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1/30/95



**ENVIRONMENTAL SERVICES, inc.**

(\*FORMERLY CEC/WRA\*)

**SECOND QUARTER GROUNDWATER MONITORING REPORT  
AT 1234 40th AVENUE, OAKLAND, CALIFORNIA**

**PREPARED FOR**

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**GROWTH Project No. 477-1532**

**January 30, 1995**

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# 1.0 INTRODUCTION

## 1.1 SITE LOCATION AND DESCRIPTION

The Motor Partners site is located at 1234 40th Avenue near 14th St. in the Fruitvale District of Oakland, California (Figure 1). The site is situated in the East Bay Plain of Alameda County in a moderately commercial and residential area three miles southeast of downtown Oakland near Nimitz Freeway (I-880). BART rail tracks are about 500 ft. west of the site and San Leandro Bay is less than one mile to the south. The nearest surface water is a tidal canal about 0.5 mile to the southwest.

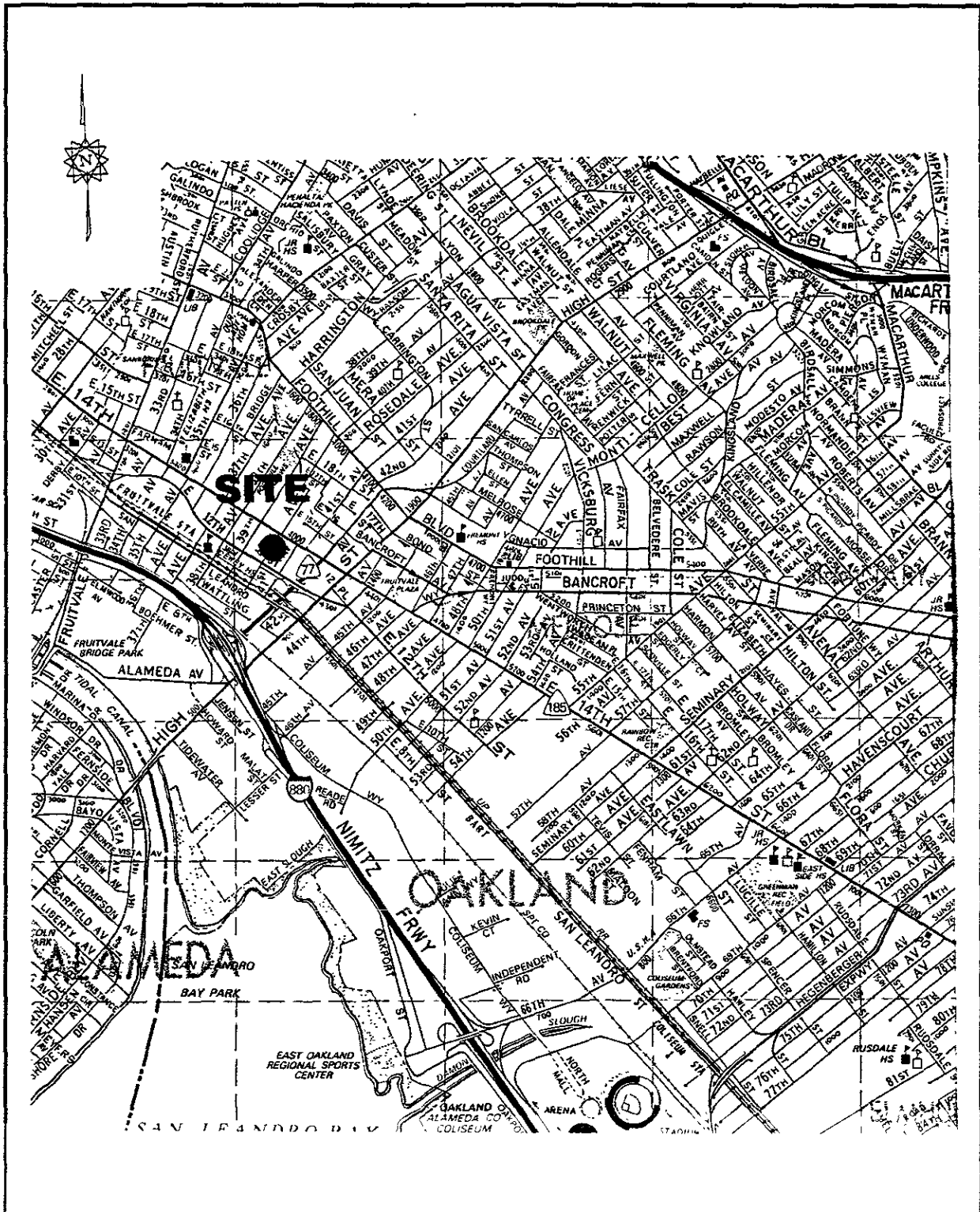
## 1.2 SITE HISTORY AND USE

**Site Use.** Motor Partners utilized the site in the past for auto repair shops. Much of the building is now vacant or used for storage. Two underground storage tanks were maintained outside the 1234 40th Ave. building. A 1,000-gallon underground gasoline tank and a 500-gallon underground waste oil tank were located below the sidewalk (Figure 2).

