Subsurface Consultants, Inc.

October 27, 1998
SCI 946.003

Mr. Larry Seto
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Groundwater Monitoring - July 1998 Event
and Request for Site Closure
2528 Adeline Street
Oakland, California STID 266

Dear Mr. Seto:

This letter presents the results of the July 1998 groundwater monitoring event for the referenced site. Groundwater monitoring has been performed at the request of the Alameda County Health Care Services Agency (ACHCSA) due to the presence of petroleum hydrocarbons and volatile organic compounds (VOCs) in groundwater beneath the site. This event constitutes the eighth sampling event. Based on several factors as described and summarized herein, SCI is petitioning the ACHCSA to consider this site for closure.

BACKGROUND

Two underground storage tanks (UST) were removed from the site in the late 1980s. The tanks were reportedly situated near each other at the northeast corner of the site, as shown on Plate 1.

An Underground Storage Tank Unauthorized Release Form filed following removal of the first tank in June 1987, indicated that soil beneath the former fill end of this UST contained total petroleum hydrocarbons (TPH) at 160 milligrams per kilogram (mg/kg). This UST reportedly stored Great Western Solvent 225 for an unspecified period of time. Samples obtained from a well in this UST area (referred to as "Former Well" hereafter), revealed that groundwater local to this UST contained a variety of petroleum hydrocarbons and chlorinated solvents. As a result of this initial testing, it appeared that there had been previous releases from this former UST.

The second UST was removed in August 1988 and reportedly stored kerosene. Subsurface soil sampling, documented by Uriah, Inc., indicated that two soil samples collected from beneath the

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

UST did not contain TPH as diesel. Hence, it did not appear as though there had been significant previous releases from this UST.

The Former Well was abandoned in 1995 since its integrity was of concern, and ~~three new wells were subsequently installed in~~ April 1995. Well locations are shown on Plate 1. Groundwater monitoring is currently performed in accordance with the program outlined in SCI's Quarterly Monitoring Report dated September 26, 1997 and approved by the ACHCSA in their letter dated December 31, 1997. The December 1997 ACHCSA letter indicates that the site may be considered for site closure status following additional monitoring. A copy of the ACHCSA letter is attached.

MW-1 3-31-95
MW-2 & MW-3 8-9-95

GROUNDWATER MONITORING ACTIVITIES

Sampling

On July 14, 1998, monitoring wells MW-1 and MW-2 were sampled. Prior to sampling, groundwater levels were measured in all site wells (MW-1, MW-2, and MW-3) with an electric well sounder. Monitoring wells MW-1 and MW-2 were first checked for the presence of free product. Groundwater was then purged from these two wells until pH, conductivity, and temperature had stabilized. The wells were sampled with new disposable bailers after they had recovered to at least 80 percent of their initial water level. The samples were retained in glass containers pre-cleaned by the supplier in accordance with EPA protocol. The containers were placed in an ice-filled cooler and remained iced until delivery to the analytical laboratory. The samples were accompanied by appropriate chain-of-custody documentation. Purge water generated during sampling activities was stored onsite in 55-gallon drums for later disposal by others.

Analytical Testing

Analytical testing of the water samples for this monitoring event was performed by Curtis & Tompkins, Ltd., a laboratory certified by the State of California Department of Health Services for hazardous waste and water testing. In accordance with the sampling program, retained samples were analyzed for the following:

1. Total volatile hydrocarbons (TVH) as gasoline and stoddard solvent by EPA 5030/8015M,
2. Benzene, toluene, ethylbenzene, total xylenes (BTEX) and methyl tertiary butyl ether (MTBE) by EPA 5030/8020A,
3. Total extractable hydrocarbons (TEH) as diesel and kerosene by EPA 3520/8015M, and
4. VOCs by EPA 5030/8260.

A summary of the current and previous analytical test results are summarized in the attached Tables 1 and 2. Analytical test reports, chain-of-custody documents, and well sampling forms for this event are also attached.

Summary of Test Results

The groundwater level data indicate the local groundwater flow direction is toward the west at a gradient of less than 1 percent. Previous groundwater monitoring events have indicated groundwater flow directions are variable; however, the gradient remains relatively flat. A summary of groundwater level data is presented in the attached Table 3.

TVH and TEH were detected in monitoring well MW-1 during this event at concentrations similar to previous events of the same quarter. Of the BTEX compounds, only ethylbenzene was detected above the laboratory reporting limit in monitoring well MW-1 (1.8 micrograms per liter [µg/L]). MTBE was detected in monitoring well MW-1 at 3.1 µg/L.

TEH was detected in well MW-2 at a concentration of 58 µg/L. Neither TVH, BTEX nor MTBE were detected in monitoring well MW-2. Concentrations of 1,1-dichloroethane (1,1-DCA), 1,1-dichloroethene (1,1-DCE), and 1,1,1-trichloroethane (1,1,1-TCA) were detected in monitoring well MW-2 at values similar to previous events (62 µg/L, 170 µg/L, and 68 µg/L, respectively).

Monitoring well MW-3 has not been sampled since July 31, 1997. Approval to cease monitoring was granted by ACHCSA since no petroleum hydrocarbons nor BTEX had been detected through six consecutive monitoring events. Low levels of some chlorinated solvents had previously been detected in the well. However, the chlorinated solvent concentrations were always less than those detected in well MW-2.

PRELIMINARY RISK ASSESSMENT

In general accordance with industry standards of practice, an assessment of risk was conducted to assist in evaluating whether the site may be a candidate for closure as a "low risk" site. The site is zoned for commercial use. There are no other nearby sensitive receptors. The closest surface water body is San Francisco Bay located approximately 1 mile away from the site. Shallow groundwater in the site vicinity is not reportedly used as a potable, agricultural or industrial source. Hence, the assessment presented herein is limited to evaluating potential risks to human health.

Petroleum Hydrocarbon Constituents

To evaluate risks associated with residual hydrocarbons at the site, an assessment of human health risks was conducted in accordance with the American Society for Testing Materials (ASTM) E 1739-95, "Standard Guide for Risk-Based Corrective Action (RBCA) at Petroleum Release Sites." This guide presents a tiered decision-making process for the assessment and response to a petroleum release, based on the protection of human health.

The RBCA Tier 1 evaluation compares representative site values with non-site specific, health-risk based values developed for the constituents of concern. The ASTM guideline presents conservative risk-based screening levels for direct and indirect exposure pathways for commonly found volatile petroleum hydrocarbon constituents, including BTEX.

Since the site is currently zoned for commercial use, the RBCA Tier 1 Risk Based Screening Levels (RBSLs) established for commercial uses were compared with representative site values. RBSLs for benzene were modified based on the California EPA correction factor of 0.29.

A summary of site soil data is presented on Table 4. BTEX compounds were not detected in the soil samples analyzed. Hence, no further evaluation of risks to human health were conducted for petroleum impacted soils.

A summary of site groundwater data is presented in Tables 1 and 2. The maximum values detected for the BTEX compounds during the last four sampling events were used as the representative site values. The maximum values for BTEX are 1.2, 4.3, 57, and 26 µg/L, respectively.

Based on current site use and zoning conditions, potential exposure due to volatilization from groundwater appears to govern the risk assessment. Ingestion, dermal contact, and dust inhalation pathways were not evaluated since BTEX compounds were not detected in soil. The Tier 1 worksheet which summarizes the RBSL results for the selected exposure scenarios and compounds is attached.

Table 5 presents the RBCA Tier 1 screening levels for groundwater compared to the representative site values for BTEX. The representative site values are below the respective compound's RBSLs established for commercial exposures and a target cancer risk level of 1×10^{-6}. Hence, the results of the RBCA Tier 1 site analyses indicate that for current site conditions, soil and groundwater impacted by previous petroleum hydrocarbon releases pose no significant risk to human health. In addition, the petroleum impacted groundwater appears localized to the former UST area and has not significantly migrated during the study period.

The two USTs at the site reportedly did not store gasoline. However, given the heightened awareness of potential impacts resulting from releases of MTBE, the laboratory was requested to preliminarily screen groundwater samples during the last two monitoring events for this chemical. MTBE concentrations have varied from non-detect to 15 µg/L. Although the detected result was not confirmed by additional monitoring data, the potential concentrations range is below the recently published EPA health advisory of 20 to 40 µg/L. Since there is no documented nor proposed beneficial use of shallow water and the potential concentrations are below action levels, MTBE is judged to pose no significant risk to human health.

Volatile Organic Compounds

The VOCs detected during site studies include the following chlorinated solvents: 1,1-DCA, 1,1-DCE, 1,1,1-TCA, and methyl isobutyl ketone (MIBK). Of these compounds, only MIBK was detected in the soil samples previously analyzed. MIBK concentrations in soil ranged from 7.5 to 60 µg/kg. The U.S. EPA Region 9 Preliminary Remediation Goal (PRG, 1996) established for MIBK concentrations in soil to be protective of human health in a residential exposure scenario is 770 mg/kg. Since the highest site concentration measured to date is well below the residential PRG and groundwater has not apparently been impacted by this compound, the MIBK impacted soil poses no significant risk to human health.

1,1-DCA, 1,1-DCE, and 1,1,1-TCA, have been measured in groundwater samples from site wells. The highest concentrations have been detected in samples from well MW-2. The maximum concentrations of these compounds detected within the last four monitoring events were selected as the representative concentrations for comparison purposes. The RBSLs are derived by Groundwater Services Inc. from standard exposure equations and reasonable maximum exposure estimates per U.S. EPA guidelines and are presented in Table 5. Since there is no documented nor proposed beneficial use of shallow water and the potential concentrations of the chlorinated solvents are below the RBSLs, their presence is judged to pose no significant risk to human health.

Barium Levels

Elevated concentrations of barium have been detected in soil and groundwater at the site. The higher concentrations of barium are limited in areal extent to soils in the upper 2 to 4 feet in the area of the former USTs. The PRG established for barium in industrial soil is 100,000 mg/kg. Site concentrations measured to date are below this screening level. The Total Threshold Limit Concentration (TTLC) for barium is 10,000 mg/kg. Soils containing barium at concentrations above the TTLC may have to be handled as hazardous if excavated and transported from the site.

Barium has not significantly impacted local groundwater. The data to date does not indicate a marked difference between barium concentrations in water from the well in the UST area and the concentrations measured in the downgradient well. Hence, the barium concentrations appear to be representative of background levels in the area. The testing program was modified following the July 1997 event to eliminate the testing of barium since the concentrations measured were below the maximum contaminant levels of 1,000 µg/L.

Since the barium impacted soils are limited in extent, are capped to limit human exposure, and have not significantly impacted groundwater quality, they do not appear to represent a current risk to human health at the site.

