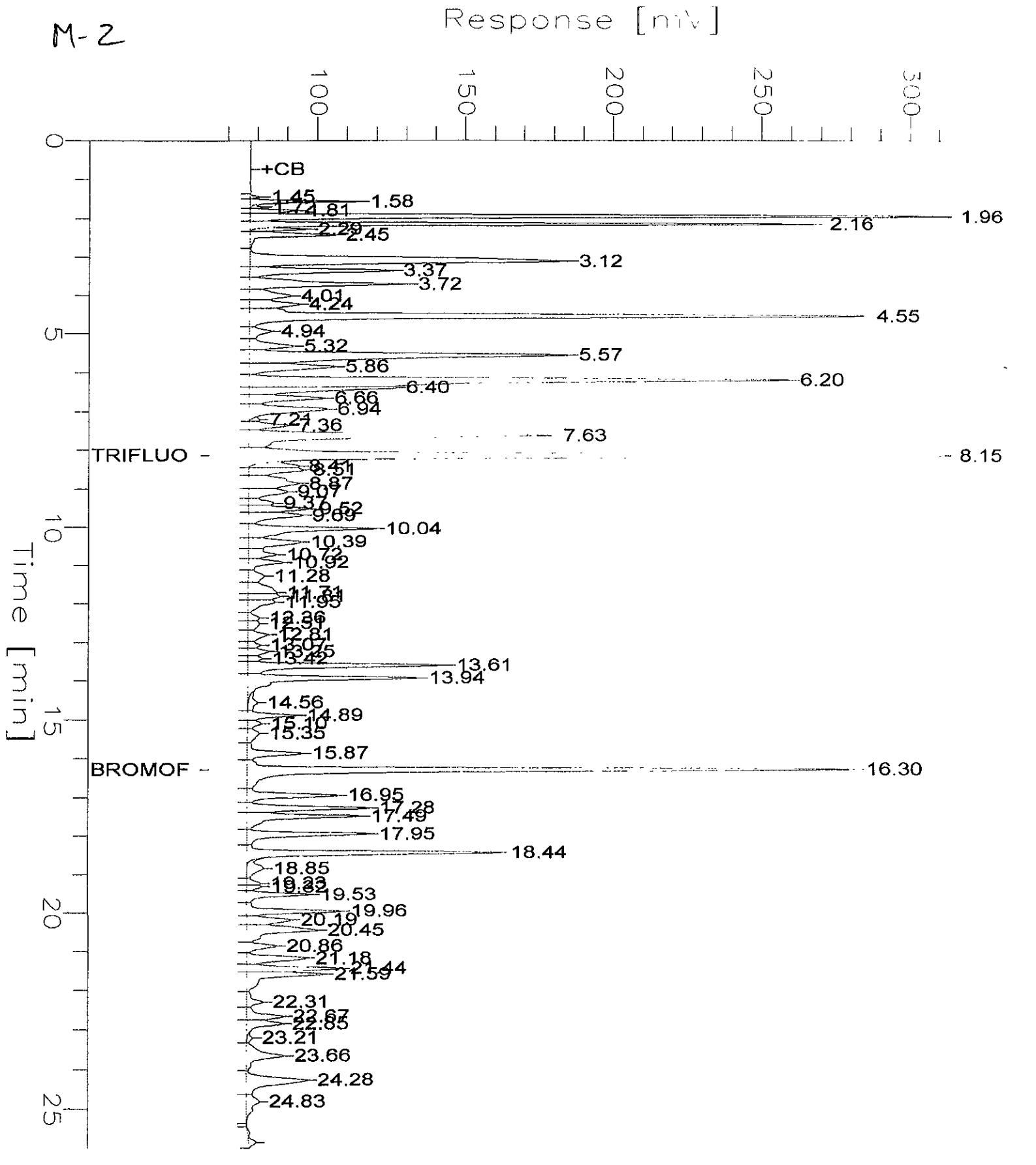
ND = Not Detected
RL = Reporting Limit

GC04 TVH 'J' Data File Rtx1FID

Sample Name : 142930-001,52539
FileName : G:\GC04\DATA\343J031.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 26.00 min
Scale Factor: -1.0 Plot Offset: 64 mV

Sample #: a1,10x Page 1
Date : 12/10/99 10:05 AM
Time of Injection: 12/10/99 10:05 AM
Low Point : 64.06 mV High Point : 314.1 mV
Plot Scale: 250.0 mV