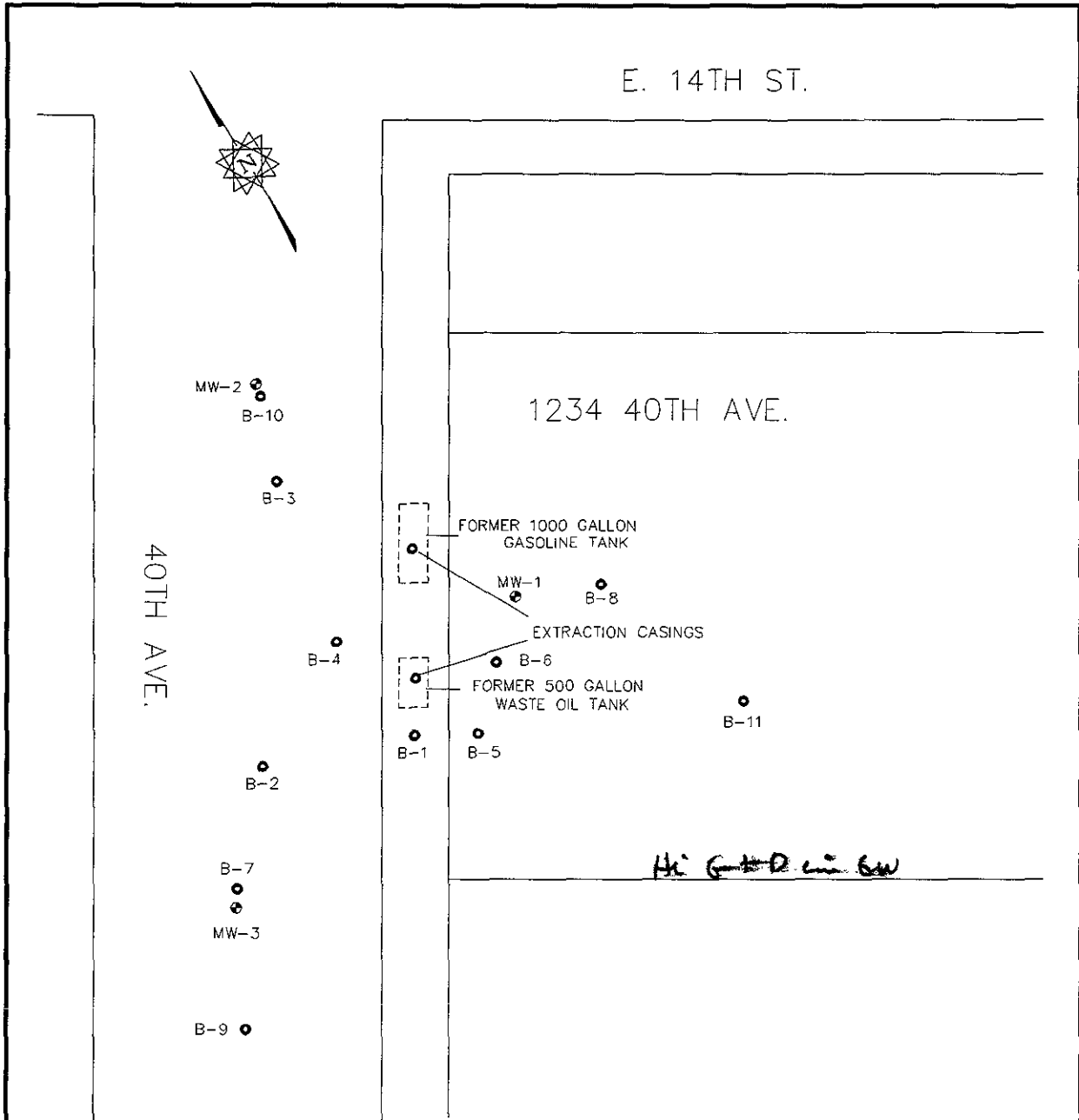
**Tank Removal.** On Oct. 12, 1990, SEMCO, Inc. of Modesto, California removed both tanks. The concentration of total petroleum hydrocarbons as gasoline (TPH-G) below the 1000-gallon tank was 1600 mg/kg. The TPH-G and TPH-D concentrations below the 500-gallon tank were 570 mg/kg and 650 mg/kg, respectively. There was no record of groundwater in the excavations. The excavations were backfilled to grade with original spoils.

In January 1994, SEMCO re-excavated the area to remove the petroleum-impacted soil and backfill. Groundwater was encountered at an unknown depth. During the course of overexcavation, it was noted that contamination extended beneath the building and into the street. The presence of utilities prevented further excavation. Samples were taken from the sidewalls of each excavation. Extraction well casings (4" diameter, 13 foot length) were installed in the center of each excavation. Clean imported rock was used to backfill the two areas. The sidewalk was resurfaced, with Christy boxes housing the two extraction casings. Levels of TPH-G in the soil samples taken from former waste oil tank area ranged from 100 to 700 ppm. Levels of TPH-G from the former gasoline tank area ranged from 150 to 1200 ppm.