CONCLUSIONS AND REQUEST FOR SITE CLOSURE

In summary, the impacted soil and groundwater at the site do not appear to pose a threat to human health nor the environment. In addition, we judge that the site can be considered as a "low risk" site for the following reasons:

- The USTs have been removed from the site.
- The site has been adequately characterized.
- Impacts to soil and groundwater are minimal and localized.
- The groundwater plume is not migrating.
- No water wells, surface waters, or other sensitive receptors are likely to be exposed.
- The site presents no significant risk to human health given the current site use.

Thus, on behalf of Ms. Howkins, SCI requests that the ACHCSA consider the site for closure as a "low risk" site and that no further action be required at this time.

If you have any questions, please call.

Yours very truly,

Subsurface Consultants, Inc.

Meg Mendoza
Project Engineer

Jeriann N. Alexander, P.E., REA x 123
Civil Engineer 40469 (expires 3/31/99)
Registered Environmental Assessor 03130 (exp. 6/30/99)

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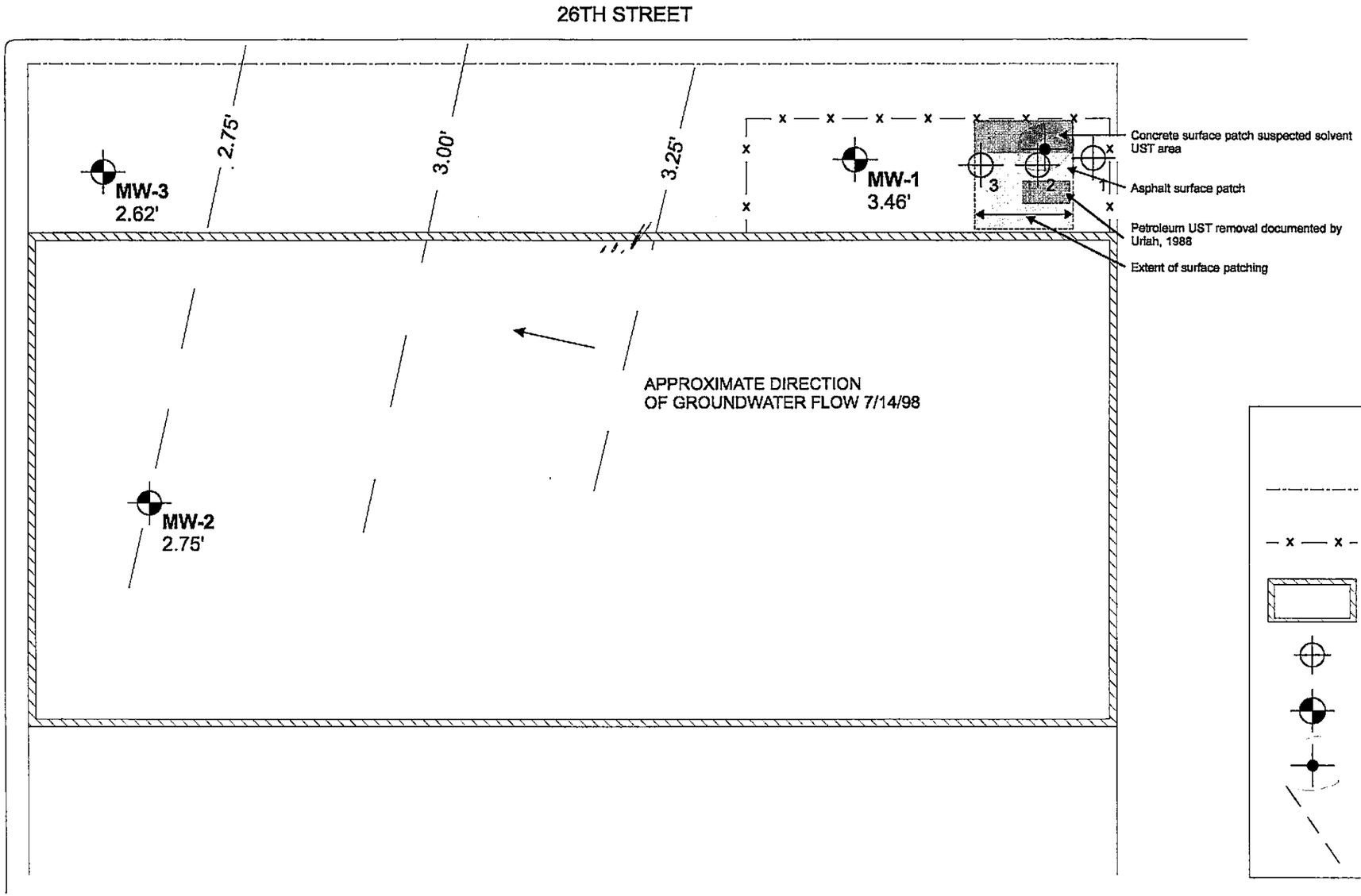
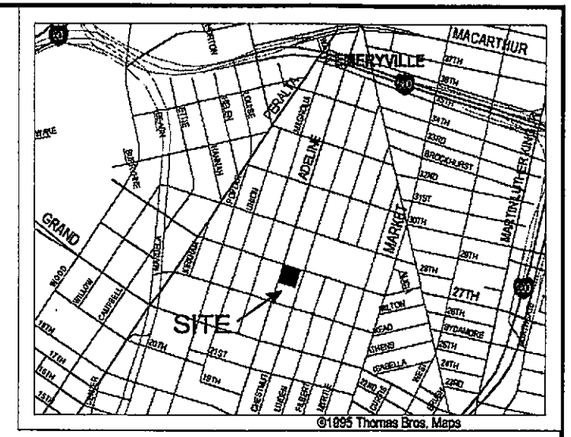
Attachments: Plate 1 - Site Plan
Table 1 - Petroleum Hydrocarbon Concentrations in Groundwater
Table 2 - Volatile Organic Compound Concentrations in Groundwater
Table 3 - Groundwater Elevation Data
Table 4 - Barium, Petroleum Hydrocarbon, and Volatile Organic Compound Concentrations in Soil
Table 5 - Volatilization Pathways
Tier 1 Worksheet
Analytical Test Reports
Chain-of-Custody Documents
Well Sampling Forms
ACHCSA Letter Dated December 31, 1997

cc: Ms. Shirley Howkins
c/o Mr. Gerald C. Smith
Fitzgerald, Abbott & Beardsley LLP
1221 Broadway, 21st Floor
Oakland, California 94612-1837





VICINITY MAP

EXPLANATION

- PROPERTY BOUNDARY
- FENCE
- EXISTING STRUCTURE
- BORING LOCATION
- MONITORING WELL LOCATION
- FORMER WELL LOCATION
- GROUNDWATER ELEVATION CONTOUR

Note: Both former tanks were believed to exist at the eastern end of the fenced area located onsite. Cement and asphalt surface patching were likely placed following tank removal.

APPROXIMATE SCALE (feet)
0 20 40

N

SCI Subsurface Consultants, Inc.
Geotechnical & Environmental Engineers

SITE PLAN

2528 ADELINE STREET - OAKLAND, CALIFORNIA

JOB NUMBER	DATE	APPROVED	PLATE
946.003	7/14/98		1

TABLE 1
PETROLEUM HYDROCARBON CONCENTRATIONS IN GROUNDWATER
2528 ADELINE STREET
OAKLAND, CALIFORNIA

		TVH[1]		TEH[2]							
Sample ID	Date	as Gasoline (µg/L)	as Stoddard Solvent (µg/L)	as Diesel C12-C22 (µg/L)	as Kerosene C10-C16 (µg/L)	O&G (mg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)
Former Well (abandoned)	3/31/95	2800	**	1600*	**	37	--	--	--	--	--
MW-1	4/3/95	730	**	**	310*	5.8	--	--	--	--	--
	4/29/96	2000*	2000*	240*	220*	<5	<0.5	<0.5	65	16	--
	7/25/96	730*	750*	190*	180*	<5	<0.5	<0.5	26	<0.5	--
	10/31/96	<50	<50	<50	<50	<5	<0.5	<0.5	<0.5	<0.5	--
	1/9/97	1800	**	470*	550*	--	<0.5	<0.5	57	26	--
	7/31/97	700	610	290	360	--	<0.5	<0.5	2.7	<0.5	--
	1/13/98	1400*	2800	320*	330*	--	1.2C	4.3C	16	0.95	13C
	7/14/98	630*	340*	250*	160*	--	<0.5	<0.5	1.8	<0.5	3.1
MW-2	8/15/95	83*	**	<50	<50	<5	--	--	--	--	--
	4/29/96	75*	74*	<50	<50	<5	<0.5	<0.5	<0.5	<0.5	--
	7/25/96	110*	92*	<50	<50	<5	<0.5	<0.5	<0.5	<0.5	--
	10/31/96	<50	<50	<50	<50	<5	<0.5	<0.5	<0.5	<0.5	--
	1/9/97	<50	<50	<50	<50	--	<0.5	<0.5	<0.5	<0.5	--
	7/31/97	<50	<50	<50	<50	--	<0.5	<0.5	<0.5	<0.5	--
	1/13/98	<50	<50	<50	<50	--	0.55	<0.5	<0.5	<0.5	15
	7/14/98	<50	<50	58*	<50	--	<0.5	<0.5	<0.5	<0.5	<2
MW-3	8/15/95	<50	<50	<50	<50	<5	--	--	--	--	--
	4/29/96	<50	<50	<50	<50	<5	<0.5	<0.5	<0.5	<0.5	--
	7/25/96	<50	<50	<50	<50	<5	<0.5	<0.5	<0.5	<0.5	--
	10/31/96	<50	<50	<50	<50	<5	<0.5	<0.5	<0.5	<0.5	--
	1/9/97	<50	<50	<50	<50	--	<0.5	<0.5	<0.5	<0.5	--
	7/31/97	<50	<50	<50	<50	--	<0.5	<0.5	<0.5	<0.5	--

8020/

[1]Gasoline and stoddard solvent hydrocarbon ranges overlap
[2]Diesel and kerosene hydrocarbon ranges overlap
* = Sample chromatogram does not resemble standard pattern
** = Range not reported due to overlap of hydrocarbons
µg/L = micrograms per liter or parts per billion
mg/L = milligrams per liter or parts pr million

TVH = Total volatile hydrocarbons
TEH = Total extractable hydrocarbons
MTBE = Methyl tertiary butyl ether
O&G = Oil and grease
-- = Test not requested
<50 = None detected above the laboratory reporting limit stated.