M-2

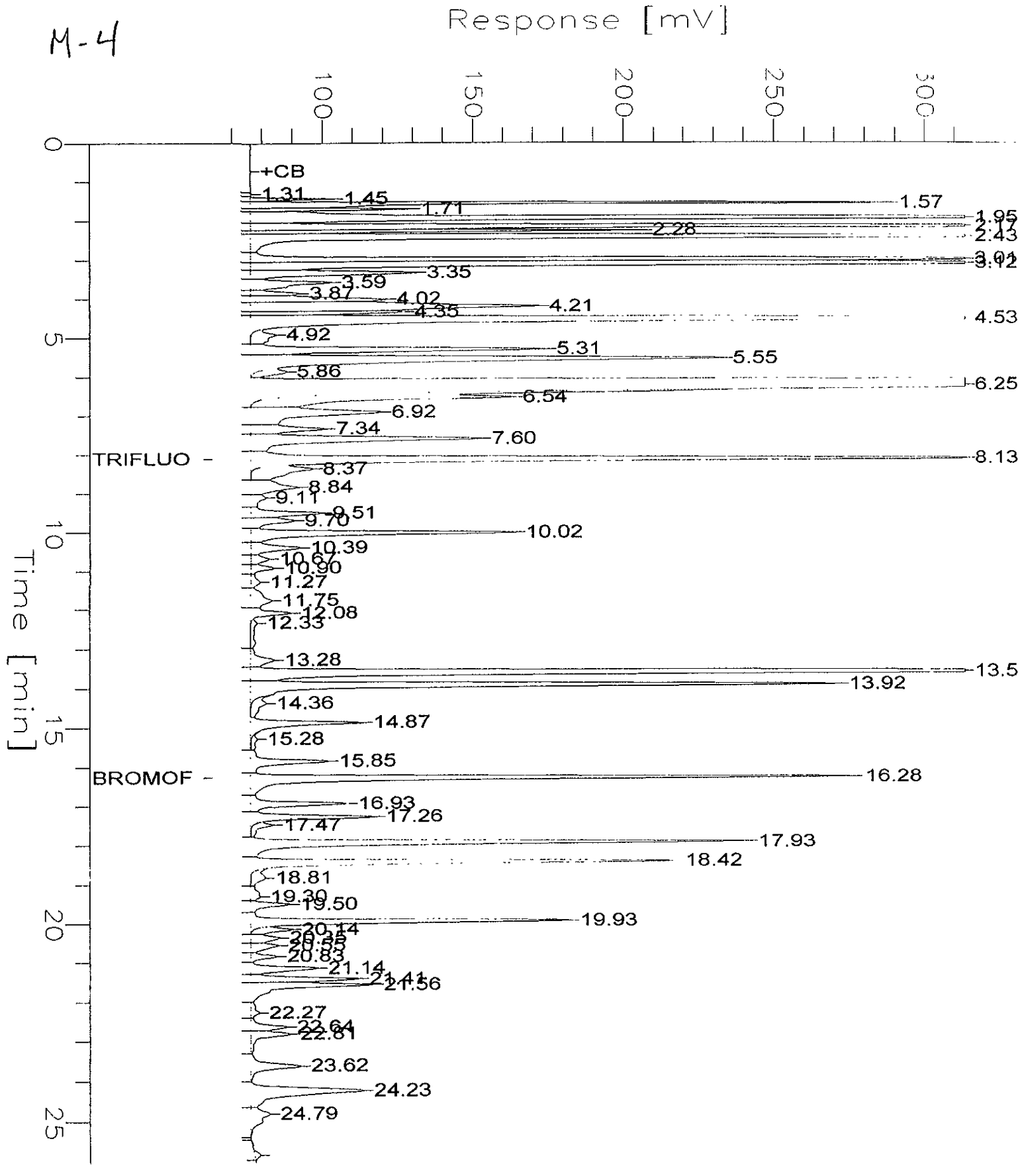


GC04 TVH 'J' Data File Rtx1FID

Sample Name : mss,142930-002,52539
FileName : G:\GC04\DATA\343J007.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 26.00 min
Scale Factor: -1.0 Plot Offset: 64 mV

Sample #: a1 Page 1 of 1
Date : 12/9/99 08:17 PM
Time of Injection: 12/9/99 07:51 PM
Low Point : 63.52 mV High Point : 313.52 mV
Plot Scale: 250.0 mV