**Soil Investigation.** On May 17, June 1, and June 2, 1994, Certified Environmental Consulting, Inc. supervised drilling at the site. Eleven borings were drilled using a Giddings probe on a portable and a truck mounted rig. The borings ranged in depth from 12 to 15.5 feet below grade surface (bgs). Groundwater was first encountered at a depth of 10.5 to 13.5 feet bgs, and stabilized at an average depth of approximately 7.5 feet bgs. Four borings (B-5, B-6, B-8 and B-11) were drilled inside the existing building (see Figure 2). Seven borings were drilled outside the building on 40th Avenue (B-1, B-2, B-3, B-4, B-7, B-9, and B-10). Two continuous cores (B-8 and B-9) were drilled for soil profile correlation. Analysis showed that hydrocarbons had impacted soils and groundwater at and around the former tank locations. Soil samples ranged up to 2700 ppm TPH-D and 1900 ppm TPH-G. Motor oil was detected in soil at B-5 and in water samples from B-1, B-5, and B-6. TPH-G and TPH-D concentrations were highest in water samples from B-1, B-2, B-4, B-6, and B-7.



|   |  |              |                        |
|---|--|--------------|------------------------|
| <p><b>GROWTH</b><br/>Growth Environmental Services Inc.<br/>Formerly Tom Fed Environmental Consulting, Inc.</p> | DESCRIPTION<br>Site Location Map<br>Source: Thomas Bros Maps 1991 The Thomas Guide, Alameda and Contra Costa Counties Limited Edition. | TITLE        | PROJECT NUMBER<br>1234 |
|   | PROJECT LOCATION<br>Water Partners 1234 40th Ave<br>Berkeley CA 94702  | DRAWN BY     |                        |
|   |  | REVISION     |                        |
|   |  | DRAWING DATE | 01/01/99               |



LEGEND

⊕ Monitoring Wells

○



|   |  |  |  |
|---|--|--|--|
| <p><b>Growth</b></p> <p>Environmental Engineering &amp; Consulting, Inc.</p> <p>10000 15th Street, Suite 200, Denver, CO 80202</p> <p>Phone: (303) 751-1100</p> <p>Fax: (303) 751-1101</p> <p>www.growthenv.com</p> |  |  |  |
|   |  |  |  |

### 1.3 LOCAL AND REGIONAL GEOLOGY AND HYDROLOGY

**Regional Geology.** The site is located on the East Bay Plain about 1.0 mile west of the Oakland Hills, and about 1.0 miles north of San Leandro Bay, which is an arm of San Francisco Bay.

The site is underlain by Quaternary deposits of various composition and physical properties. The predominant formation is the Temescal Formation consisting of contemporaneous alluvial units of different origin, lithology, and physical properties. The material ranges from irregularly bedded clay, silt, sand and gravel to lenses of clay, silt, sand, and gravel with Claremont Chert.

The Hayward Fault is approximately 1.5 miles east of the site and is an historically active fault. An active fault is one that has shown surface displacement within Holocene time (the last 11,000 years). The Hayward Fault is the only active fault in the Oakland East Quadrangle.

**Site Geology.** The geology of the site consists of unconsolidated fill material overlying alluvial units. The fill is composed of dark brown silty clay with gravel. Beneath the fill, the alluvial units range from sandy silty clay and gravelly clay to clayey sands and clayey gravel. The site is near the contact between Quaternary alluvium and Quaternary fluvial deposits. These are both unconsolidated units of moderate permeability, laid down under similar depositional conditions, except that the fluvial deposits are generally finer-grained than the alluvium.

**Hydrology.** The site is located within the East Bay Plain, which makes up the groundwater reservoir in the area. The water bearing capacity within the area varies due to the juxtaposed positions of the various types of soils and strata encountered underneath the East Bay Plain. In general the water-bearing capacities of the younger alluvium range from moderately permeable to low permeable soils. Below the younger alluvium at a depth of approximately 70 feet lies the older alluvium, which yields small to large quantities of well water. Groundwater is assumed to flow southwest toward San Leandro Bay.

#### References:

Radbruch, Dorothy H., Areal and Engineering Geology of the Oakland East Quadrangle, California, Map GQ-769, 1969.

Alameda County Flood Control and Water Conservation District, 1988, Geohydrology and Groundwater-Quality Overview, of the East Bay Plain Area, Alameda County, California, 205 (j) Report.

Thomas Bros Maps, 1991, The Thomas Guide. Alameda and Contra Costa Counties, Updated Edition 1992

Certified Environmental Consulting, September 21, 1994. Report of Phase I Site Investigation, Motor Partners, 1234 40th Avenue, Oakland, CA



## 2.0 GROUNDWATER SAMPLING

### 2.1 WELL INSTALLATION AND DEVELOPMENT

Three monitoring wells were installed on the site on June 14-15, 1994 (see Figure 2). Table 1 displays the monitoring well construction data. The three 10-inch borings were all drilled to between 22 and 23 feet. The screen slot size for the slotted interval was 0.020 inches. The filter pack material was 2/14 Lonestar sand, poured from the bottom of the boring to one foot above the top of the slotted interval. The wells were sealed with bentonite pellets. They were installed and developed according to SWRCB standards. After completion, the wells were developed and sampled for the first quarter. GROWTH surveyed the well casing elevations on June 17, 1994.

### 2.2 GROUNDWATER ELEVATION MEASUREMENTS

Groundwater elevations were measured in on-site wells MW-2 and MW-3 in December, 1994. Since June 17, 1994, groundwater elevation has risen 1.35' in MW-2 and 2.11' in MW-3. The static groundwater elevations were recorded on sample event data sheets for the December quarterly sampling, and are presented in Appendix A. Table 1 includes well casing elevation measurements.