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

TABLE 2
VOLATILE ORGANIC COMPOUND
CONCENTRATIONS IN GROUNDWATER
2528 ADELINE STREET
OAKLAND, CALIFORNIA

SAMPLE ID	Date Sampled	Acetone (µg/L)	Carbon disulfide (µg/L)	1,1-DCA (µg/L)	1,1-DCE (µg/L)	2-Butanone (µg/L)	4-Methyl-2-pentanone (µg/L)	1,1,1-TCA (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl benzene (µg/L)	Total xylenes (µg/L)	cis-1,2-DCE (µg/L)	Other EPA 8240 Compounds
Former Well (Abandoned)	3/31/95	24	4.1*	<5.0	<5.0	7.7*	57	<5.0	4.5*	49	34	270	<5.0	ND
MW-1	4/3/95	<20	<5.0	<5.0	4.2	<10	<10	<5.0	3.1	39	13	75	<5.0	ND
	4/29/96	<20	<5.0	<5.0	6.2	<10	<10	<5.0	<5.0	<5.0	62	12	<5.0	ND
	7/25/96	<20	<5.0	<5.0	<5.0	<10	<10	<5.0	<5.0	<5.0	6.4	<5.0	<5.0	ND
	10/31/96	<20	<5.0	<5.0	<5.0	<10	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	ND
	1/9/97	<20	<5.0	<5.0	<5.0	<10	<10	<5.0	<5.0	<5.0	51	22	<5.0	ND
	7/31/97	<20	<5.0	<5.0	<5.0	<10	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	ND
MW-2	8/15/95	<50	<13	62	260	<25	<25	170	<13	<13	<13	<13	<13	ND
	4/29/96	<20	<5.0	91	400	<10	<10	260	<5.0	<5.0	<5.0	<5.0	<5.0	ND
	7/25/96	<40	<10	70	270	<20	<20	230	<10	<10	<10	<10	<10	ND
	10/31/96	<33	<8.3	67	210	<17	<17	160	<8.3	<8.3	<8.3	<8.3	<8.3	ND
	1/9/97	<50	<13	79	340	<25	<25	230	<13	<13	<13	<13	<13	ND
	7/31/97	<33	<8.3	66	210	<17	<17	120	<8.3	<8.3	<8.3	<8.3	<8.3	ND
	1/13/98	<40	<10	70	270	<20	<20	110	<10	<10	<10	<10	<10	ND
	7/14/98	<33	<8.3	62	170	<17	<17	68	<8.3	<8.3	<8.3	<8.3	<8.3	ND
MW-3	8/15/95	<20	<5.0	3.3	4.1	<10	<10	8.8	<5.0	<5.0	<5.0	<5.0	2.9	ND
	4/29/96	<20	<5.0	<5.0	14	<10	<10	12	<5.0	<5.0	<5.0	<5.0	<5.0	ND
	7/25/96	<20	<5.0	<5.0	7.2	<10	<10	8	<5.0	<5.0	<5.0	<5.0	<5.0	ND
	10/31/96	<20	<5.0	<5.0	<5.0	<10	<10	5.1	<5.0	<5.0	<5.0	<5.0	<5.0	ND
	1/9/97	<20	<5.0	<5.0	<5.0	<10	<10	5.6	<5.0	<5.0	<5.0	<5.0	<5.0	ND
	7/31/97	<20	<5.0	<5.0	<5.0	<10	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	ND

1,1-DCA = 1,1-Dichloroethane
1,1-DCE = 1,1-Dichloroethene
1,1,1-TCA = 1,1,1-Trichloroethane
cis-1,2-DCE = cis-1,2-Dichloroethene
<20 = None detected at or above the stated detection limit

ND = Not detected at or above analytical detection limits. See analytical test reports for individual detection limits.
µg/L = micrograms per liter or parts per billion
* = Estimated value detected below the laboratory reporting limit.

TABLE 3
GROUNDWATER ELEVATION DATA
2528 ADELINE STREET
OAKLAND, CALIFORNIA

Well Number	Date	TOC[1] Elevation (feet)	Groundwater Depths[2] (feet)	Groundwater Elevation[3] (feet)
MW-1	4/3/95	10.99	5.78	5.21
	8/14/95		8.04	2.95
	4/29/96		8.16	2.83
	7/25/96		8.80	2.19
	10/31/96		8.69	2.30
	1/9/97		5.65	5.34
	7/31/97		7.58	3.41
	1/13/98		5.20	5.79
	7/14/98		7.53	3.46
MW-2	8/14/95	9.12	6.42	2.70
	4/29/96		5.43	3.69
	7/25/96		6.68	2.44
	10/31/96		6.74	2.38
	1/9/97		3.99	5.13
	7/31/97		6.78	2.34
	1/13/98		3.70	5.42
	7/14/98		6.37	2.75
MW-3	8/14/95	9.93	7.48	2.45
	4/29/96		7.16	2.77
	7/25/96		7.55	2.38
	10/31/96		7.17	2.76
	1/9/97		6.66	3.27
	7/31/97		7.57	2.36
	1/13/98		6.22	3.71
	7/14/98		7.31	2.62

Notes:
1. TOC - Top of Casing
2. Measured below TOC
3. Reference Mean Sea Level

TABLE 4
BARIUM, PETROLEUM HYDROCARBON, AND VOLATILE ORGANIC COMPOUND CONCENTRATIONS IN SOIL
2528 ADELINE STREET
OAKLAND, CALIFORNIA

Sample ID	Ba (mg/kg)	TEH (mg/kg)	TVH (mg/kg)	O&G (mg/kg)	Methyl-2-pentanol (µg/kg)	Other EPA 8240 Compounds
1 @ 2.0'	**83**	<1.0	<1.0	**60**	**7.5**	ND
1 @ 3.5'	**91**	--	--	--	--	--
1 @ 10.5'	--	<1.0	**14**	**80**	--	--
2 @ 4.0'	**67,000**	**37**	<1.0	**140**	**9.1**	ND
2 @ 5.5'	**1,900**	--	--	--	--	--
2 @ 10.5'	**820**	--	--	--	--	--
2 @ 11'	--	<1.0	**24**	**110**	--	--
3 @ 2.0'	**14,000**	**41**	<1.0	**200**	**18**	ND
3 @ 4.0'	**2,100**	--	--	--	--	--
3 @ 8.0'	**2,900**	--	--	--	--	--
MW-1 @ 3.0'	**220**	<1.0	<1.0	**140**	**60**	ND
MW-1 @ 7.0'	--	<1.0	<1.0	**150**	--	--
MW-1 @ 8.0'	**160**	--	--	--	--	--
MW-2 @ 1.0'	**37**	--	--	--	--	--
MW-3 @ 2.5'	**100**	--	--	--	--	--

TVH = Total volatile hydrocarbons reported as gasoline, however the sample chromatogram does not resemble the gasoline standard.
TEH = Total extractable hydrocarbons reported as diesel, however the sample chromatogram does not resemble the diesel standard.
O&G = Oil and Grease
-- = Test not requested
Ba = Barium
Samples were collected on March 31, or August 9, 1995
mg/kg = milligrams per kilogram
µg/kg = micrograms per kilogram
<1.0 = None detected at or above the stated detection limit

Table 5
Volatilization Pathways, Commercial Scenario
RBCA Calculations, Risk Factor = 10^{-6}
2528 Adeline Street, Oakland
SCI 946.003

GROUNDWATER

Constituents of Concern	Representative Site Concentration (mg/l)	Risk Based Screening Level (RBSL)* Volatilization to Indoor Air (mg/l)	Outdoor Air (mg/l)
Benzene	0.001	0.021†	5.3†
Ethylbenzene	0.004	>Sol	>Sol
Toluene	0.057	85	>Sol
Total Xylenes	0.026	>Sol	>Sol
1,1-Dichloroethane	0.079	55	>Sol
1,1,1-Trichloroethane	0.23	98	>Sol
1,1-Dichloroethene	0.34	1.8	520

Notes:
mg/l = milligrams per liter
>Sol = The RBSL exceeds the pure component solubility; therefore, the selected risk level cannot be reached or exceeded for that compound and the specified exposure scenario.
† Benzene value reflects CAL EPA's more stringent requirements
The representative groundwater concentrations presented are the maximum values detected in site wells during the last 4 monitoring events.
*Obtained from the ASTM E1739-95 "Standard Guide for Risk-Based Corrective Action Applied at Petroleum Release Sites" and Groundwater Services Inc. Guidance Manual for Risk-Based Corrective Action and associated software.

RBCA SITE ASSESSMENT | **Tier 1 Worksheet 6.3**

Site Name: 2528 Adeline
Site Location: Oakland

Completed By: Meg
Date Completed: 8/6/1998

GROUNDWATER RBSL VALUES

Target Risk (Class A & B) 1.0E-6
Target Risk (Class C) 1.0E-5
Target Hazard Quotient 1.0E+0

☐ MCL exposure limit?
☐ PEL exposure limit?

Calculation Option: 1

RBSL Results For Complete Exposure Pathways ("x" If Complete)

CONSTITUENTS OF CONCERN		Representative Concentration		Groundwater Ingestion			X Groundwater Volatilization to Indoor Air		X Groundwater Volatilization to Outdoor Air		Applicable RBSL	Exceeded ?	Required CRF
CAS No.	Name	(mg/L)	Residential: (on-site)	Commercial: (on-site)	Regulatory(MCL): (on-site)	Residential: (on-site)	Commercial: (on-site)	Residential (on-site)	Commercial: (on-site)	(mg/L	"■" If yes	Only if "yes" left
71-43-2	Benzene	1.2E-3	NA	NA	NA	NA	7.4E-2	NA	1.8E+1	7.4E-2	☐	<1
75-35-4	DCE	3.4E-1	NA	NA	NA	NA	1.8E+0	NA	5.2E+2	1.8E+0	☐	<1
75-34-3	Dichloroethane, 1,1-	7.9E-2	NA	NA	NA	NA	5.5E+1	NA	>Sol	5.5E+1	☐	<1
100-41-4	Ethylbenzene	4.0E-3	NA	NA	NA	NA	>Sol	NA	>Sol	>Sol	☐	<1
1634-04-4	Methyl t-Butyl Ether	1.5E-2	NA	NA	NA	NA	3.7E+3	NA	>Sol	3.7E+3	☐	<1
108-88-3	Toluene	5.7E-2	NA	NA	NA	NA	8.5E+1	NA	>Sol	8.5E+1	☐	<1
71-55-6	Trichloroethane, 1,1,1-	2.3E-1	NA	NA	NA	NA	9.8E+1	NA	>Sol	9.8E+1	☐	<1
1330-20-7	Xylene (mixed isomers)	2.6E-2	NA	NA	NA	NA	>Sol	NA	>Sol	>Sol	☐	<1

Software: GSI RBCA Spreadsheet
Version: v 1.0

Serial: G-289-DJX-518

CAL EPA CORRECTION FOR BENZENE RBSL's

INDOOR AIR: 0.074 mg/L * 0.29 = 0.021 mg/L

OUTDOOR AIR: 18 mg/L * 0.29 = 5.22 mg/L

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

ANALYTICAL REPORT

Prepared for:

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

Date: 22-JUL-98
Lab Job Number: 134531
Project ID: 946.003
Location: 2528 Adeline St.

Reviewed by: _____

Reviewed by: _____

TEH-Tot Ext Hydrocarbons

Client: Subsurface Consultants
Project#: 946.003
Location: 2528 Adeline St.