M-4

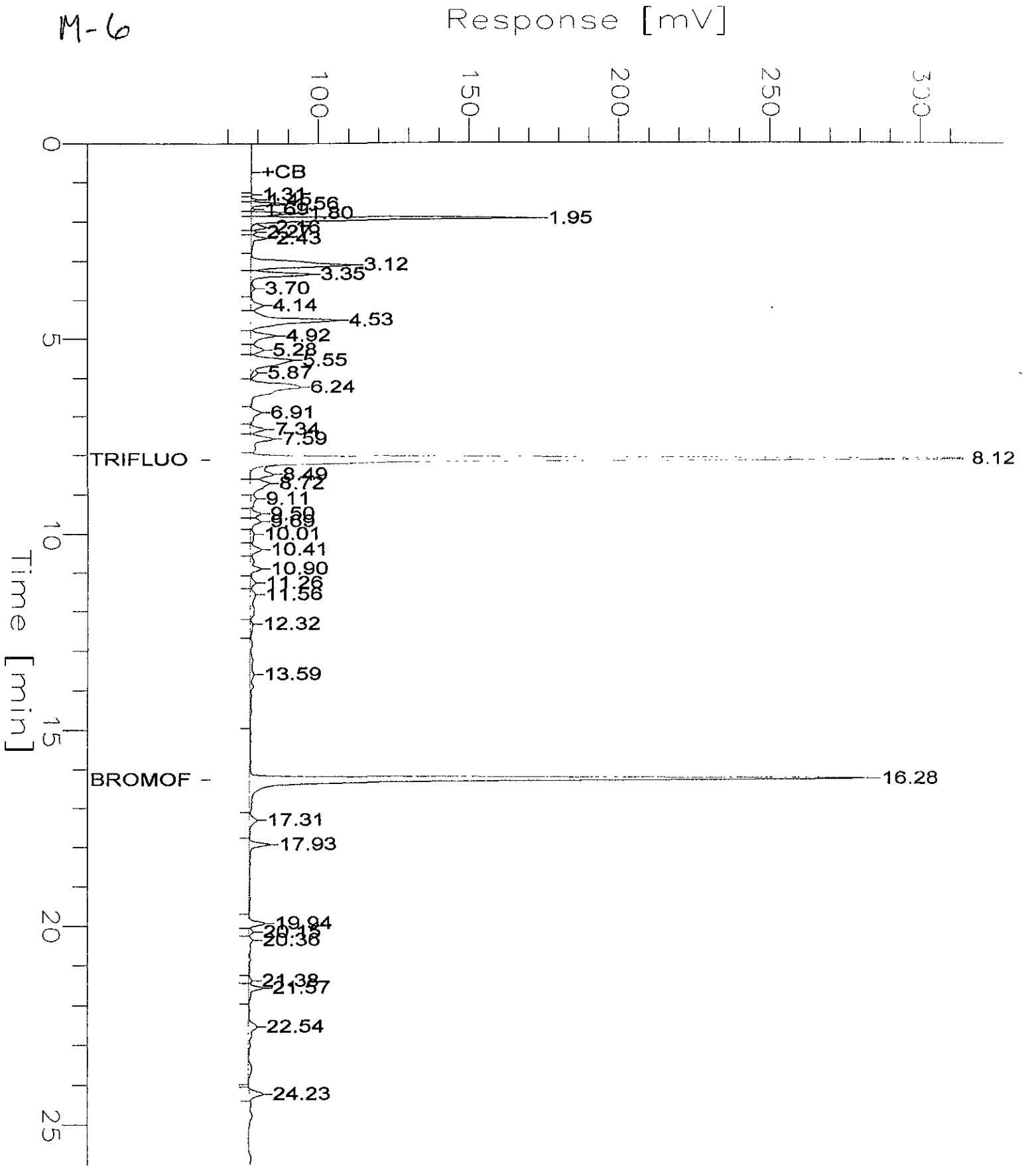


GC04 TVH 'J' Data File Rtx1FID

Sample Name : 142930-004,52539
FileName : G:\GC04\DATA\343J011.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 26.00 min
Scale Factor: -1.0 Plot Offset: 64 mV

Sample #: a1 Page 1 of 1
Date : 12/9/99 10:35 PM
Time of Injection: 12/9/99 10:09 PM
Low Point : 64.30 mV High Point : 314.30 mV
Plot Scale: 250.0 mV

M-6



Curtis & Tompkins, Ltd.

Gasoline by GC/FID CA LUFT

Lab #:	142930	Location:	APA Fund Task-1
Client:	Subsurface Consultants	Analysis Method:	EPA 8015M
Project#:	838.006	Prep Method:	EPA 5030
Matrix:	Water	Sampled:	09-DEC-1999
Units:	ug/L	Received:	09-DEC-1999

Field ID:	P-2	Batch#:	52608
Type:	SAMPLE	Prepared:	13-DEC-1999
Lab ID:	142930-005	Analyzed:	14-DEC-1999
Diln Fac:	20.00		

Analyte	Result	RL
Gasoline C7-C12	32,000	1,000

Surrogate	%REC	Limits
Trifluorotoluene	118	53-150
Bromofluorobenzene	136	53-149

Field ID:	P-3	Batch#:	52539
Type:	SAMPLE	Prepared:	09-DEC-1999
Lab ID:	142930-006	Analyzed:	10-DEC-1999
Diln Fac:	1.000		

Analyte	Result	RL
Gasoline C7-C12	1,500	50

Surrogate	%REC	Limits
Trifluorotoluene	110	53-150
Bromofluorobenzene	107	53-149

Type:	BLANK	Batch#:	52539
Lab ID:	QC103216	Prepared:	09-DEC-1999
Diln Fac:	1.000	Analyzed:	09-DEC-1999

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene	98	53-150
Bromofluorobenzene	99	53-149

Type:	BLANK	Batch#:	52608
Lab ID:	QC103491	Prepared:	13-DEC-1999
Diln Fac:	1.000	Analyzed:	13-DEC-1999