Only two of the on-site wells were sampled on December 7, 1994. The well inside the building (MW-1) was not accessible because of construction activities. The area was under approximately 2 to 3 inches of water and the well was covered with lumber and roofing materials. Therefore, it was not possible to determine groundwater flow direction because there were only two groundwater depth reference points. Groundwater is assumed to flow toward San Leandro Bay. Table 2 contains the groundwater elevation data. Figure 3 shows the groundwater gradient for the June 17, 1994 sampling event, which was calculated to be 0.016 feet/foot in the direction of S82W.

### 2.3 MONITORING WELL SAMPLING

Monitoring wells MW-2 and MW-3 were sampled on December 7, 1994 using GROWTH's standard water sampling protocols. The wells were sampled after purging three casing volumes from the well and allowing the water level to recover to at least 80% of the original, static level. Temperature, turbidity, electrical conductivity, and pH were monitored during purging to verify that water had been removed from well casing storage and that well water was representative of the aquifer.

Samples were collected with disposable Teflon bailers and each sample was transferred to three 40-milliliter VOA vials and one 1-liter amber bottle. The samples were labeled and stored on ice until delivered under chain-of-custody procedures to McCampbell Analytical, Inc., a state-certified analytical laboratory in Pacheco, California. Samples were analyzed for total petroleum hydrocarbons as gasoline (TPH-G), for benzene, toluene, ethylbenzene, and xylene (BTEX) using GCFID 5030/EPA Method 8015/8020, and total petroleum hydrocarbons as diesel (TPH-D) using GCFID 3550/EPA Method 8015.

**TABLE 1**

**Well Construction Data**  
1234 40th Ave., Oakland, CA

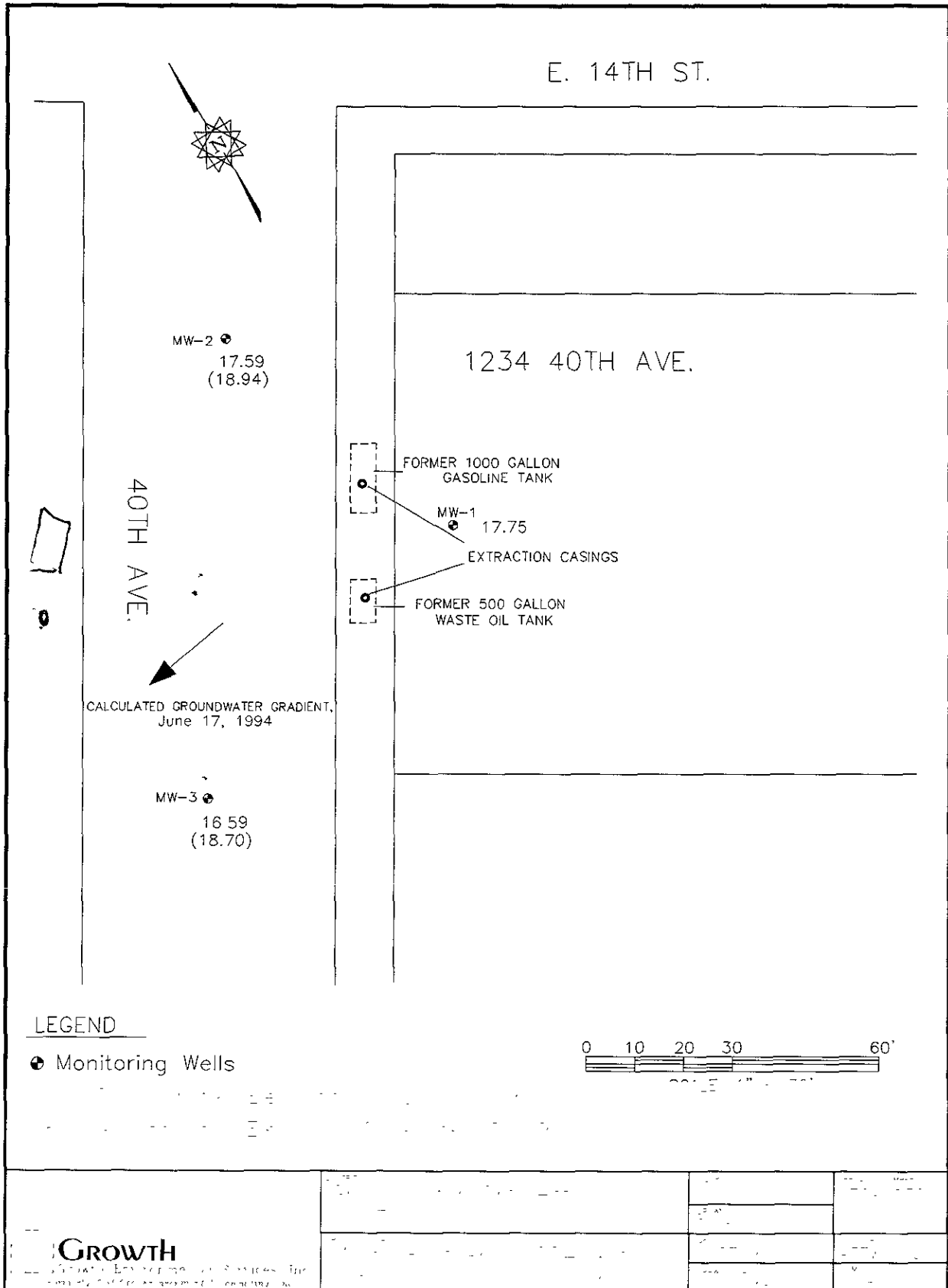
| Well | Diameter (inches) | Date Drilled | Total Depth (feet) | Top of Casing Elevation (in feet, relative to mean sea level) | Filter Pack Interval (feet below grade) | Screened Interval (feet below grade) |
|------|-------------------|--------------|--------------------|---|---|--------------------------------------|
| MW-1 | 2                 | 6/15/94      | 22.5               | 25.07   | 6.0-17.0                                | 7.0-17.0                             |
| MW-2 | 2                 | 6/14/94      | 22.0               | 24.67   | 9.0-20.0                                | 10.0-20.0                            |
| MW-3 | 2                 | 6/14/94      | 23.0               | 24.05   | 6.5-20.0                                | 7.0-20.0                             |