Analysis Method: EPA 8015M
Prep Method: EPA 3520

Sample #	Client ID	Batch #	Sampled	Extracted	Analyzed	Moisture
134531-001	MW-1	42066	07/14/98	07/16/98	07/20/98	
134531-002	MW-2	42066	07/14/98	07/16/98	07/20/98	

Matrix: Water

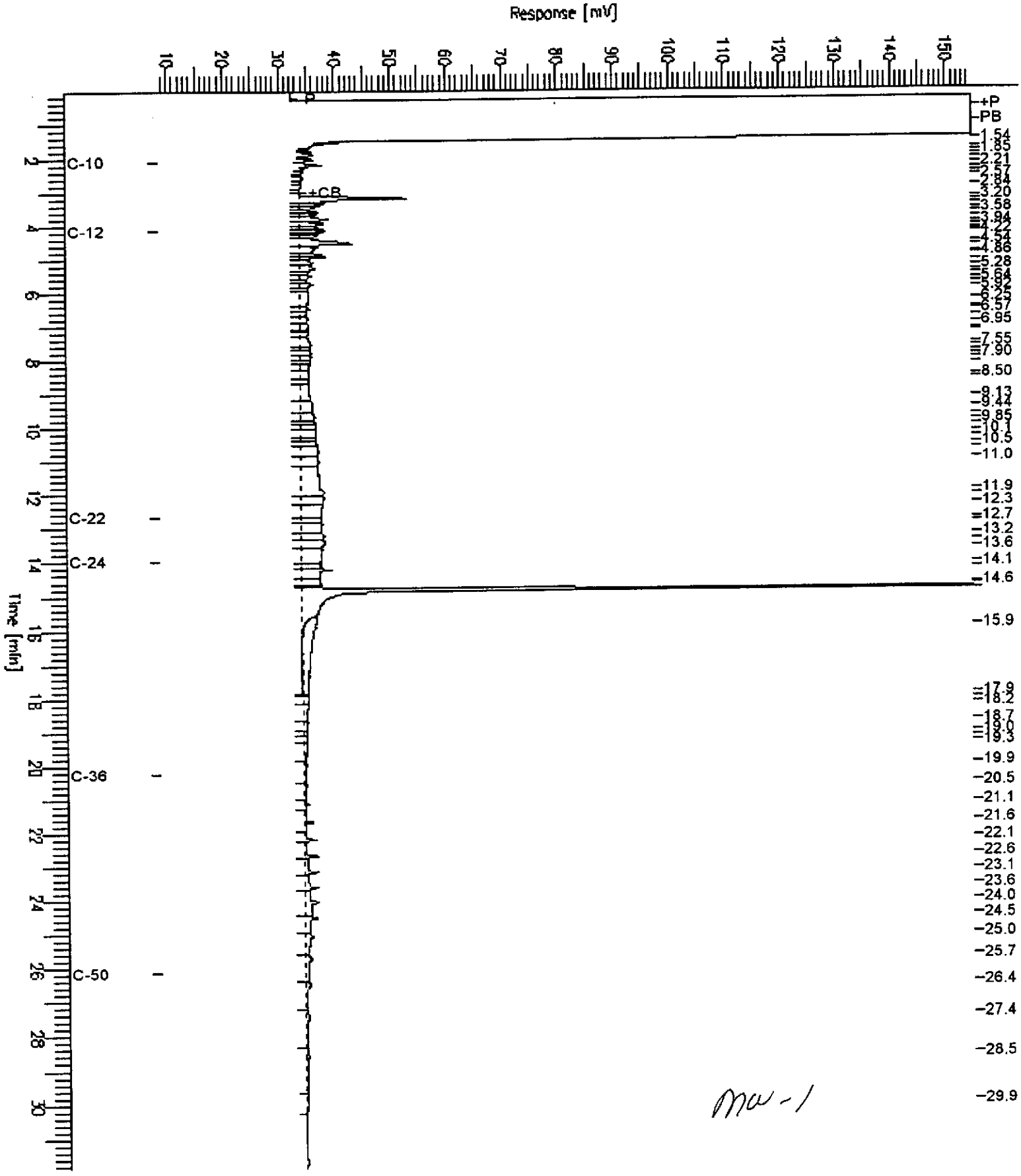
Analyte	Units	134531-001	134531-002
Diln Fac:		1	1
Kerosene C10-C16	ug/L	160 YH	<50
Diesel C12-C22	ug/L	250 Y	58 Y
Surrogate			
Hexacosane	%REC	96	97

Y: Sample exhibits fuel pattern which does not resemble standard
H: Heavier hydrocarbons than indicated standard

GC15 Channel B TEH

Sample Name : 134531-001,42066
FileName : C:\GC15\CHB\201B010.RAW
Method : B180TEH.MTH
Start Time : 0.07 min End Time : 31.91 min
Scale Factor: 0.0 Plot Offset: 8 mV

Sample #: 42066 Page 1 of 1
Date : 7/21/98 03:57 PM
Time of Injection: 7/20/98 08:07 PM
Low Point : 8.37 mV High Point : 154.82 mV
Plot Scale: 146.4 mV

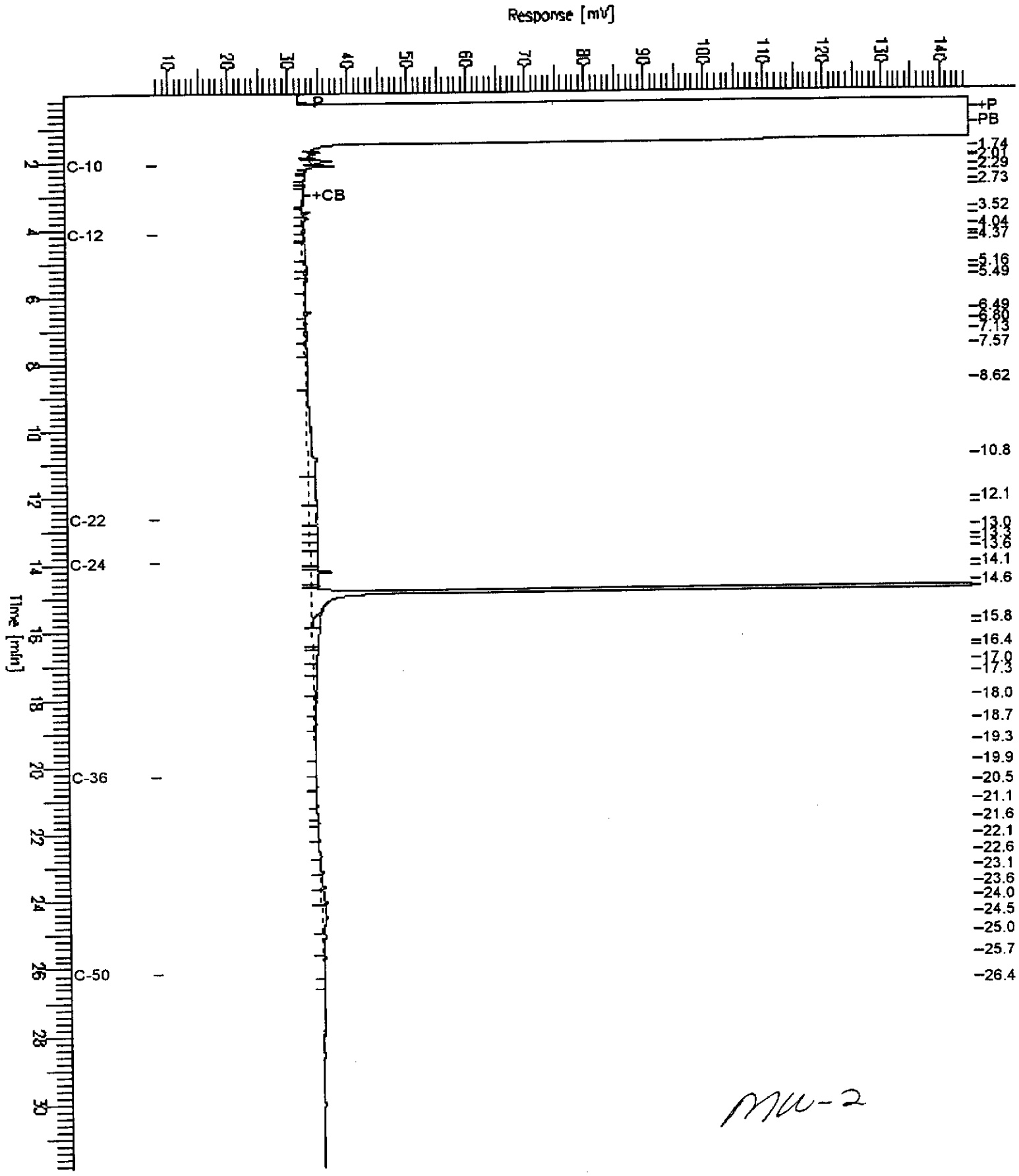


MW-1

GC15 Channel B TEH

Sample Name : 134531-002,42066
FileName : C:\GC15\CHB\201B011.RAW
Method : B180TEH.MTH
Start Time : 0.01 min End Time : 31.91 min
Scale Factor: 0.0 Plot Offset: 8 mV

Sample #: 42066 Page 1 of 1
Date : 7/21/98 03:58 PM
Time of Injection: 7/20/98 08:50 PM
Low Point : 7.92 mV High Point : 144.89 mV
Plot Scale: 137.0 mV



MW-2

Lab #: 134531

BATCH QC REPORT

Curtis & Tompkins, Ltd.

TEH-Tot Ext Hydrocarbons

Client:	Subsurface Consultants	Analysis Method:	EPA 8015M
Project#:	946.003	Prep Method:	EPA 3520
Location:	2528 Adeline St.		

METHOD BLANK

Matrix:	Water	Prep Date:	07/16/98
Batch#:	42066	Analysis Date:	07/21/98
Units:	ug/L		
Diln Fac:	1		

MB Lab ID: QC75077

Analyte	Result
Kerosene C10-C16	<50
Diesel C12-C22	<50

Surrogate	%Rec	Recovery Limits
Hexacosane	98	53-136

Lab #: 134531

BATCH QC REPORT

Curtis & Tompkins Ltd.

TEH-Tot Ext Hydrocarbons

Client: Subsurface Consultants
Project#: 946.003
Location: 2528 Adeline St.

