



ENVIRONMENTAL
PROTECTION

CITY OF OAKLAND



98 JUL 34 PM 2: 24

DALZIEL BUILDING • 250 FRANK H. OGAWA PLAZA, SUITE 5301 • OAKLAND, CALIFORNIA 94612

Public Works Agency
Environmental Services

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July 29, 1998

#3978

Mr. Barney Chan
Alameda County Department of Environmental Health
1131 Harbor Bay Parkway
Alameda, California 94502-6577

Subject: Groundwater Monitoring Report – May 1998, City of Oakland
Municipal Service Center (94407)

Dear Mr. Chan:

Enclosed is one copy of the Groundwater Monitoring Report for May 1998, prepared by our consultant, DOVE Engineering Group, Inc., for the City of Oakland's Municipal Service Center at 7101 Edgewater Drive. Groundwater monitoring will be performed again in August in accordance with the quarterly monitoring schedule.

Please call me at 238-7695, if you have any questions or require additional information.

Sincerely,

Mark B. Hersh
Environmental Program Specialist

cc: (w enclosure)
Dianne Heinz, Port of Oakland

(w/o enclosure)
Andrew Clark-Clough

GROUNDWATER MONITORING REPORT

**Municipal Service Center
7101 Edgewater Drive
Oakland, California**

ACC Project No. 97-6442-001.00

Prepared for:

City of Oakland
Public Works Agency/Environmental Services Division
Oakland, California 94612

July 2, 1998

Prepared by:

Carolyn Mulvihill
Technical Editor

Reviewed by:

David R. DeMent, RG
Senior Geologist, ACC

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GROUNDWATER MONITORING REPORT
Municipal Service Center
7101 Edgewater Drive
Oakland, California

1.0 INTRODUCTION

ACC Environmental Consultants, Inc., (ACC) was retained by Dove Engineering Group, Inc., (DEGI) to conduct groundwater monitoring of three monitoring wells at the Municipal Service Center (MSC), Oakland, California (Figure 1).

The project objectives were to: measure the water levels and calculate the elevation of the groundwater in the wells; obtain groundwater samples from the wells and analyze the water samples for various analytes; and report the findings.

2.0 BACKGROUND

The MSC is located at 7101 Edgewater Drive and occupies approximately 17 acres adjacent to San Leandro Bay and Damon Slough (Figure 2). The site is used by various City of Oakland departments for vehicle and equipment storage, maintenance, and fueling. The MSC property consists of offices including the Public Works building and warehouse structures used for maintenance. About 14 underground storage tanks were previously located at the site. An abandoned pressurized underground gasoline pipeline network is currently located at the site. Previous investigations indicated that elevated levels of fuel hydrocarbons are present in the soil and groundwater.

3.0 GROUNDWATER MONITORING AND SAMPLING

ACC performed a groundwater investigation of monitoring wells MW-8 through MW-10 on June 8, 1998. Work at the site included measuring depth to water, subjectively evaluating groundwater in the wells for petroleum hydrocarbon odor and sheen, and purging and sampling the wells for laboratory analysis. Sampling results have been reviewed by Mr. Christopher Palmer, project manager for DEGI.

Before groundwater sampling, the depth to the surface of the water was measured from the top of the polyvinyl chloride well casing using a Solinst water level meter. All water level measurements were recorded to the nearest 0.01 foot. Groundwater monitoring data was recorded on the attached well monitoring worksheets. Information regarding groundwater levels is summarized in Table 1.

TABLE 1 - GROUNDWATER DEPTH INFORMATION

| Well No. | Date Sampled | Well Elevation ⁽¹⁾ (above MSL) | Depth to Groundwater | Groundwater Elevation |
|---------------------|--------------|--|-------------------------|--------------------------|
| MW-1 | 11/20/97 | 10.20 | 6.41 | 3.79 |
| | 02/24/98 | | 1.75 | 8.45 |
| MW-2 | 11/20/97 | 10.47 | 7.67 | 2.80 |
| | 02/24/98 | | 5.44 | 5.03 |
| MW-3 ⁽²⁾ | 11/20/97 | --- | 6.93 | --- |
| | 02/24/98 | | --- | --- |
| MW-4 ⁽²⁾ | 11/20/97 | 7.89 | 6.59 | 1.30 |
| | 02/24/98 | | --- | --- |
| MW-5 | 11/20/97 | 11.15 | 6.45 | 4.70 |
| | 02/24/98 | | 4.22 | 6.93 |
| MW-6 | 11/20/97 | 10.98 | 8.91 | 2.07 |
| | 02/24/98 | | 6.00 | 4.98 |
| MW-7 | 11/20/97 | 11.51 | 7.24 | 4.27 |
| | 02/24/98 | | 4.69 | 6.82 |
| MW-8 | 11/20/97 | 12.22 | 9.59 | 2.63 |
| | 02/24/98 | | 8.42 | 3.80 |
| | 06/08/98 | | 9.57 | 2.65 |
| MW-9 | 11/20/97 | 10.77 | 7.91 | 2.86 |
| | 02/24/98 | | 6.11 | 4.66 |
| | 06/08/98 | | 7.14 | 3.63 |
| MW-10 | 11/20/97 | 10.59 | 7.70 | 2.89 |
| | 02/24/98 | | 4.39 | 6.20 |
| | 06/08/98 | | 6.94 | 3.65 |