Analyte	Result	RL
Gasoline C7-C12	ND	50

Surrogate	%REC	Limits
Trifluorotoluene	104	53-150
Bromofluorobenzene	106	53-149

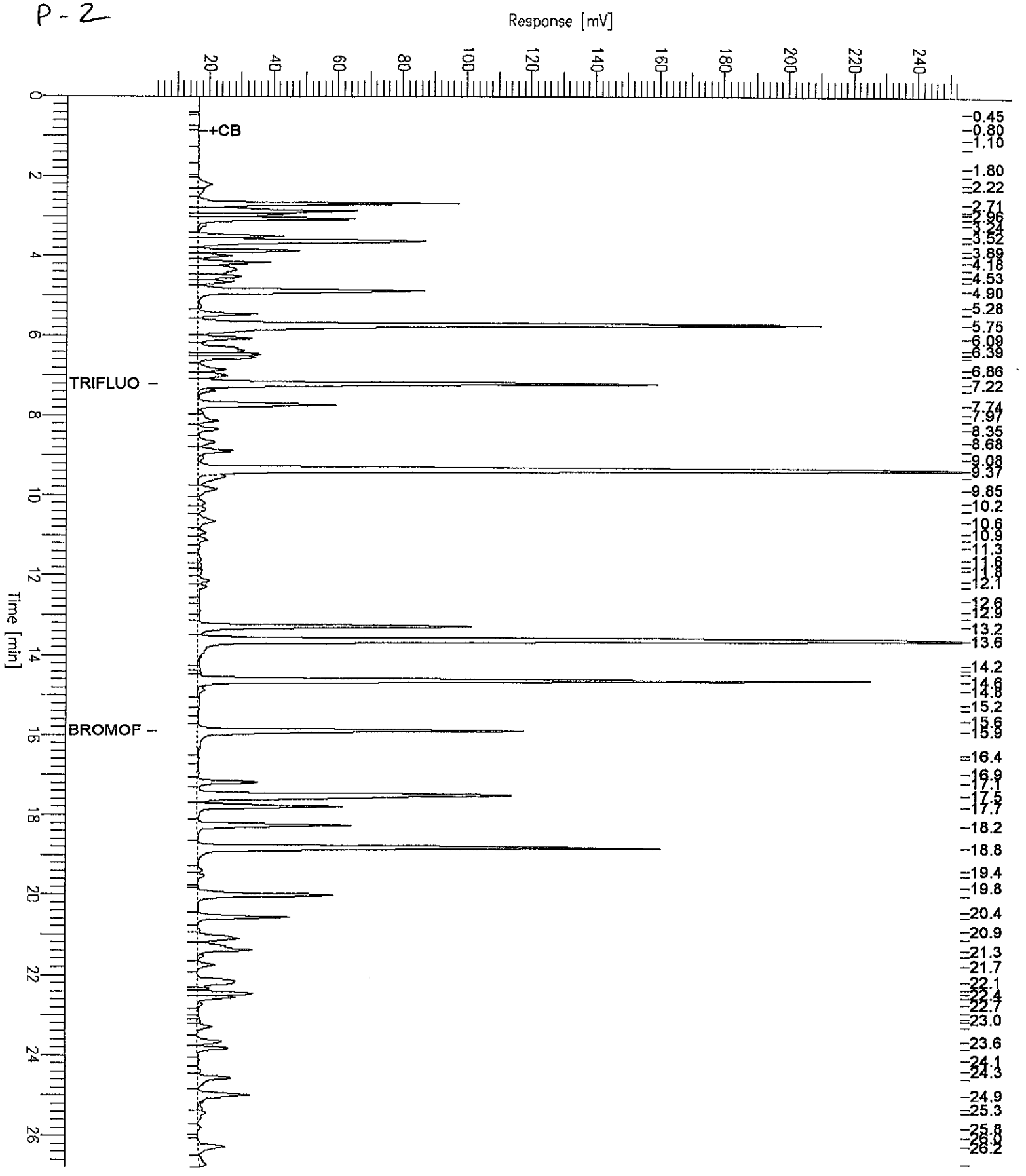
ND = Not Detected
RL = Reporting Limit

GC19 TVH 'X' Data File (FID)

Sample Name : 142930-005,52608
FileName : G:\GC19\DATA\347X031.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 26.80 min
Scale Factor: -1.0 Plot Offset: 4 mV

Sample #: Page 1 of 1
Date : 12/14/99 03:49 PM
Time of Injection: 12/14/99 03:21 PM
Low Point : 3.92 mV High Point : 253.92 mV
Plot Scale: 250.0 mV

P-2

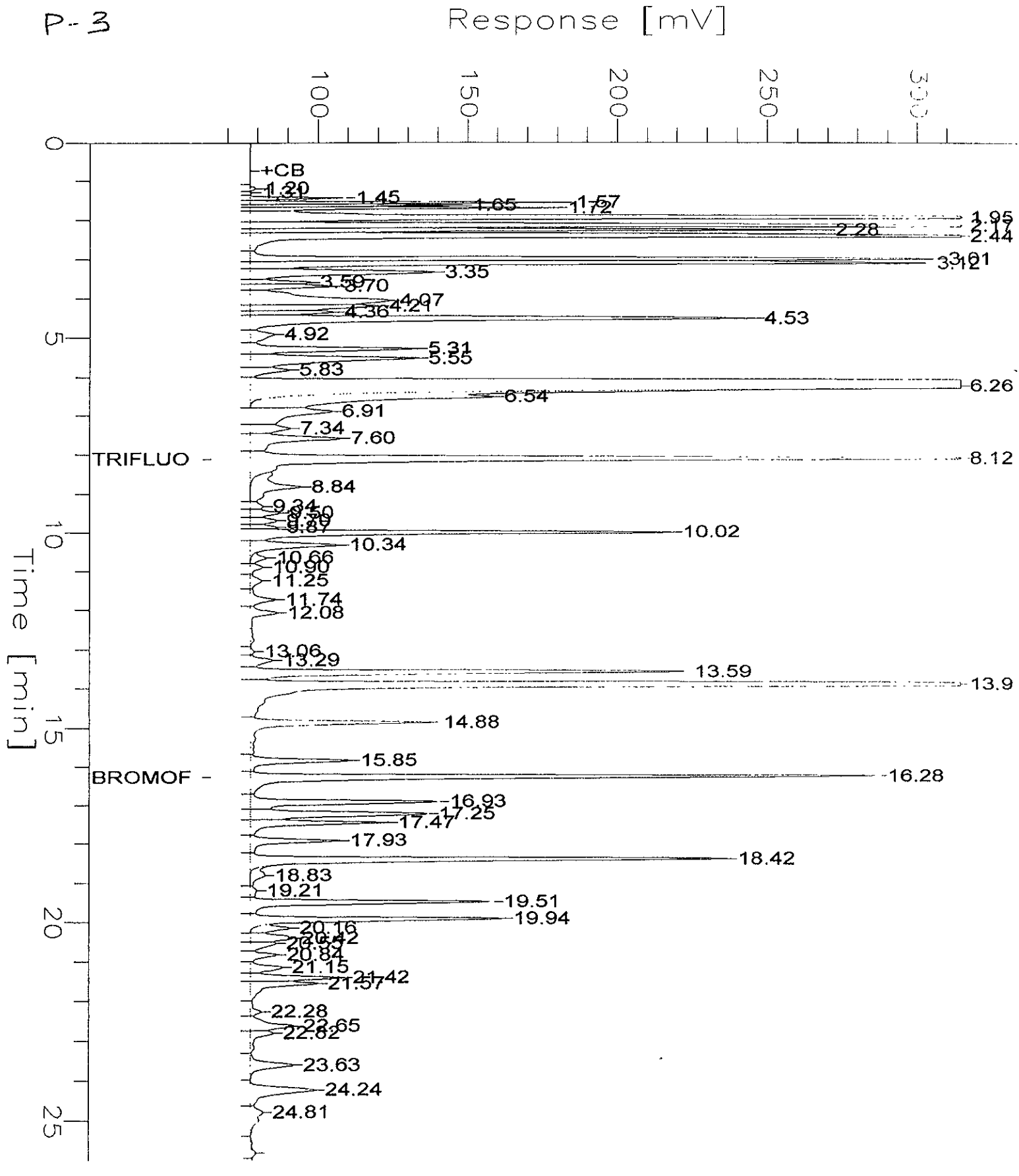


GC04 TVH 'J' Data File Rtx1FID

Sample Name : 142930-006,52539
FileName : G:\GC04\DATA\343J019.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 26.00 min
Scale Factor: -1.0 Plot Offset: 65 mV