Analysis Method: EPA 8015M
Prep Method: EPA 3520

BLANK SPIKE/BLANK SPIKE DUPLICATE

Matrix: Water
Batch#: 42066
Units: ug/L
Diln Fac: 1

Prep Date: 07/16/98
Analysis Date: 07/21/98

BS Lab ID: QC75078

Analyte	Spike Added	BS	%Rec #	Limits
Diesel C12-C22	2475	2129	86	58-110

Surrogate	%Rec	Limits
Hexacosane	79	53-136

BSD Lab ID: QC75079

Analyte	Spike Added	BSD	%Rec #	Limits	RPD #	Limit
Diesel C12-C22	2475	1802	73	58-110	17	21

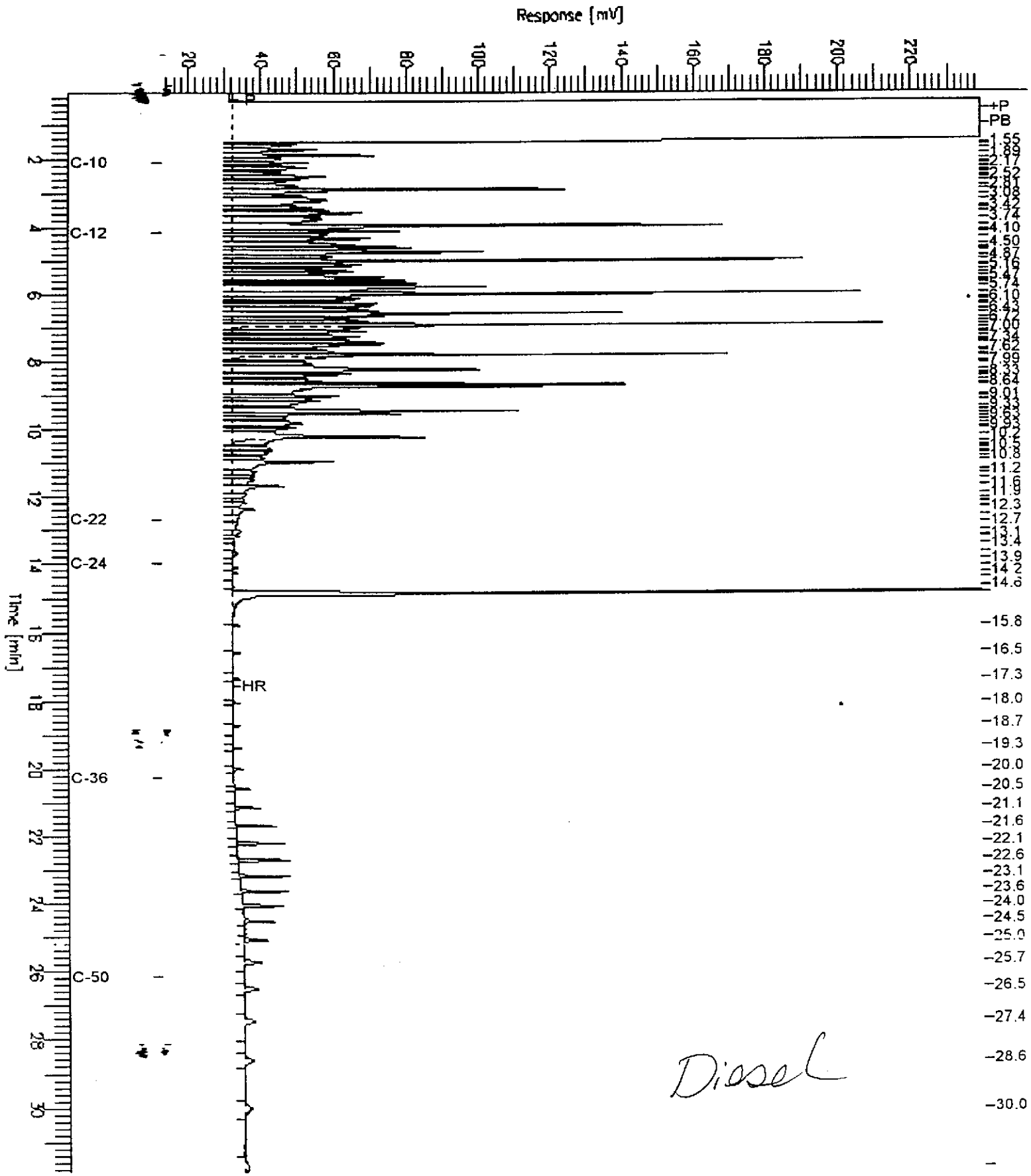
Surrogate	%Rec	Limits
Hexacosane	100	53-136

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

GC15 Channel B TEH

Sample Name : CCV,98WS5988,DS
FileName : C:\GC15\CHB\201B002.RAW
Method : B180TEH.MTH
Start Time : 0.07 min End Time : 31.91 min
Scale Factor: 0.0 Plot Offset: 12 mV

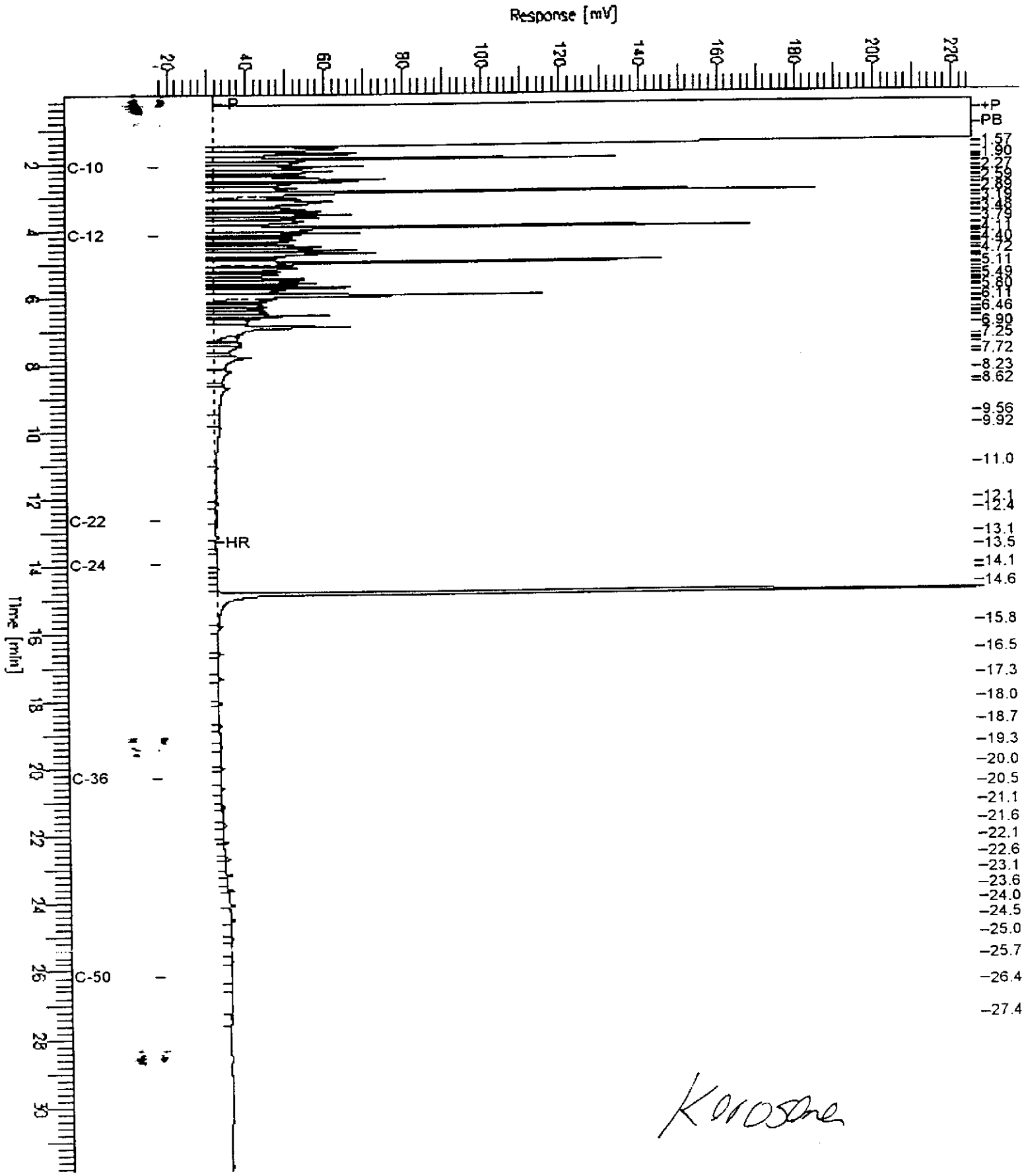
Sample #: 500MG/L Page 1 of 1
Date : 7/21/98 10:57 AM
Time of Injection: 7/20/98 02:01 PM
Low Point : 12.30 mV High Point : 239.23 mV
Plot Scale: 226.9 mV



GC15 Channel B TEH

Sample Name : CCV,98WS5652,KER
FileName : C:\GC15\CHB\201B004.RAW
Method : B180TEH.MTH
Start Time : 0.01 min End Time : 31.91 min
Scale Factor: 0.0 Plot Offset: 17 mV

Sample #: 250MG/L
Date : 7/21/98 11:00 AM
Time of Injection: 7/20/98 03:26 PM
Low Point : -17.39 mV High Point : 225.21 mV
Plot Scale: 207.8 mV



Kerosene

Volatile Organics by GC/MS

Client: Subsurface Consultants
Project#: 946.003
Location: 2528 Adeline St.

Analysis Method: EPA 8260
Prep Method: EPA 5030

Field ID: MW-2
Lab ID: 134531-002
Matrix: Water
Batch#: 42045
Units: ug/L
Diln Fac: 1.667

Sampled: 07/14/98
Received: 07/14/98
Extracted: 07/16/98
Analyzed: 07/16/98

Analyte	Result	Reporting Limit
Freon 12	ND	17
Chloromethane	ND	17
Vinyl Chloride	ND	17
Bromomethane	ND	17
Chloroethane	ND	17
Trichlorofluoromethane	ND	8.3
Acetone	ND	33
Freon 113	ND	8.3
1,1-Dichloroethene	170	8.3
Methylene Chloride	ND	33
Carbon Disulfide	ND	8.3
trans-1,2-Dichloroethene	ND	8.3
Vinyl Acetate	ND	83
1,1-Dichloroethane	62	8.3
2-Butanone	ND	17
cis-1,2-Dichloroethene	ND	8.3
2,2-Dichloropropane	ND	8.3
Chloroform	ND	8.3
Bromochloromethane	ND	17
1,1,1-Trichloroethane	68	8.3
1,1-Dichloropropene	ND	8.3
Carbon Tetrachloride	ND	8.3
1,2-Dichloroethane	ND	8.3
Benzene	ND	8.3
Trichloroethene	ND	8.3
1,2-Dichloropropane	ND	8.3
Bromodichloromethane	ND	8.3
Dibromomethane	ND	8.3
4-Methyl-2-Pentanone	ND	17
cis-1,3-Dichloropropene	ND	8.3
Toluene	ND	8.3
trans-1,3-Dichloropropene	ND	8.3
1,1,2-Trichloroethane	ND	8.3
2-Hexanone	ND	17
1,3-Dichloropropane	ND	8.3
Tetrachloroethene	ND	8.3
Dibromochloromethane	ND	8.3
1,2-Dibromoethane	ND	8.3