**TABLE 2**

**Groundwater Elevation Data (in feet)**  
1234 40th Ave., Oakland, CA

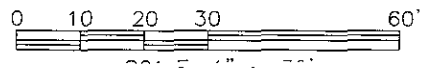
|            | Date            | MW-1         | MW-2         | MW-3         |
|------------|-----------------|--------------|--------------|--------------|
| SWL        | 06-17-94        | 7.32         | 7.08         | 7.46         |
| <b>GSE</b> | <b>06-17-94</b> | <b>17.75</b> | <b>17.59</b> | <b>16.59</b> |
| SWL        | 12-07-94        | Not measured | 5.73         | 5.35         |
| <b>GSE</b> | <b>12-07-94</b> | --           | <b>18.94</b> | <b>18.70</b> |

SWL - Static Water Level  
GSE - Groundwater Surface Elevation



LEGEND

⊕ Monitoring Wells



**GROWTH**

Environmental Engineering & Services, Inc.  
 10000 14th St., Suite 100, Denver, CO 80202  
 Phone: (303) 751-1100

### 3.0 ANALYTICAL RESULTS

#### 3.1 MONITORING WELL SAMPLING ANALYTICAL RESULTS

The analytical results of the December 5, 1994 sampling are included in Table 3 with the results of the previous sampling round. The analytical results indicate that groundwater continues to be impacted. Both monitoring wells show detectable levels of TPH-G and BTEX constituents. Analysis also detected TPH-D in MW-3. This is consistent with the previous sampling round. Although hydrocarbon concentration in MW-2 generally decreased, the results from MW-3 were mixed. Levels of TPH-G, TPH-D, and xylenes were lower, while benzene, toluene, and ethylbenzene concentrations were higher.

The laboratory analytical data sheets and chain-of-custody records for the December sampling are included as Appendix B. The detection limits for the TPH-G and TPH-D analyses are 50 µg/L (ppb) and 0.5 µg/L for BTEX constituents.

**TABLE 3**

**Groundwater Monitoring Well Results**  
1234 40th Avenue, Oakland, CA

| Sample Number  | Sample Date     | TPH-D (ppb) | TPH-G (ppb) | Benzene (ppb) | Toluene (ppb) | Ethyl Benzene (ppb) | Xylene (ppb) |
|--|-----------------|-------------|-------------|---------------|---------------|---------------------|--------------|
| MW-1   | 06-17-94        | 2400        | 17,000      | 1200          | 220           | 1000                | 2600         |
| MW-2   | 06-17-94        | 370         | 990         | ND            | 1.3           | 2.3                 | 4.4          |
| <b>MW-2</b>  | <b>12-07-94</b> | <b>ND</b>   | <b>170</b>  | <b>2.1</b>    | <b>0.70</b>   | <b>0.60</b>         | <b>1.7</b>   |
| MW-3   | 06-17-94        | 2200        | 9500        | 330           | 40            | 100                 | 74           |
| <b>MW-3</b>  | <b>12-07-94</b> | <b>1700</b> | <b>7500</b> | <b>380</b>    | <b>42</b>     | <b>130</b>          | <b>72</b>    |
| *CA Dept of Health Services primary maximum contaminant level for drinking water |                 | None Listed | None Listed | 10            | 1000          | 680                 | 1750         |

\* Marshack, J.B., 1989. A Compilation of Water Quality Goals. Staff Report of the California Regional Water Quality Control Board, Central Valley Region, 15 p

ND = Not Detected

## 4.0 CONCLUSIONS/RECOMMENDATIONS

Groundwater at the site continues to be impacted by gasoline, diesel and BTEX constituents. Although MW-2 is not considered down gradient from the former tank locations, soil analytical results from the nearby bore hole B-10 demonstrated that the soil was contaminated and could explain the impact to groundwater in MW-2.

Continued quarterly monitoring of wells MW-1, MW-2 and MW-3 is recommended to evaluate the impact of hydrocarbons on groundwater. Measurement of static water levels from MW-1, MW-2 and MW-3 is also recommended to verify groundwater flow direction.

Further activities may include:

- Advancement of additional soil borings to define the extent of the contaminant plume in soil and groundwater prior to installing an additional groundwater monitoring well. *need wells also whether or not extent is confirmed.*
- Installation of a groundwater monitoring well to define more clearly the extent of the groundwater contaminant plume.
- Remediation of the site by pumping the contaminants from groundwater or vapor extraction.  
*need a pump test.*

## **5.0 SCHEDULE OF ACTIVITIES FOR NEXT QUARTER**

### **5.1 GROUNDWATER ELEVATION MEASUREMENT**

The on-site wells will be sounded and the groundwater levels will be used to calculate the groundwater elevation for each quarter. Water levels will be measured and the elevation calculated for the month of March 1995, and will be presented in the next quarterly report.