Sample #: a1 Page 1 of 1
Date : 12/10/99 03:11 AM
Time of Injection: 12/10/99 02:45 AM
Low Point : 64.79 mV High Point : 314.79 mV
Plot Scale: 250.0 mV

P-3

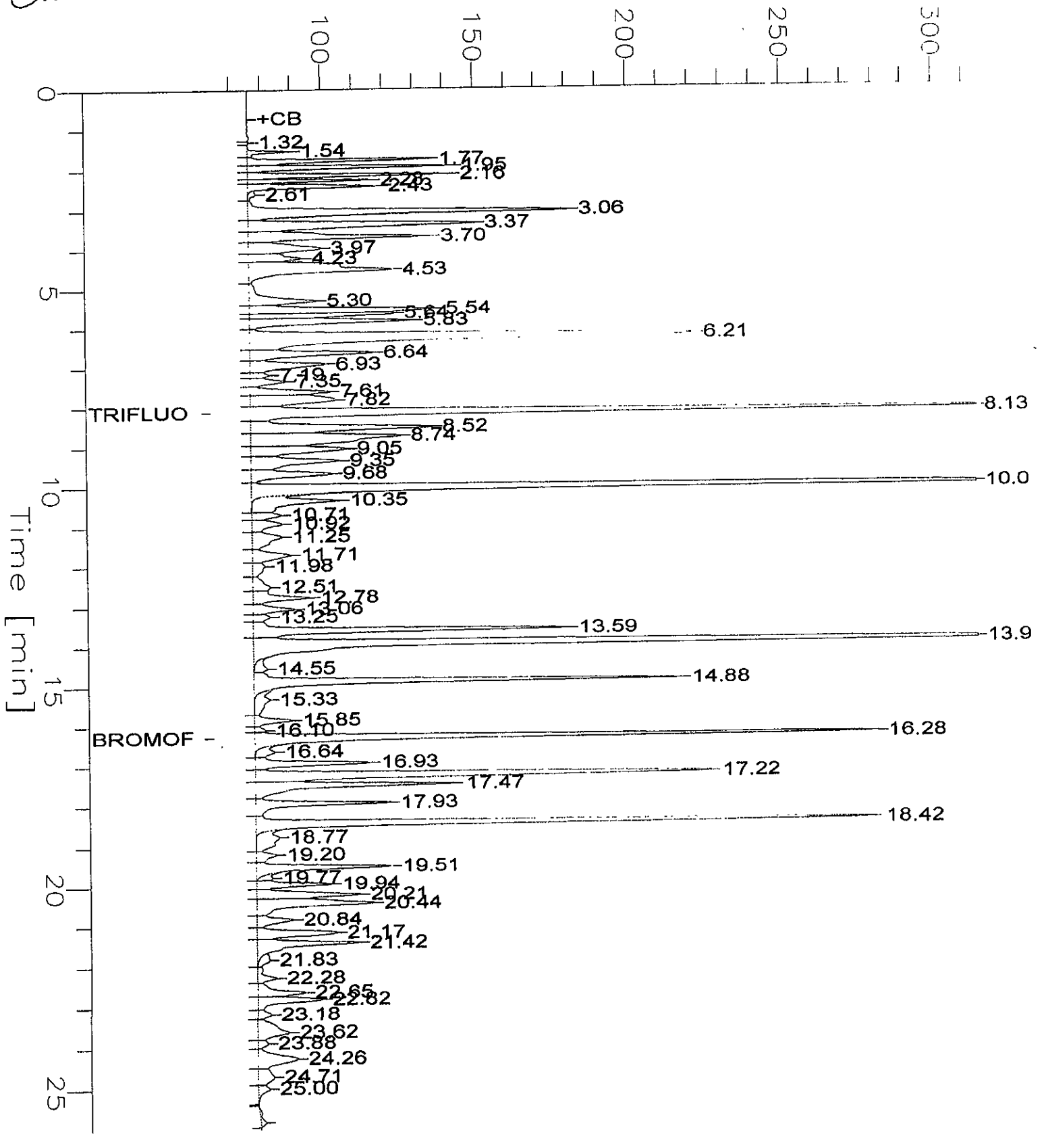


GC04 TVH 'J' Data File Rextld

Sample Name : ccv/lcs,qc103217,99ws8283,52539
FileName : G:\GC04\DATA\343J001.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 26.00 min
Scale Factor: -1.0 Plot Offset: 63 mV

Sample #: 343jk,gas Page 1 of 1
Date : 12/9/99 04:32 PM
Time of Injection: 12/9/99 04:06 PM
Low Point : 63.47 mV High Point 313.47 mV
Plot Scale: 250.0 mV

Gasoline Standard



Curtis & Tompkins, Ltd.

Gasoline by GC/FID CA LUFT

Lab #:	142930	Location:	APA Fund Task-1
Client:	Subsurface Consultants	Analysis Method:	EPA 8015M
Project#:	838.006	Prep Method:	EPA 5030
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC103217	Batch#:	52539
Matrix:	Water	Analyzed:	09-DEC-1999
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	2,000	2,104	105	77-117

Surrogate	%REC	Limits
Trifluorotoluene	101	53-150
Bromofluorobenzene	108	53-149

Curtis & Tompkins, Ltd.