Volatile Organics by GC/MS

Field ID:	MW-2	Sampled:	07/14/98
Lab ID:	134531-002	Received:	07/14/98
Matrix:	Water	Extracted:	07/16/98
Batch#:	42045	Analyzed:	07/16/98
Units:	ug/L		
Diln Fac:	1.667		

Analyte	Result	Reporting Limit
Chlorobenzene	ND	8.3
1,1,1,2-Tetrachloroethane	ND	8.3
Ethylbenzene	ND	8.3
m,p-Xylenes	ND	8.3
o-Xylene	ND	8.3
Styrene	ND	8.3
Bromoform	ND	8.3
Isopropylbenzene	ND	8.3
1,1,2,2-Tetrachloroethane	ND	8.3
1,2,3-Trichloropropane	ND	8.3
Propylbenzene	ND	8.3
Bromobenzene	ND	8.3
1,3,5-Trimethylbenzene	ND	8.3
2-Chlorotoluene	ND	8.3
4-Chlorotoluene	ND	8.3
tert-Butylbenzene	ND	8.3
1,2,4-Trimethylbenzene	ND	8.3
sec-Butylbenzene	ND	8.3
para-Isopropyl Toluene	ND	8.3
1,3-Dichlorobenzene	ND	8.3
1,4-Dichlorobenzene	ND	8.3
n-Butylbenzene	ND	8.3
1,2-Dichlorobenzene	ND	8.3
1,2-Dibromo-3-Chloropropane	ND	8.3
1,2,4-Trichlorobenzene	ND	8.3
Hexachlorobutadiene	ND	8.3
Naphthalene	ND	8.3
1,2,3-Trichlorobenzene	ND	8.3

Surrogate	%Recovery	Recovery Limits
Dibromofluoromethane	104	76-128
1,2-Dichloroethane-d4	99	85-121
Toluene-d8	97	92-110
Bromofluorobenzene	95	84-115

Lab #: 134531 BATCH QC REPORT

EPA 8260 Volatile Organics

Client: Subsurface Consultants
Project#: 946.003
Location: 2528 Adeline St.

Analysis Method: EPA 8260
Prep Method: EPA 5030

METHOD BLANK

Matrix: Water
Batch#: 42045
Units: ug/L
Diln Fac: 1

Prep Date: 07/16/98
Analysis Date: 07/16/98

MB Lab ID: QC75008

Analyte	Result	Reporting Limit
Freon 12	ND	10
Chloromethane	ND	10
Vinyl Chloride	ND	10
Bromomethane	ND	10
Chloroethane	ND	10
Trichlorofluoromethane	ND	5.0
Acetone	ND	20
Freon 113	ND	5.0
1,1-Dichloroethene	ND	5.0
Methylene Chloride	ND	20
Carbon Disulfide	ND	5.0
trans-1,2-Dichloroethene	ND	5.0
Vinyl Acetate	ND	50
1,1-Dichloroethane	ND	5.0
2-Butanone	ND	10
cis-1,2-Dichloroethene	ND	5.0
2,2-Dichloropropane	ND	5.0
Chloroform	ND	5.0
Bromochloromethane	ND	10
1,1,1-Trichloroethane	ND	5.0
1,1-Dichloropropene	ND	5.0
Carbon Tetrachloride	ND	5.0
1,2-Dichloroethane	ND	5.0
Benzene	ND	5.0
Trichloroethene	ND	5.0
1,2-Dichloropropane	ND	5.0
Bromodichloromethane	ND	5.0
Dibromomethane	ND	5.0
4-Methyl-2-Pentanone	ND	10
cis-1,3-Dichloropropene	ND	5.0
Toluene	ND	5.0
trans-1,3-Dichloropropene	ND	5.0
1,1,2-Trichloroethane	ND	5.0
2-Hexanone	ND	10
1,3-Dichloropropane	ND	5.0
Tetrachloroethene	ND	5.0
Dibromochloromethane	ND	5.0
1,2-Dibromoethane	ND	5.0

Lab #: 134531 BATCH QC REPORT

EPA 8260 Volatile Organics

Client: Subsurface Consultants
Project#: 946.003
Location: 2528 Adeline St.

Analysis Method: EPA 8260
Prep Method: EPA 5030

METHOD BLANK

Matrix: Water
Batch#: 42045
Units: ug/L
Diln Fac: 1

Prep Date: 07/16/98
Analysis Date: 07/16/98

MB Lab ID: QC75008

Analyte	Result	Reporting Limit
Chlorobenzene	ND	5.0
1,1,1,2-Tetrachloroethane	ND	5.0
Ethylbenzene	ND	5.0
m,p-Xylenes	ND	5.0
o-Xylene	ND	5.0
Styrene	ND	5.0
Bromoform	ND	5.0
Isopropylbenzene	ND	5.0
1,1,2,2-Tetrachloroethane	ND	5.0
1,2,3-Trichloropropane	ND	5.0
Propylbenzene	ND	5.0
Bromobenzene	ND	5.0
1,3,5-Trimethylbenzene	ND	5.0
2-Chlorotoluene	ND	5.0
4-Chlorotoluene	ND	5.0
tert-Butylbenzene	ND	5.0
1,2,4-Trimethylbenzene	ND	5.0
sec-Butylbenzene	ND	5.0
para-Isopropyl Toluene	ND	5.0
1,3-Dichlorobenzene	ND	5.0
1,4-Dichlorobenzene	ND	5.0
n-Butylbenzene	ND	5.0
1,2-Dichlorobenzene	ND	5.0
1,2-Dibromo-3-Chloropropane	ND	5.0
1,2,4-Trichlorobenzene	ND	5.0
Hexachlorobutadiene	ND	5.0
Naphthalene	ND	5.0
1,2,3-Trichlorobenzene	ND	5.0

Surrogate	%Rec	Recovery Limits
Dibromofluoromethane	102	76-128
1,2-Dichloroethane-d4	97	85-121
Toluene-d8	97	92-110
Bromofluorobenzene	95	84-115

Lab #: 134531

BATCH QC REPORT

Curtis & Tompkins, Ltd.

EPA 8260 Volatile Organics

Client: Subsurface Consultants
Project#: 946.003
Location: 2528 Adeline St.

Analysis Method: EPA 8260
Prep Method: EPA 5030

BLANK SPIKE/BLANK SPIKE DUPLICATE

Matrix: Water
Batch#: 42045
Units: ug/L
Diln Fac: 1

Prep Date: 07/16/98
Analysis Date: 07/16/98

BS Lab ID: QC75006

Analyte	Spike Added	BS	%Rec #	Limits
1,1-Dichloroethene	50	40.92	82	69-137
Benzene	50	45.41	91	87-117
Trichloroethene	50	47.29	95	83-116
Toluene	50	46.26	93	88-116
Chlorobenzene	50	48.2	96	87-117

Surrogate	%Rec	Limits
Dibromofluoromethane	101	76-128
1,2-Dichloroethane-d4	98	85-121
Toluene-d8	97	92-110
Bromofluorobenzene	95	84-115

BSD Lab ID: QC75007

Analyte	Spike Added	BSD	%Rec #	Limits	RPD #	Limit
1,1-Dichloroethene	50	46.74	93	69-137	13	14
Benzene	50	46.51	93	87-117	2	10
Trichloroethene	50	49.79	100	83-116	5	10
Toluene	50	49.08	98	88-116	6	10
Chlorobenzene	50	50.81	102	87-117	5	10

Surrogate	%Rec	Limits
Dibromofluoromethane	102	76-128
1,2-Dichloroethane-d4	97	85-121
Toluene-d8	97	92-110
Bromofluorobenzene	95	84-115

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits
RPD: 0 out of 5 outside limits
Spike Recovery: 0 out of 10 outside limits

TVH-Total Volatile Hydrocarbons

Client: Subsurface Consultants
Project#: 946.003
Location: 2528 Adeline St.

Analysis Method: EPA 8015M
Prep Method: EPA 5030

Sample #	Client ID	Batch #	Sampled	Extracted	Analyzed	Moisture
134531-001	MW-1	42043	07/14/98	07/17/98	07/17/98	
134531-002	MW-2	42043	07/14/98	07/16/98	07/16/98	

Matrix: Water

Analyte	Units	134531-001		134531-002
Diln Fac:		1		1
Gasoline C7-C12	ug/L	630	YL	<50
Stoddard Solvent	ug/L	340	YL	<50
Surrogate				
Trifluorotoluene	%REC	149		120
Bromofluorobenzene	%REC	114		109

Y: Sample exhibits fuel pattern which does not resemble standard
L: Lighter hydrocarbons than indicated standard

BTXE

Client: Subsurface Consultants
Project#: 946.003
Location: 2528 Adeline St.

Analysis Method: EPA 8020A
Prep Method: EPA 5030

Sample #	Client ID	Batch #	Sampled	Extracted	Analyzed	Moisture
134531-001	MW-1	42043	07/14/98	07/17/98	07/17/98	
134531-002	MW-2	42043	07/14/98	07/16/98	07/16/98	