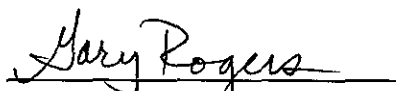
### **5.2 QUARTERLY SAMPLING**

The next quarterly sampling event will occur in March 1995. The quarterly report will be submitted after the March sampling event with analytical results and groundwater elevation calculations.

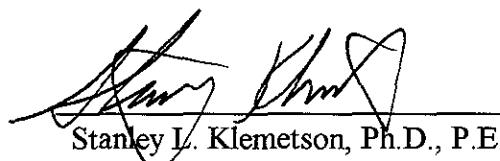
## 6.0 LIMITATIONS

This report has been prepared in accordance with generally accepted environmental, geological and engineering practices. No warranty, either expressed or implied, is made as to the professional advice presented herein. The analysis, conclusions and recommendations contained in this report are based upon site conditions as they existed at the time of the investigation and they are subject to change.

The conclusions presented in this report are professional opinions based solely upon visual observations of the site and vicinity, and interpretation of available information as described in this report. The scope of services performed in execution of this investigation may not be appropriate to satisfy the needs of other users and any use or reuse of this document or its findings, conclusions or recommendations presented herein is at the sole risk of said user.



Gary Rogers, Ph.D.  
Project Manager



Stanley L. Klemetson, Ph.D., P.E.  
Director Engineering  
P.E. No. 40087



**APPENDIX A**  
**SAMPLING EVENT DATA SHEETS**  
**FOR MONITORING WELL SAMPLING**

**December 7, 1994**

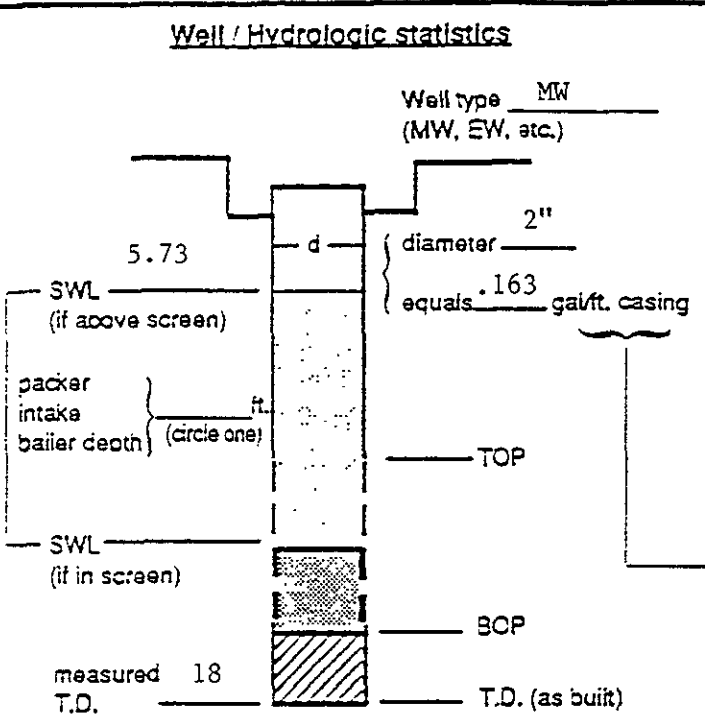


# SAMPLING EVENT DATA SHEET

(fill out completely)

WELL OR LOCATION MW-2

PROJECT Motor Partners EVENT Quarterly SAMPLER T. Pew DATE 12/07/94



| Action             | Time | Pump rate | IWL (low yield) |
|--------------------|------|-----------|-----------------|
| Start pump / Begin | 1:24 |           |                 |
| Stop               | 1:35 |           |                 |
| Sampled            | 1:38 |           |                 |
| (Final IWL)        | 6.50 |           |                 |

**Purge calculation**

$.163 \text{ gal/ft.} \cdot 15.2 \text{ ft.} = 2.5 \text{ gals} \times 3 = 7.5 \text{ gals.}$

SWL to BOP or packer to BOP      one volume      purge volume - 3 casings

**Head purge calculation (Airlift only)**

gal/ft. \* ft. = gals.

packer to SWL

Equipment Used / Sampling Method / Description of Event:

|                        |                       |
|------------------------|-----------------------|
| Actual gallons purged  | _____                 |
| Actual volumes purged  | _____                 |
| Well yield (see below) | ⊕ _____               |
| COC #                  | _____                 |
| Sample I.D.            | Analysis      Lab     |
| MW-2                   | TPH.D      McCampbell |
|                        | TPH.G                 |
|                        | Btex                  |

Additional comments:

| Gallons purged * | TEMP °C (°F)<br>(circle one) | EC<br>(µs/cm) | PH   | TURBIDITY<br>(NTU) |
|------------------|------------------------------|---------------|------|--------------------|
| 1. 1             | 67.4                         | 836           | 6.25 |                    |
| 2. 3             | 68.1                         | 8.66          | 6.12 |                    |
| 3. 5.5           | 68.0                         | 8.96          | 6.02 |                    |
| 4. 7.5           | 68.2                         | 902           | 5.92 |                    |
| 5.               |                              |               |      |                    |

\* Take measurement at approximately each casing volume purged.