Gasoline by GC/FID CA LUFT

Lab #:	142930	Location:	APA Fund Task-1
Client:	Subsurface Consultants	Analysis Method:	EPA 8015M
Project#:	838.006	Prep Method:	EPA 5030
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC103489	Batch#:	52608
Matrix:	Water	Analyzed:	13-DEC-1999
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Gasoline C7-C12	2,000	1,815	91	77-117

Surrogate	%REC	Limits
Trifluorotoluene	113	53-150
Bromofluorobenzene	123	53-149

Curtis & Tompkins, Ltd.

Gasoline by GC/FID CA LUFT

Lab #:	142930	Location:	APA Fund Task-1
Client:	Subsurface Consultants	Analysis Method:	EPA 8015M
Project#:	838.006	Prep Method:	EPA 5030
Field ID:	M-4	Batch#:	52539
MSS Lab ID:	142930-002	Sampled:	09-DEC-1999
Matrix:	Water	Received:	09-DEC-1999
Units:	ug/L	Analyzed:	09-DEC-1999
Diln Fac:	1.000		

Type: MS Lab ID: QC103220

Analyte	MSS Result	Spiked	Result	%REC	Limits
Gasoline C7-C12	1,548	2,000	3,500	98	69-131

Surrogate	%REC	Limits
Trifluorotoluene	109	53-150
Bromofluorobenzene	114	53-149

Type: MSD Lab ID: QC103221

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Gasoline C7-C12	2,000	3,459	96	69-131	1	13

Surrogate	%REC	Limits
Trifluorotoluene	108	53-150
Bromofluorobenzene	113	53-149

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

BTXE Compounds by GC/PID

Lab #:	142930	Location:	APA Fund Task-1
Client:	Subsurface Consultants	Analysis Method:	EPA 8021B
Project#:	838.006	Prep Method:	EPA 5030
Matrix:	Water	Sampled:	09-DEC-1999
Units:	ug/L	Received:	09-DEC-1999

Field ID:	M-2	Batch#:	52539
Type:	SAMPLE	Prepared:	09-DEC-1999
Lab ID:	142930-001	Analyzed:	10-DEC-1999
Diln Fac:	10.00		

Analyte	Result	RL
Benzene	560	5.0
Toluene	130	5.0
Ethylbenzene	240	5.0
m,p-Xylenes	210	5.0
o-Xylene	55	5.0

Surrogate	%REC	Limits
Trifluorotoluene	95	51-143
Bromofluorobenzene	95	37-146

Field ID:	M-4	Batch#:	52608
Type:	SAMPLE	Prepared:	13-DEC-1999
Lab ID:	142930-002	Analyzed:	14-DEC-1999
Diln Fac:	20.00		

Analyte	Result	RL
Benzene	2,500	10
Toluene	32	10
Ethylbenzene	140	10
m,p-Xylenes	73	10
o-Xylene	15	10

Surrogate	%REC	Limits
Trifluorotoluene	113	51-143
Bromofluorobenzene	120	37-146

Field ID:	M-5	Batch#:	52539
Type:	SAMPLE	Prepared:	09-DEC-1999
Lab ID:	142930-003	Analyzed:	09-DEC-1999
Diln Fac:	1.000		

Analyte	Result	RL
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Trifluorotoluene	94	51-143
Bromofluorobenzene	95	37-146

ND = Not Detected
RL = Reporting Limit

Curtis & Tompkins, Ltd.

BTXE Compounds by GC/PID

Lab #:	142930	Location:	APA Fund Task-1
Client:	Subsurface Consultants	Analysis Method:	EPA 8021B
Project#:	838.006	Prep Method:	EPA 5030
Matrix:	Water	Sampled:	09-DEC-1999
Units:	ug/L	Received:	09-DEC-1999

Field ID:	M-6	Batch#:	52539
Type:	SAMPLE	Prepared:	09-DEC-1999
Lab ID:	142930-004	Analyzed:	09-DEC-1999
Diln Fac:	1.000		

Analyte	Result	RL
Benzene	3.7	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Trifluorotoluene	92	51-143
Bromofluorobenzene	96	37-146

Field ID:	P-2	Batch#:	52608
Type:	SAMPLE	Prepared:	13-DEC-1999
Lab ID:	142930-005	Analyzed:	14-DEC-1999
Diln Fac:	20.00		

Analyte	Result	RL
Benzene	1,500	10
Toluene	3,200	10
Ethylbenzene	700	10
m,p-Xylenes	3,300	10
o-Xylene	1,800	10

Surrogate	%REC	Limits
Trifluorotoluene	121	51-143
Bromofluorobenzene	130	37-146

Field ID:	P-3	Batch#:	52608
Type:	SAMPLE	Prepared:	13-DEC-1999
Lab ID:	142930-006	Analyzed:	14-DEC-1999
Diln Fac:	20.00		

Analyte	Result	RL
Benzene	3,700	10
Toluene	52	10
Ethylbenzene	57	10
m,p-Xylenes	190	10
o-Xylene	20	10

Surrogate	%REC	Limits
Trifluorotoluene	117	51-143
Bromofluorobenzene	123	37-146

ND = Not Detected
RL = Reporting Limit

Curtis & Tompkins, Ltd.