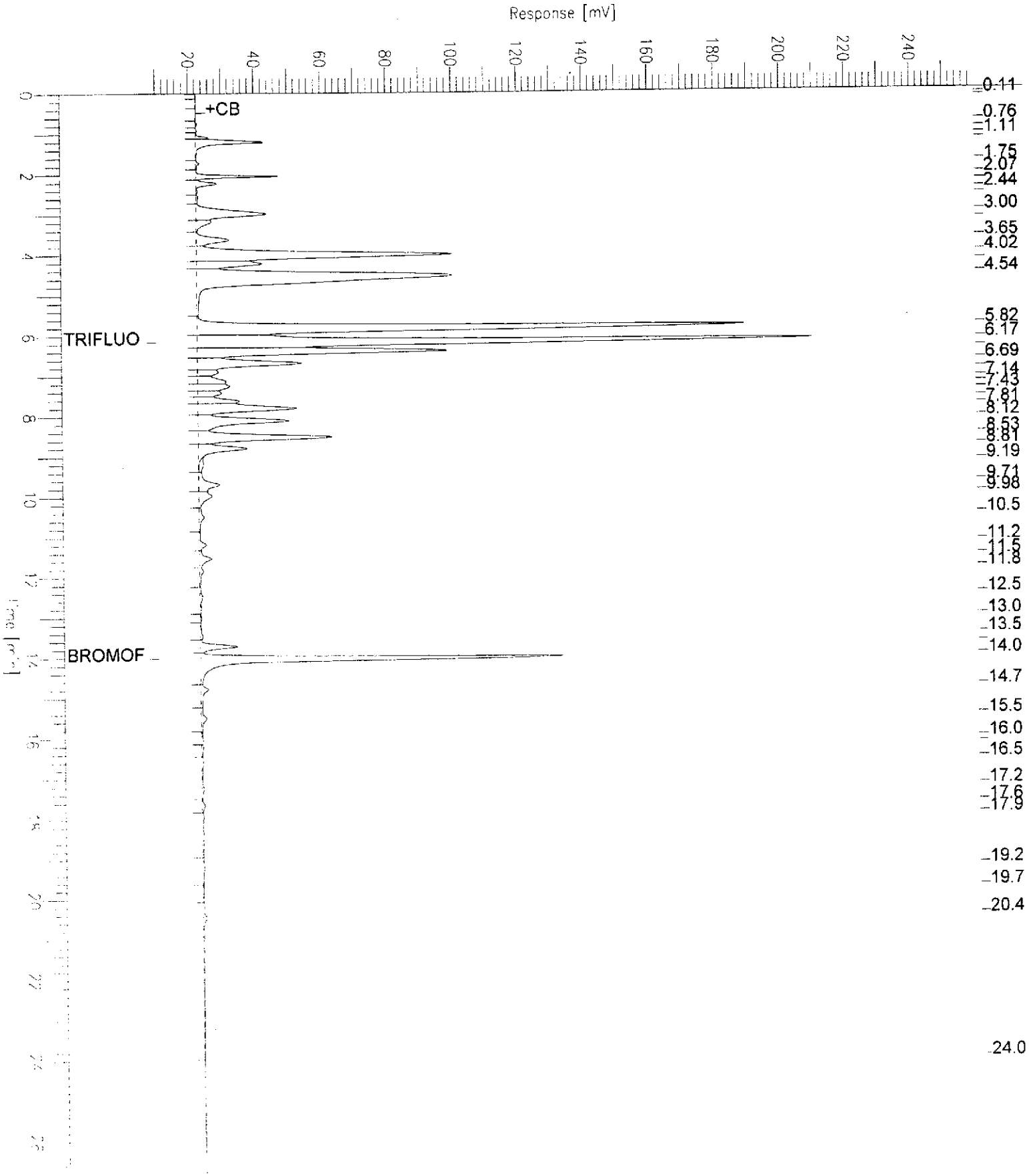
Matrix: Water

Analyte	Units	134531-001	134531-002
Diln Fac:		1	1
MTBE	ug/L	3.1	<2
Benzene	ug/L	<0.5	<0.5
Toluene	ug/L	<0.5	<0.5
Ethylbenzene	ug/L	1.8	<0.5
m,p-Xylenes	ug/L	<0.5	<0.5
o-Xylene	ug/L	<0.5	<0.5
Surrogate			
Trifluorotoluene	%REC	100	85
Bromofluorobenzene	%REC	89	85

GC05 'G' File TVH

Sample Name : RR,134531-001,42043,
FileName : G:\GC05\DATA\197G024.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 26.80 min
Scale Factor: -1.0 Plot Offset: 10 mV

Sample #:
Date : 7/17/98 12:51 AM
Time of Injection: 7/17/98 12:24 AM
Low Point : 9.83 mV High Point : 259.83 mV
Plot Scale: 250.0 mV

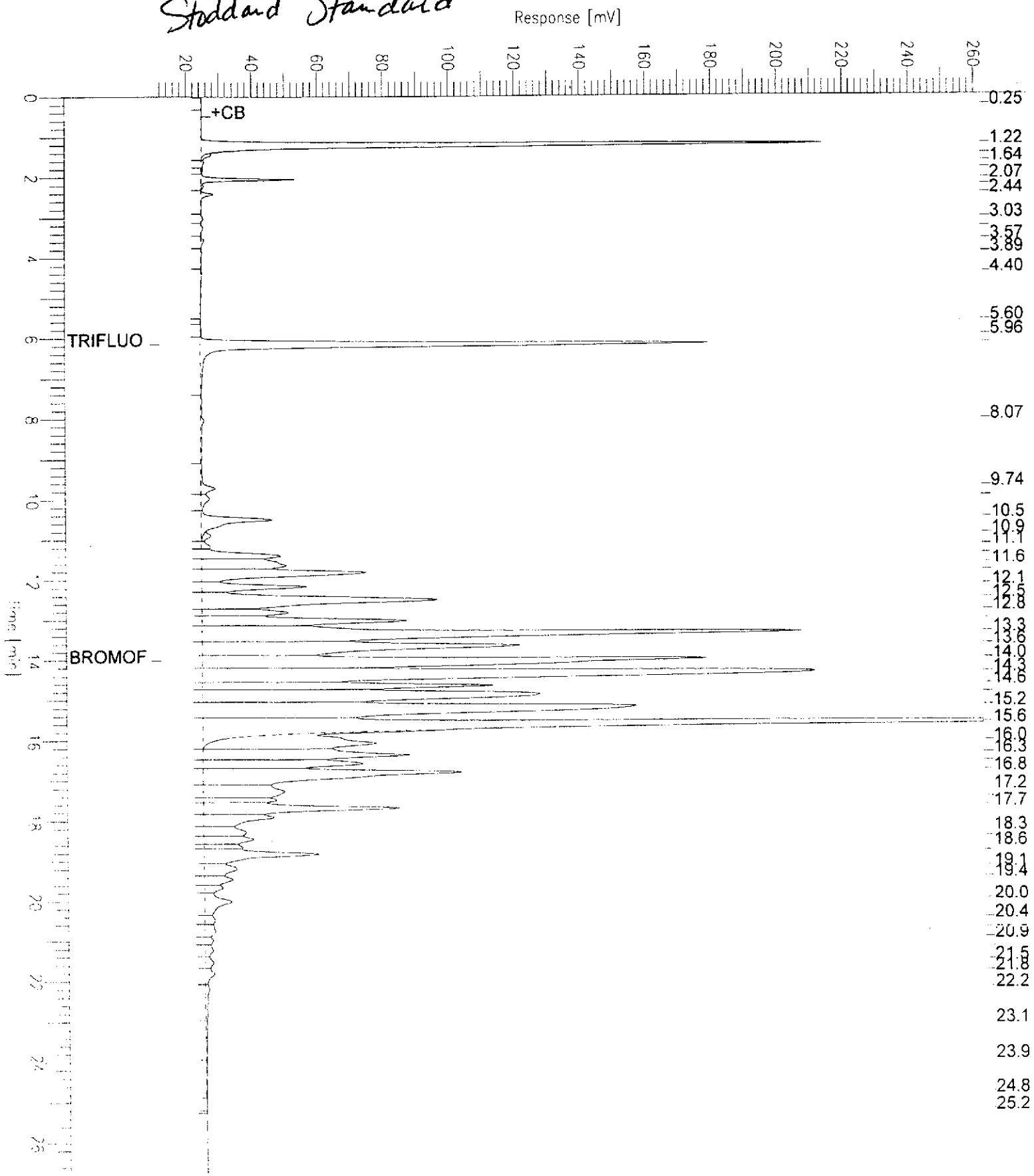


GC05 'G' File TVH

Sample Name : CCV,98WS5833,42043,
FileName : G:\GC05\DATA\197G002.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 26.80 min
Scale Factor: -1.0 Plot Offset: 12 mV

Sample #: STODDARD Page 1 of 1
Date : 7/16/98 10:47 AM
Time of Injection: 7/16/98 10:20 AM
Low Point : 11.95 mV High Point : 261.95 mV
Plot Scale: 250.0 mV

Stoddard Standard

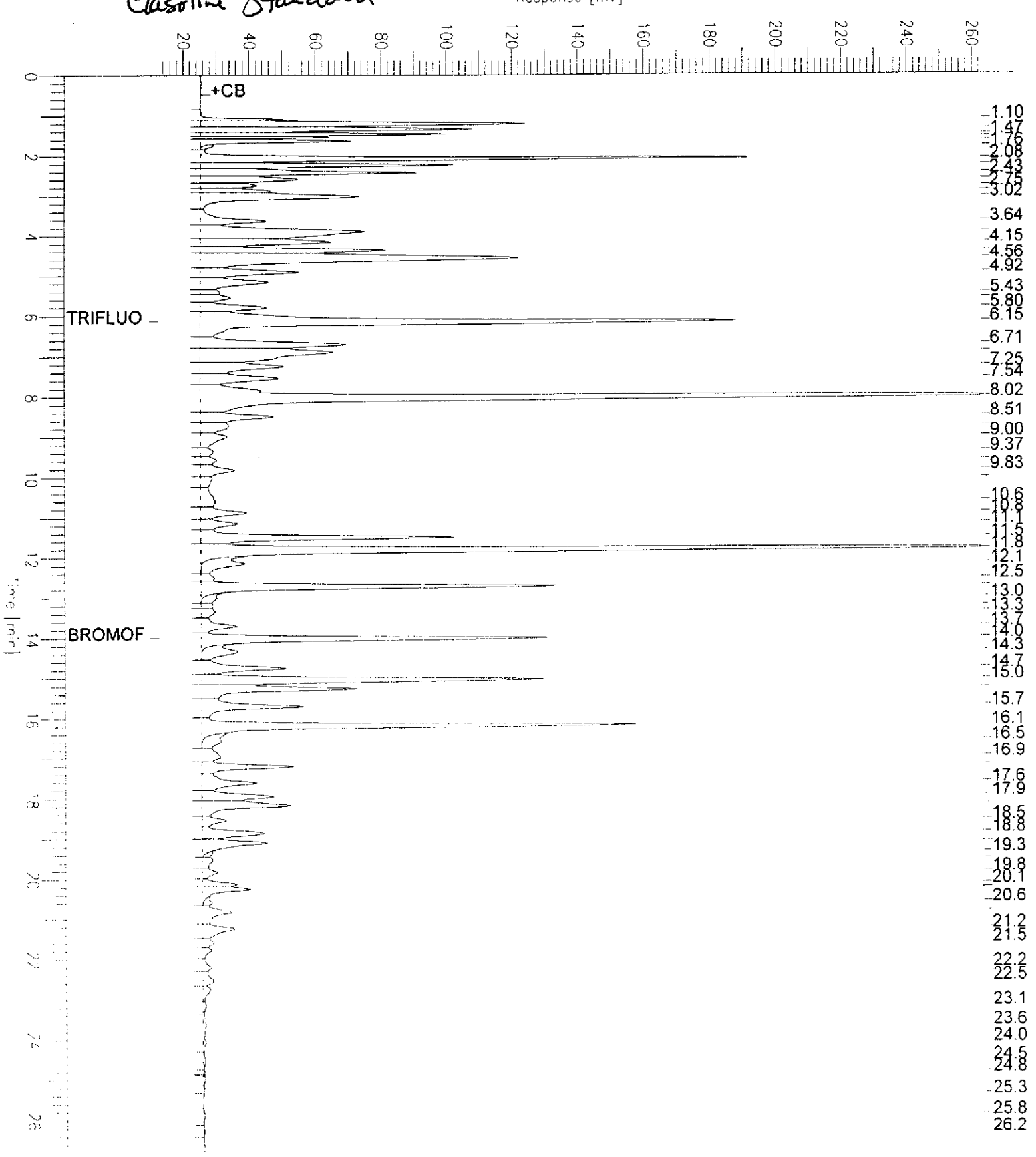


GC05 'G' File TVH

Sample Name : CCV/LCS,QC75000,98WS6074,42043,
FileName : G:\GC05\DATA\197G001.raw
Method : TVHBTXE
Start Time : 0.00 min End Time : 26.80 min
Scale Factor: -1.0 Plot Offset: 13 mV

Sample #: GAS
Date : 7/16/98 10:11 AM
Time of Injection: 7/16/98 09:44 AM
Low Point : 12.72 mV High Point : 262.72 mV
Plot Scale: 250.0 mV

Gasoline Standard



TVH-Total Volatile Hydrocarbons

Client: Subsurface Consultants
Project#: 946.003
Location: 2528 Adeline St.