Notes: All measurements in feet

⁽¹⁾Well elevation measured to top of casing

⁽²⁾Well submerged at time of survey

After water level measurements were collected, wells MW-8 through MW-10 were purged by hand using a designated disposable polyethylene bailer for each well. Groundwater pH, temperature, salinity, dissolved oxygen, turbidity, and electrical conductivity were monitored during well purging. Each well was considered to be purged when four well volumes had been removed. Worksheets of conditions monitored during purging are attached.

After the groundwater level had recovered to a minimum of approximately 80 percent of its static level, water samples were obtained using designated disposable polyethylene bailers and laboratory supplied containers. The samples were preserved in a pre-chilled insulated container and submitted to Chromalab, Inc., (Chromalab) following chain of custody protocol.

3.1 Groundwater Gradient

Groundwater elevations were calculated from data collected from the wells on June 8, 1998. Groundwater gradient and flow direction were not calculated during this sampling event. Historic groundwater gradient and flow direction are summarized in Table 2.

TABLE 2 - GROUNDWATER GRADIENT AND FLOW DIRECTION

| Date Monitored | Gradient (foot/foot) | Direction |
|---------------------|----------------------|-----------|
| 11-20-97 (north) | 0.005 | North |
| 11-20-97 (south) | 0.004 | Southwest |
| 02-24-98 (north) | 0.020 | North |
| 02-24-98 (south) | 0.007 | Southwest |

3.2 Groundwater Analytical Results

One groundwater sample from each of wells MW-8 through MW-10 was collected and submitted to Chromalab for analysis. Samples were analyzed for total petroleum hydrocarbons as gasoline (TPHg) and benzene, toluene, ethylbenzene, and total xylenes (BTEX) by EPA Method SW846 8020A Nov 1990/8015 Mod, total extractable petroleum hydrocarbons (TEPH) as kerosene, diesel, and motor oil by EPA Method 8015M, and fuel oxygenates [methyl-tertiary-butyl ether (MTBE), di-isopropyl ether (DIPE), tertiary butyl alcohol (TBA), ethyl-tertiary-butyl ether (ETBE), and tertiary amyl methyl ether (TAME)] by GC/MS EPA SW846 Method 8260 Modified.

No concentrations of fuel oxygenates were detected in any of the wells sampled with the exception of a minor concentration of TBA in well MW-10 (6.7 ppb). The remainder of the analytical results of the groundwater samples are summarized in Table 3. A copy of the analytical results and chain of custody record is attached.