BTXE Compounds by GC/PID

Lab #:	142930	Location:	APA Fund Task-1
Client:	Subsurface Consultants	Analysis Method:	EPA 8021B
Project#:	838.006	Prep Method:	EPA 5030
Matrix:	Water	Sampled:	09-DEC-1999
Units:	ug/L	Received:	09-DEC-1999

Type:	BLANK	Batch#:	52539
Lab ID:	QC103216	Prepared:	09-DEC-1999
Diln Fac:	1.000	Analyzed:	09-DEC-1999

Analyte	Result	RL
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Trifluorotoluene	93	51-143
Bromofluorobenzene	89	37-146

Type:	BLANK	Batch#:	52608
Lab ID:	QC103491	Prepared:	13-DEC-1999
Diln Fac:	1.000	Analyzed:	13-DEC-1999

Analyte	Result	RL
Benzene	ND	0.50
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylenes	ND	0.50
o-Xylene	ND	0.50

Surrogate	%REC	Limits
Trifluorotoluene	100	51-143
Bromofluorobenzene	105	37-146

ND = Not Detected
RL = Reporting Limit

Curtis & Tompkins, Ltd.

BTXE Compounds by GC/PID

Lab #:	142930	Location:	APA Fund Task-1
Client:	Subsurface Consultants	Analysis Method:	EPA 8021B
Project#:	838.006	Prep Method:	EPA 5030
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC103490	Batch#:	52608
Matrix:	Water	Analyzed:	13-DEC-1999
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
Benzene	20.00	17.21	86	65-111
Toluene	20.00	17.58	88	76-117
Ethylbenzene	20.00	17.96	90	71-121
m,p-Xylenes	40.00	37.43	94	80-123
o-Xylene	20.00	17.74	89	75-127

Surrogate	%REC	Limits
Trifluorotoluene	104	51-143
Bromofluorobenzene	109	37-146

Curtis & Tompkins, Ltd.

BTXE Compounds by GC/PID

Lab #:	142930	Location:	APA Fund Task-1
Client:	Subsurface Consultants	Analysis Method:	EPA 8021B
Project#:	838.006	Prep Method:	EPA 5030
Matrix:	Water	Batch#:	52539
Units:	ug/L	Analyzed:	09-DEC-1999
Diln Fac:	1.000		

Type: BS Lab ID: QC103218

Analyte	Spiked	Result	%REC	Limits
Benzene	20.00	18.81	94	65-111
Toluene	20.00	18.01	90	76-117
Ethylbenzene	20.00	18.62	93	71-121
m,p-Xylenes	40.00	37.92	95	80-123
o-Xylene	20.00	18.83	94	75-127

Surrogate	%REC	Limits
Trifluorotoluene	96	51-143
Bromofluorobenzene	94	37-146

Type: BSD Lab ID: QC103219

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Benzene	20.00	18.70	94	65-111	1	10
Toluene	20.00	18.01	90	76-117	0	10
Ethylbenzene	20.00	18.44	92	71-121	1	11
m,p-Xylenes	40.00	37.65	94	80-123	1	10
o-Xylene	20.00	18.40	92	75-127	2	11

Surrogate	%REC	Limits
Trifluorotoluene	94	51-143
Bromofluorobenzene	90	37-146

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

BTXE Compounds by GC/PID

Lab #:	142930	Location:	APA Fund Task-1
Client:	Subsurface Consultants	Analysis Method:	EPA 8021B
Project#:	838.006	Prep Method:	EPA 5030
Field ID:	ZZZZZZZZZZ	Batch#:	52608
MSS Lab ID:	142870-001	Sampled:	07-DEC-1999
Matrix:	Water	Received:	07-DEC-1999
Units:	ug/L	Prepared:	13-DEC-1999
Diln Fac:	1.000	Analyzed:	14-DEC-1999

Type: MS Lab ID: QC103492

Analyte	MSS Result	Spiked	Result	%REC	Limits
Benzene	<0.5000	20.00	17.63	88	55-122
Toluene	<0.5000	20.00	18.09	90	63-139
Ethylbenzene	<0.5000	20.00	18.05	90	61-137
m,p-Xylenes	<0.5000	40.00	37.61	94	57-148
o-Xylene	<0.5000	20.00	18.23	91	70-141

Surrogate	%REC	Limits
Trifluorotoluene	120	51-143
Bromofluorobenzene	126	37-146

Type: MSD Lab ID: QC103493

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Benzene	20.00	18.55	93	55-122	5	10
Toluene	20.00	19.07	95	63-139	5	10
Ethylbenzene	20.00	18.83	94	61-137	4	10
m,p-Xylenes	40.00	39.17	98	57-148	4	10
o-Xylene	20.00	19.22	96	70-141	5	10

Surrogate	%REC	Limits
Trifluorotoluene	119	51-143
Bromofluorobenzene	126	37-146

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	142930	Location:	APA Fund Task-1
Client:	Subsurface Consultants	Analysis Method:	EPA 8260B
Project#:	838.006	Prep Method:	EPA 5030
Matrix:	Water	Sampled:	09-DEC-1999
Units:	ug/L	Received:	09-DEC-1999
Diln Fac:	1.000		

Field ID: M-2 Batch#: 52582
Type: SAMPLE Analyzed: 12-DEC-1999
Lab ID: 142930-001

Analyte	Result	RL
MTBE	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	101	67-140
1,2-Dichloroethane-d4	86	80-129
Toluene-d8	98	88-111
Bromofluorobenzene	112	76-128

Field ID: M-4 Batch#: 52582
Type: SAMPLE Analyzed: 12-DEC-1999
Lab ID: 142930-002

Analyte	Result	RL
MTBE	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	110	67-140
1,2-Dichloroethane-d4	89	80-129
Toluene-d8	95	88-111
Bromofluorobenzene	114	76-128

Field ID: M-5 Batch#: 52582
Type: SAMPLE Analyzed: 12-DEC-1999
Lab ID: 142930-003

Analyte	Result	RL
MTBE	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	111	67-140
1,2-Dichloroethane-d4	90	80-129
Toluene-d8	92	88-111
Bromofluorobenzene	112	76-128