Analysis Method: EPA 8015M
Prep Method: EPA 5030

METHOD BLANK

Matrix: Water
Batch#: 42043
Units: ug/L
Diln Fac: 1

Prep Date: 07/16/98
Analysis Date: 07/16/98

MB Lab ID: QC75001

Analyte	Result
Gasoline C7-C12	<50
Stoddard Solvent	<50

Surrogate	%Rec	Recovery Limits
Trifluorotoluene	109	59-162
Bromofluorobenzene	100	59-162

BATCH QC REPORT

Curtis & Tompkins, Ltd.

BTXE

Client: Subsurface Consultants
Project#: 946.003
Location: 2528 Adeline St.

Analysis Method: EPA 8020A
Prep Method: EPA 5030

METHOD BLANK

Matrix: Water
Batch#: 42043
Units: ug/L
Diln Fac: 1

Prep Date: 07/16/98
Analysis Date: 07/16/98

MB Lab ID: QC75001

Analyte	Result
MTBE	<2.0
Benzene	<0.5
Toluene	<0.5
Ethylbenzene	<0.5
m,p-Xylenes	<0.5
o-Xylene	<0.5

Surrogate	%Rec	Recovery Limits
Trifluorotoluene	80	53-124
Bromofluorobenzene	82	41-142

Lab #: 134531

BATCH QC REPORT

Curtis & Tompkins, Ltd.

TVH-Total Volatile Hydrocarbons

Client: Subsurface Consultants
Project#: 946.003
Location: 2528 Adeline St.

Analysis Method: EPA 8015M
Prep Method: EPA 5030

LABORATORY CONTROL SAMPLE

Matrix: Water
Batch#: 42043
Units: ug/L
Diln Fac: 1

Prep Date: 07/16/98
Analysis Date: 07/16/98

LCS Lab ID: QC75000

Analyte	Result	Spike Added	%Rec #	Limits
Gasoline C7-C12	2008	2000	100	80-119

Surrogate	%Rec	Limits
Trifluorotoluene	139	59-162
Bromofluorobenzene	105	59-162

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 #: 134531 BATCH QC REPORT

Curtis & Tompkins, Ltd.

BTXE

Client: Subsurface Consultants
Project#: 946.003
Location: 2528 Adeline St.

Analysis Method: EPA 8020A
Prep Method: EPA 5030

BLANK SPIKE/BLANK SPIKE DUPLICATE

Matrix: Water
Batch#: 42043
Units: ug/L
Diln Fac: 1

Prep Date: 07/16/98
Analysis Date: 07/16/98

BS Lab ID: QC75002

Analyte	Spike Added	BS	%Rec #	Limits
MTBE	20	18.63	93	65-135
Benzene	20	16.83	84	69-109
Toluene	20	19.45	97	72-116
Ethylbenzene	20	18.64	93	67-120
m,p-Xylenes	40	39.37	98	69-117
o-Xylene	20	19.74	99	75-122

Surrogate	%Rec	Limits
Trifluorotoluene	83	53-124
Bromofluorobenzene	83	41-142

BSD Lab ID: QC75003

Analyte	Spike Added	BSD	%Rec #	Limits	RPD #	Limit
MTBE	20	19.66	98	65-135	5	20
Benzene	20	17.34	87	69-109	3	11
Toluene	20	19.45	97	72-116	0	11
Ethylbenzene	20	18.97	95	67-120	2	12
m,p-Xylenes	40	39.99	100	69-117	2	11
o-Xylene	20	20.12	101	75-122	2	12

Surrogate	%Rec	Limits
Trifluorotoluene	82	53-124
Bromofluorobenzene	83	41-142

Column to be used to flag recovery and RPD values with an asterisk
* Values outside of QC limits
RPD: 0 out of 6 outside limits
Spike Recovery: 0 out of 12 outside limits

Lab #: 134531

BATCH QC REPORT

Curtis & Tompkins, Ltd.

TVH-Total Volatile Hydrocarbons

Client: Subsurface Consultants
Project#: 946.003
Location: 2528 Adeline St.

Analysis Method: EPA 8015M
Prep Method: EPA 5030

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Field ID: ZZZZZZ
Lab ID: 134504-008
Matrix: Water
Batch#: 42043
Units: ug/L
Diln Fac: 1

Sample Date: 07/09/98
Received Date: 07/10/98
Prep Date: 07/16/98
Analysis Date: 07/16/98

MS Lab ID: QC75004

Analyte	Spike Added	Sample	MS	%Rec #	Limits
Gasoline C7-C12	2000	<50	2114	106	71-131

Surrogate	%Rec	Limits
Trifluorotoluene	154	59-162
Bromofluorobenzene	121	59-162

MSD Lab ID: QC75005

Analyte	Spike Added	MSD	%Rec #	Limits	RPD #	Limit
Gasoline C7-C12	2000	2096	105	71-131	1	26

Surrogate	%Rec	Limits
Trifluorotoluene	153	59-162
Bromofluorobenzene	121	59-162

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

CHAIN OF CUSTODY FORM

134531

PAGE ____ OF ____

PROJECT NAME: 2528 Adeline St.
JOB NUMBER: 946.003
PROJECT CONTACT: Meg Mendoza
SAMPLED BY: Dennis Alexander

LAB: Curtis & Tompkins
TURNAROUND: Normal
REQUESTED BY: Meg Mendoza

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: TEH@diesel/kerosene	TVH@gas/stoddard solvent	BTXE	MTBE	VOCs
	MW-1	X				7	1			X			X		07	14	98	1100		X	X	X	X	
	MW-2	X				7	1			X			X		07	14	98	1000		X	X	X	X	X

CHAIN OF CUSTODY RECORD

RELEASED BY: (Signature)	DATE / TIME	RECEIVED BY: (Signature)	DATE / TIME
Dennis Alexander	7/14/98 1140	J. GUERRERO	7-14-98 1140
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 201, OAKLAND, CALIFORNIA 94607
(510) 268-0461 • FAX: 510-268-0137

GROUNDWATER DEPTHS

Project Name: 2528 Adeline St.

Job No.: 946.003

Measured by: DWA

Well	Date	Time	Groundwater Depth (feet)	Comments
MW-1	7/14/98	0915	7.53	
MW-2	↓	0930	6.37	
MW-3	↓	0910	7.31	

WELL SAMPLING FORM

Project Name: 2528 Adeline St. Well Number: MW-1

Job No.: 946.003 Well Casing Diameter: 2 inches

Sampled By: DWA Date: 7/14/98

TOC Elevation: _____ Weather: sunny

Depth to Casing Bottom (below TOC) 20.00 feet

Depth to Groundwater Before Purging (below TOC) 7.53 feet

Feet of Water in Well 12.47 feet

Depth to Groundwater When 80% Recovered 10.02 feet

Casing Volume (feet of water x Casing DIA ^{2} x 0.0408) 2.0 gallons

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

Free Product none

Purge Method disposable bailer

FIELD MEASUREMENTS

fast recharge

Gallons Removed	Time	pH	Temp (°C / °F)	Conductivity (micromhos/cm)	Salinity S%	Comments
2		6.35	19.0	900		clear/no odor
4		6.41	19.0	900		"
6		6.39	19.0	900		semi-clear
8		6.40	18.5	800		murky

Total Gallons Purged 8 gallons

Depth to Groundwater Before Sampling (below TOC) 9.80 feet

Sampling Method disposable bailer

Containers Used 7 (40 ml) 1 (liter) _____ (pint) _____

Subsurface Consultants

JOB NUMBER DATE APPROVED

PLATE

WELL SAMPLING FORM

Project Name: 2528 Adeline St.
Well Number: MW-2
Job No.: 946.003
Well Casing Diameter: 2 inches
Sampled By: DWA
Date: 7/14/98
TOC Elevation:
Weather: foggy

Depth to Casing Bottom (below TOC) 13.50 feet
Depth to Groundwater Before Purging (below TOC) 6.37 feet
Feet of Water in Well 7.13 feet
Depth to Groundwater When 80% Recovered 7.80 feet
Casing Volume (feet of water x Casing DIA ² x 0.0408) 1.1 gallons
Depth Measurement Method Tape & Paste / (Electronic Sounder) / Other
Free Product none
Purge Method disposable bailer fast recharge

FIELD MEASUREMENTS

Gallons Removed	Time	pH	Temp (°C / °F)	Conductivity (micromhos/cm)	Salinity S%	Comments
1		6.41	18.0	1125		semi-clear/no odor
2		5.99	18.0	1175		
3		5.96	18.0	1125		
4		5.96	18.0	1125		

Total Gallons Purged 4 gallons
Depth to Groundwater Before Sampling (below TOC) 7.63 feet
Sampling Method disposable bailer
Containers Used 7 (40 ml) 1 (liter) (pint)

Subsurface Consultants

JOB NUMBER DATE APPROVED

PLATE

December 31, 1997
STID #266

Shirley B. Howkins
Formerly Aeroe Pacific
1132 Carpentier St., #207
San Leandro, CA 94577

Dear Shirley B. Howkins:

This office has received and reviewed Quarterly Monitoring Reports dated March 5, 1997 and September 26, 1997 by Subsurface Consultants, Inc. for the above site. The following are comments concerning these reports:

1. This office accepts the "conclusions and petition which runs from page 2 to page 3 of the latter report. It is assumed that MTBE does not have to be tested for because motor vehicle fuel was never used at the site.

2. Biannual testing, as stated in the first report, is acceptable.

3. This case may be acceptable for closure after the next round of sampling. Closure should be requested if it is desired.

Please contact Larry Seto at (510) 567-6774 if you have any questions.

Sincerely,

Thomas Peacock, Manager
Division of Environmental Protection

c: Meg Mendoza, Subsurface Consultants, Inc., 3736 Mt. Diablo Blvd., Suite 200, Lafayette, CA 94549
Dick Pantages - Chief - Files
LeRoy Griffin, City of Oakland Hazardous Materials