| Well Date | TPHg (µg/L) | Benzene (µg/L) | Toluene (µg/L) | Ethylbenzene (µg/L) | Total Xylenes (µg/L) | TPHd (µg/L) | TEPH ⁽¹⁾ (µg/L) |
|-----------|-------------|----------------|----------------|---------------------|----------------------|-------------|---|
| MW-7 | | | | | | | |
| 12/31/91 | <50 | <0.5 | <0.5 | <0.5 | <0.5 | <50 | --- |
| 04/27/93 | <1,000 | <1 | <1 | <1 | <1 | <1,000 | --- |
| 04/19/95 | <50 | <2 | <2 | <2 | <2 | <50 | --- |
| 07/27/95 | <50 | <2 | <2 | <2 | <2 | <50 | --- |
| 11/20/95 | <50 | <0.5 | <0.5 | <0.5 | 1.5 | <50 | --- |
| 02/21/96 | <50 | <0.5 | <0.5 | <0.5 | <0.5 | <50 | --- |
| 05/13/96 | --- | <0.5 | <0.5 | <0.5 | <0.5 | --- | --- |
| 08/27/96 | --- | <0.5 | <0.5 | <0.5 | <0.5 | --- | --- |
| 11/20/96 | --- | --- | --- | --- | --- | --- | --- |
| 11/20/97 | --- | --- | --- | --- | --- | --- | --- |
| 02/24/98 | --- | --- | --- | --- | --- | --- | --- |
| MW-8 | | | | | | | |
| 11/20/96 | <50 | 0.66 | <0.5 | <0.5 | <0.5 | 880 | 200d |
| 11/20/97 | <50 | <0.5 | <0.5 | <0.5 | <0.5 | --- | -- |
| 02/24/98 | <50 | <0.5 | <0.5 | <0.5 | <0.5 | --- | ND |
| 06/08/98 | <50 | <0.5 | <0.5 | <0.5 | <0.5 | --- | 1,200d ⁽²⁾ , 1,000m ⁽³⁾ |
| MW-9 | | | | | | | |
| 11/20/96 | 240 | 21 | 0.81 | 1.8 | 2.2 | 1,900 | 1000d ⁽²⁾ , |
| 11/20/97 | 300 | 20 | <0.5 | <0.5 | 1.8 | --- | 780m |
| 02/24/98 | 2,200 | 540 | 5.6 | 1.6 | 4.9 | --- | ND |
| 06/08/98 | 840 | 450 | 6.1 | 3.3 | 5.3 | --- | 1,800d ⁽²⁾ , 890m ⁽³⁾ |
| MW-10 | | | | | | | |
| 11/28/96 | <50 | 49 | 0.59 | 0.54 | 1.2 | 940 | 370d ⁽²⁾ , |
| 11/20/97 | <50 | <0.5 | <0.5 | <0.5 | <0.5 | --- | 570m |
| 02/24/98 | <50 | <0.5 | <0.5 | <0.5 | <0.5 | --- | ND |
| 06/08/98 | <50 | 7.3 | <0.5 | <0.5 | <0.5 | --- | 500 ⁽²⁾ |

Notes: ND = no analytes detected above laboratory reporting limits

⁽¹⁾TEPH as diesel (d), motor oil (m), and kerosene (k)

⁽²⁾Hydrocarbon reported is in the late diesel range and does not match the laboratory's diesel standard

⁽³⁾Hydrocarbon reported as motor oil does not match the laboratory's standard

4.0 DISCUSSION

Groundwater sample analytical results indicate minor concentrations of gasoline or diesel constituents in wells MW-8, MW-9, and MW-10. TPHg was reported in well MW-9 only at 840 ppb with minor concentrations of toluene, ethylbenzene, and total xylenes. Benzene was reported in well MW-10 at 7.3 ppb. No concentrations of fuel oxygenates were detected in any of the wells sampled with the exception of 6.7 ppb of TBA in well MW-10.

Petroleum hydrocarbons reported in wells MW-8, MW-9, and MW-10 indicate degraded gasoline and appear to be primarily in the motor oil range with associated degradation products in the diesel range. These constituents typically have low toxicity and limited migration potential.