ND = Not Detected
RL = Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	142930	Location:	APA Fund Task-1
Client:	Subsurface Consultants	Analysis Method:	EPA 8260B
Project#:	838.006	Prep Method:	EPA 5030
Matrix:	Water	Sampled:	09-DEC-1999
Units:	ug/L	Received:	09-DEC-1999
Diln Fac:	1.000		

Field ID:	M-6	Batch#:	52582
Type:	SAMPLE	Analyzed:	12-DEC-1999
Lab ID:	142930-004		

Analyte	Result	RL
MTBE	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	111	67-140
1,2-Dichloroethane-d4	89	80-129
Toluene-d8	91	88-111
Bromofluorobenzene	112	76-128

Field ID:	P-2	Batch#:	52582
Type:	SAMPLE	Analyzed:	12-DEC-1999
Lab ID:	142930-005		

Analyte	Result	RL
MTBE	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	102	67-140
1,2-Dichloroethane-d4	87	80-129
Toluene-d8	97	88-111
Bromofluorobenzene	110	76-128

Field ID:	P-3	Batch#:	52589
Type:	SAMPLE	Analyzed:	13-DEC-1999
Lab ID:	142930-006		

Analyte	Result	RL
MTBE	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	107	67-140
1,2-Dichloroethane-d4	89	80-129
Toluene-d8	95	88-111
Bromofluorobenzene	106	76-128

Type:	BLANK	Batch#:	52582
Lab ID:	QC103396	Analyzed:	11-DEC-1999

Analyte	Result	RL
MTBE	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	116	67-140
1,2-Dichloroethane-d4	89	80-129
Toluene-d8	93	88-111
Bromofluorobenzene	111	76-128

ND = Not Detected
RL = Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	142930	Location:	APA Fund Task-1
Client:	Subsurface Consultants	Analysis Method:	EPA 8260B
Project#:	838.006	Prep Method:	EPA 5030
Matrix:	Water	Sampled:	09-DEC-1999
Units:	ug/L	Received:	09-DEC-1999
Diln Fac:	1.000		

Type: BLANK
Lab ID: QC103397
Batch#: 52582
Analyzed: 11-DEC-1999

Analyte	Result	RL
MTBE	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	112	67-140
1,2-Dichloroethane-d4	89	80-129
Toluene-d8	93	88-111
Bromofluorobenzene	108	76-128

Type: BLANK
Lab ID: QC103427
Batch#: 52589
Analyzed: 13-DEC-1999

Analyte	Result	RL
MTBE	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	114	67-140
1,2-Dichloroethane-d4	89	80-129
Toluene-d8	93	88-111
Bromofluorobenzene	112	76-128

Type: BLANK
Lab ID: QC103428
Batch#: 52589
Analyzed: 13-DEC-1999

Analyte	Result	RL
MTBE	ND	0.5

Surrogate	%REC	Limits
Dibromofluoromethane	109	67-140
1,2-Dichloroethane-d4	90	80-129
Toluene-d8	94	88-111
Bromofluorobenzene	117	76-128

ND = Not Detected
RL = Reporting Limit

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	142930	Location:	APA Fund Task-1
Client:	Subsurface Consultants	Analysis Method:	EPA 8260B
Project#:	838.006	Prep Method:	EPA 5030
Type:	LCS	Diln Fac:	1.000
Lab ID:	QC103395	Batch#:	52582
Matrix:	Water	Analyzed:	11-DEC-1999
Units:	ug/L		

Analyte	Spiked	Result	%REC	Limits
MTBE	50.00	46.07	92	62-115

Surrogate	%REC	Limits
Dibromofluoromethane	109	67-140
1,2-Dichloroethane-d4	89	80-129
Toluene-d8	95	88-111
Bromofluorobenzene	102	76-128

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	142930	Location:	APA Fund Task-1
Client:	Subsurface Consultants	Analysis Method:	EPA 8260B
Project#:	838.006	Prep Method:	EPA 5030
Matrix:	Water	Batch#:	52589
Units:	ug/L	Analyzed:	13-DEC-1999
Diln Fac:	1.000		

Type: BS Lab ID: QC103425

Analyte	Spiked	Result	%REC	Limits
MTBE	50.00	46.47	93	62-115

Surrogate	%REC	Limits
Dibromofluoromethane	107	67-140
1,2-Dichloroethane-d4	87	80-129
Toluene-d8	94	88-111
Bromofluorobenzene	107	76-128

Type: BSD Lab ID: QC103426

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	50.00	43.70	87	62-115	6	15

Surrogate	%REC	Limits
Dibromofluoromethane	109	67-140
1,2-Dichloroethane-d4	87	80-129
Toluene-d8	94	88-111
Bromofluorobenzene	110	76-128

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	142930	Location:	APA Fund Task-1
Client:	Subsurface Consultants	Analysis Method:	EPA 8260B
Project#:	838.006	Prep Method:	EPA 5030
Field ID:	ZZZZZZZZZZ	Batch#:	52582
MSS Lab ID:	142922-003	Sampled:	03-DEC-1999
Matrix:	Water	Received:	06-DEC-1999
Units:	ug/L	Analyzed:	12-DEC-1999
Diln Fac:	1.000		

Type: MS Lab ID: QC103398

Analyte	MSS Result	Spiked	Result	%REC	Limits
MTBE	<0.5000	50.00	45.53	91	62-115

Surrogate	%REC	Limits
Dibromofluoromethane	108	67-140
1,2-Dichloroethane-d4	87	80-129
Toluene-d8	94	88-111
Bromofluorobenzene	115	76-128

Type: MSD Lab ID: QC103399

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
MTBE	50.00	42.27	85	62-115	7	15

Surrogate	%REC	Limits
Dibromofluoromethane	104	67-140
1,2-Dichloroethane-d4	86	80-129
Toluene-d8	94	88-111
Bromofluorobenzene	114	76-128

RPD= Relative Percent Difference