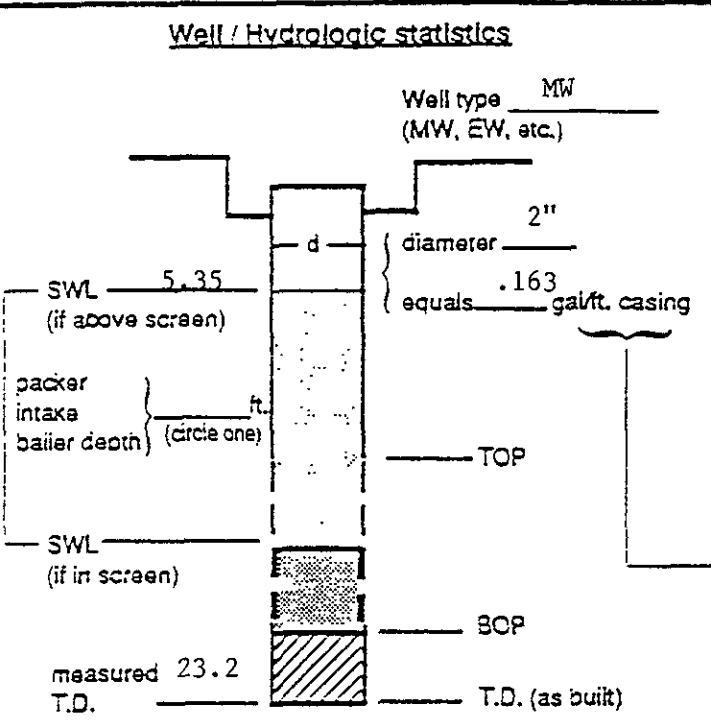
⊕ HY - Minimal W.L. drop      MY - WL drop - able to purge 3 volumes during one sitting by reducing pump rate or cycling pump      LY - Able to purge 3 volumes by returning later or next day      VLY - Minimal recharge - unable to purge 3 volumes.

# SAMPLING EVENT DATA SHEET

(fill out completely)

WELL OR LOCATION MW-3

PROJECT Motor Partners EVENT Quarterly SAMPLER T. Pew DATE 12/07/94



| Action   | Time  | Pump rate | IWL (low yield) |
|--|-------|-----------|-----------------|
| Start pump / Begin   | 12:32 |           |                 |
|  |       |           |                 |
|  |       |           |                 |
|  |       |           |                 |
|  |       |           |                 |
|  |       |           |                 |
|  |       |           |                 |
| Stop   | 12:50 |           |                 |
| Sampled  | 12:52 |           |                 |
| (Final IWL)  | 6.10  |           |                 |
| <b>Purge calculation</b>   |       |           |                 |
| $.163 \text{ gal/ft.} \cdot 17.83 \text{ ft.} = 2.9 \text{ gals} \times 3 = 8.7 \text{ gals.}$ |       |           |                 |
| ↑ SWL to BOP or one packer to BOP volume      purge volume - 3 casings                         |       |           |                 |
| <b>Head purge calculation (Airlift only)</b>   |       |           |                 |
| gal/ft.      ft.      gals.  |       |           |                 |
| packer to SWL  |       |           |                 |

Equipment Used / Sampling Method / Description of Event:

|                        |            |
|------------------------|------------|
| Actual gallons purged  | _____      |
| Actual volumes purged  | _____      |
| Well yield (see below) | ⊕ _____    |
| COC #                  | _____      |
| Sample I.D.            | _____      |
| MW-3                   | TPH.D      |
|                        | McCampbell |
|                        | TPH.G      |
|                        | Btex       |

Additional comments:

Strong odor.  
 Dangerous traffic - necessary to block entire lane, using jeep and cones as barricades.

| Gallons purged * | TEMP °C / °F (circle one) | EC (µs / cm) | PH   | TURBIDITY (NTU) |  |  |
|------------------|---------------------------|--------------|------|-----------------|--|--|
| 1. 1             | 67.6                      | 962          | 4.58 |                 |  |  |
| 2. 3             | 67.2                      | 952          | 6.78 |                 |  |  |
| 3. 6             | 67.2                      | 950          | 6.38 |                 |  |  |
| 4. 9             | 67.4                      | 958          | 6.23 |                 |  |  |
| 5.               |                           |              |      |                 |  |  |

\* Take measurement at approximately each casing volume purged.

⊕ MY - Minimal W.L. drop      MY - WL drop - able to purge 3 volumes during one sitting by reducing pump rate or cycling pump      LY - Able to purge 3 volumes by returning later or next day      VLY - Minimal recharge - unable to purge 3 volumes.

**APPENDIX B**

**ANALYTICAL DATA SHEETS**  
**AND**  
**CHAIN-OF-CUSTODY RECORDS**  
**FOR MONITORING WELL SAMPLING**

**December 7, 1994**



|   |   |                                |
|---|---|--------------------------------|
| Growth Environmental Services<br>536 Stone Road, Ste. J<br>Benicia, CA 94510-1016 | Client Project ID: # 477-1532; Motor Partners | Date Sampled: 12/07/94         |
|   | Client Contact: Gary Rogers                   | Date Received: 12/13/94        |
|   | Client P.O:                                   | Date Extracted: 12/13-12/14/94 |
|   |   | Date Analyzed: 12/13-12/14/94  |

**Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline\*, with BTEX\***

EPA methods 5030, modified 8015, and 8020 or 602; California RWQCB (SF Bay Region) method GCFID(5030)

| Lab ID   | Client ID | Matrix    | TPH(g) <sup>+</sup> | Benzene | Toluene | Ethylbenzene | Xylenes | % Rec. Surrogate |
|--|-----------|-----------|---------------------|---------|---------|--------------|---------|------------------|
| 43008  | MW-2      | W         | 170,d               | 2.1     | 0.70    | 0.60         | 1.7     | 105              |
| 43009  | MW-3      | W         | 7500,c,a            | 380     | 42      | 130          | 72      | 109              |
|  |           |           |                     |         |         |              |         |                  |
|  |           |           |                     |         |         |              |         |                  |
|  |           |           |                     |         |         |              |         |                  |
|  |           |           |                     |         |         |              |         |                  |
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|  |           |           |                     |         |         |              |         |                  |
|  |           |           |                     |         |         |              |         |                  |
|  |           |           |                     |         |         |              |         |                  |
|  |           |           |                     |         |         |              |         |                  |
|  |           |           |                     |         |         |              |         |                  |
|  |           |           |                     |         |         |              |         |                  |
| Detection Limit unless otherwise stated; ND means Not Detected | W         | 50 ug/L   | 0.5                 | 0.5     | 0.5     | 0.5          | 0.5     |                  |
|  | S         | 1.0 mg/kg | 0.005               | 0.005   | 0.005   | 0.005        | 0.005   |                  |

\*water samples are reported in ug/L, soil samples in mg/kg, and all TCLP extracts in mg/L

# cluttered chromatogram; sample peak co-elutes with surrogate peak

+ The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation a) unmodified or weakly modified gasoline is significant, b) heavier gasoline range compounds are significant(aged gasoline?), c) lighter gasoline range compounds (the most mobile fraction) are significant, d) gasoline range compounds are significant; no recognizable pattern, e) TPH pattern that does not appear to be derived from gasoline (?); f) one to a few isolated peaks present, g) strongly aged gasoline or diesel range compounds are significant, h) lighter than water immiscible phase is present.

|   |   |                               |
|---|---|-------------------------------|
| Growth Environmental Services<br>536 Stone Road, Ste. J<br>Benicia, CA 94510-1016 | Client Project ID: # 477-1532; Motor Partners | Date Sampled: 12/07/94        |
|   | Client Contact: Gary Rogers                   | Date Received: 12/13/94       |
|   | Client P.O:                                   | Date Extracted: 12/14/94      |
|   |   | Date Analyzed: 12/14-12/16/94 |

**Diesel Range (C10-C23) Extractable Hydrocarbons as Diesel \***

EPA methods modified 8015, and 3550 or 3510; California RWQCB (SF Bay Region) method GCFID(3550) or GCFID(3510)

| Lab ID   | Client ID | Matrix | TPH(d) <sup>+</sup> | % Recovery Surrogate |
|--|-----------|--------|---------------------|----------------------|
| 43008  | MW-2      | W      | ND,d                | 99                   |
| 43009  | MW-3      | W      | 1700,a              | 98                   |
|  |           |        |                     |                      |
|  |           |        |                     |                      |
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|  |           |        |                     |                      |
|  |           |        |                     |                      |
|  |           |        |                     |                      |
| Detection Limit unless otherwise stated; ND means Not Detected | W         |        | 50 ug/L             |                      |
|  | S         |        | 10 mg/kg            |                      |

\*water samples are reported in ug/L, soil samples in mg/kg, and all TCLP extracts in mg/L  
 # cluttered chromatogram: surrogate and sample peaks co-elute or surrogate peak is on elevated baseline

+ The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation a) unmodified or weakly modified diesel is significant, b) diesel range compounds are significant, no recognizable pattern, c) modified diesel?, light(CL) or heavy(CH) diesel compounds are significant; d) gasoline range compounds are significant; e) medium boiling point pattern that does not match diesel(?), f) one to a few isolated peaks present, g) oil range compounds are significant, h) lighter than water immiscible phase is present.

## QC REPORT FOR HYDROCARBON ANALYSES

Date: 12/13-12/14/94

Matrix: Water

| Analyte                | Concentration (ug/L) |       |       | Amount Spiked | % Recovery |       | RPD |
|------------------------|----------------------|-------|-------|---------------|------------|-------|-----|
|                        | Sample               | MS    | MSD   |               | MS         | MSD   |     |
| TPH (gas)              | 0.0                  | 95.0  | 100.0 | 100           | 95.0       | 100.0 | 5.1 |
| Benzene                | 0                    | 10.1  | 10.6  | 10            | 101.0      | 106.0 | 4.8 |
| Toluene                | 0                    | 10.2  | 10.7  | 10            | 102.0      | 107.0 | 4.8 |
| Ethyl Benzene          | 0                    | 10.3  | 10.8  | 10            | 103.0      | 108.0 | 4.7 |
| Xylenes                | 0                    | 32.3  | 33.8  | 30            | 107.7      | 112.7 | 4.5 |
| TPH (diesel)           | 0                    | 141   | 135   | 150           | 94         | 90    | 5.0 |
| TRPH<br>(oil & grease) | 0                    | 21600 | 21600 | 23700         | 91         | 91    | 0.0 |

$$\% \text{ Rec.} = (\text{MS} - \text{Sample}) / \text{amount spiked} \times 100$$

$$\text{RPD} = (\text{MS} - \text{MSD}) / (\text{MS} + \text{MSD}) \times 2 \times 100$$