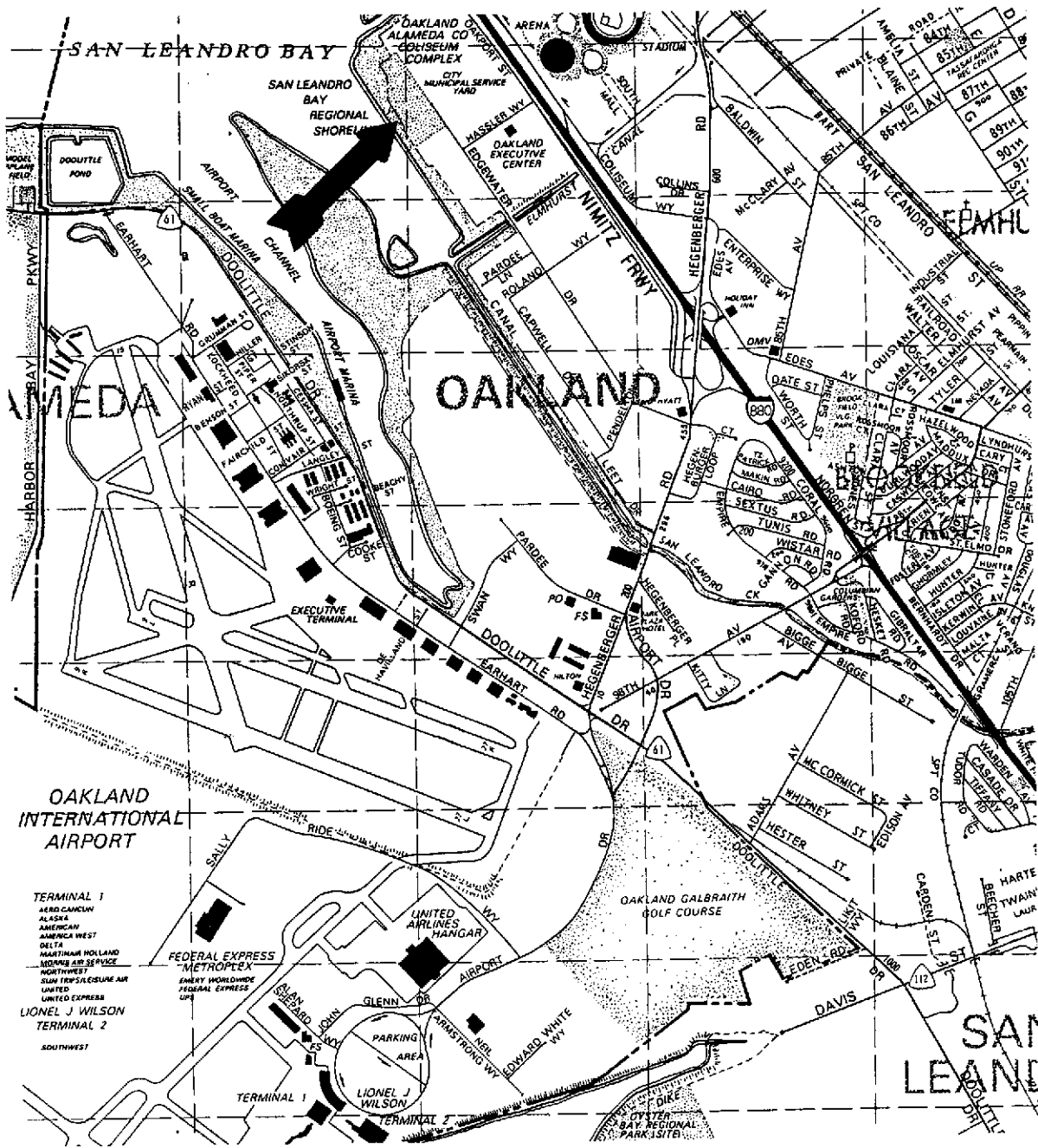
not to ecological species!

5.0 CONCLUSIONS AND RECOMMENDATIONS

Based on analytical results and field observations and measurements, ACC has made the following conclusions regarding shallow groundwater at the site.

- Minor concentrations of gasoline constituents were detected in wells MW-9 and MW-10;
- Concentrations of diesel constituents were detected in wells MW-8, MW-9, and MW-10; and
- Dissolved oxygen (DO) levels vary across the site from 0.3 to 2.4 ppm; decreased DO may be due to use during natural degradation of petroleum hydrocarbons or increased biological or chemical oxygen demand.

Based on the results of groundwater monitoring and sampling, ACC recommends future sampling events be conducted biannually in wells MW-8 through MW-10 to document groundwater conditions and concentrations of constituents of concern. In addition, we recommend suspending fuel oxygenates analysis in wells MW-8 through MW-10.



OAKLAND INTERNATIONAL AIRPORT

- TERMINAL 1
- AERO CANCUN
- ALASKA
- AMERICAN WEST
- DELTA
- HAWAIIAN HOLLAND
- MONTANA AIR SERVICE
- NORTHWEST
- SUN FLY/VELOCITY AIR
- UNITED
- UNITED EXPRESS
- LIONEL J WILSON
- TERMINAL 2
- SOUTHWEST

FEDERAL EXPRESS METROPEX

UNITED AIRLINES HANGAR

LIONEL J WILSON

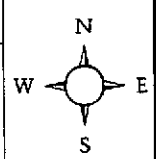
Title: Location Map
Municipal Service Center
7101 Edgewater Drive
Oakland, California

Figure Number: 1 Scale: 1" = 1/4 mi

Drawn By: CLM Date: 1/22/98

Project Number: 97-6442-001.00

ACC Environmental Consultants
7977 Capwell Drive, Suite 100
Oakland, California 94621
(510) 638-8400 Fax: (510) 638-8404



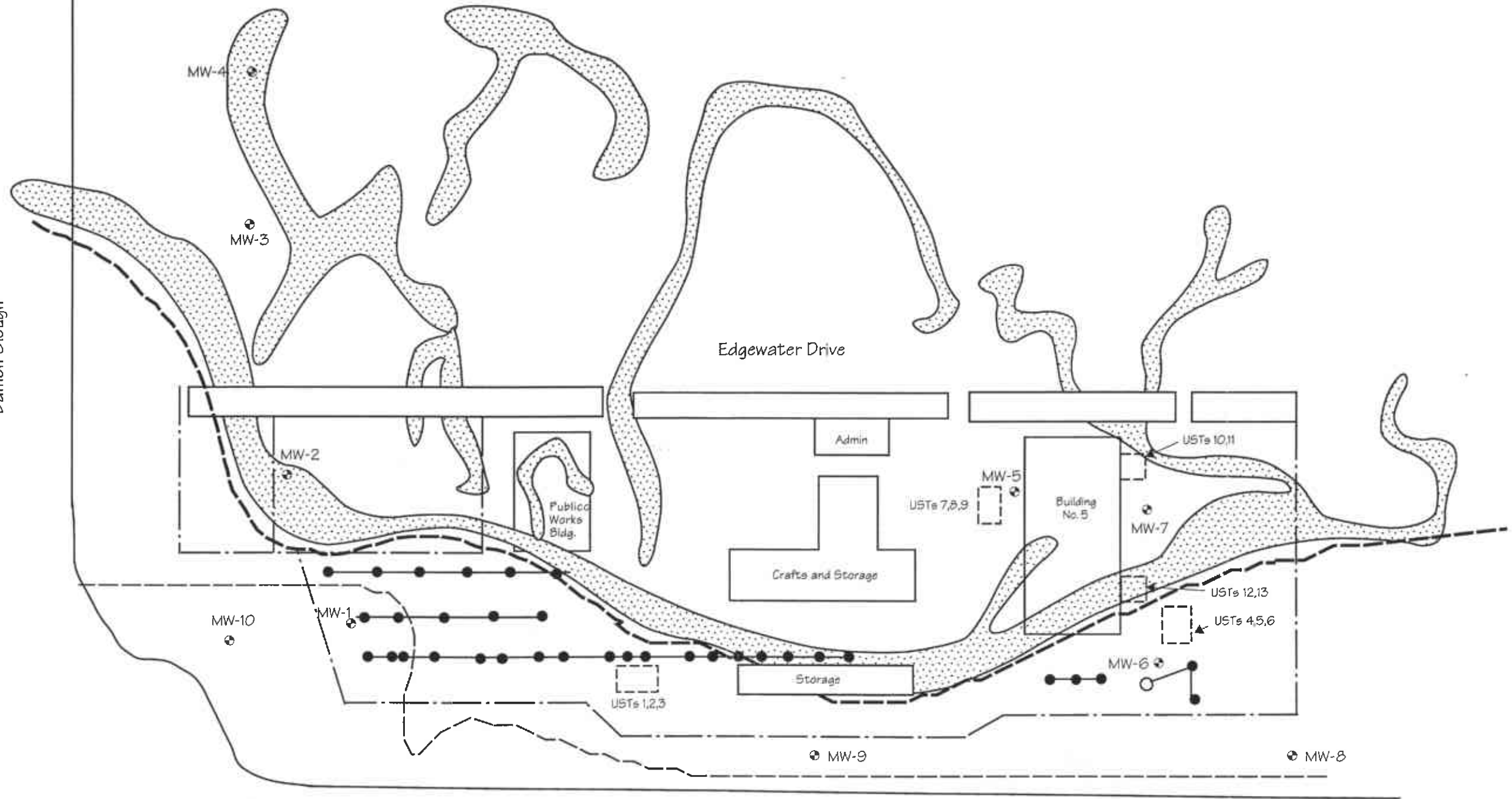
SOURCE: Thomas Bros. Guide, 1994

Damon Slough

Edgewater Drive

Legend

- ⊕ Approximate Monitoring Well Location
- Approximate UST Location
- Fueling Stations and Pipeline
- - - Approximate Limits of Fill in 1970
- Dike Location
- ⊖ Approximate Location of Buried Tidal/Stream Channel
- Valve Box



San Leandro Bay

Pre-Development Shoreline

Map Sources: Woodward -Clyde Site Plan and Uribe & Associates Site Plan, measurements not confirmed in the field.

| | |
|---|-----------------------------|
| Title: Draft Site Plan Municipal Service Center 7101 Edgewater Drive Oakland, California | |
| Figure Number: 2 | Scale: 1 in = 200 ft |
| Drawn By: CLM | Date: 12/16/97 |
| Project Number: 6442-001.00 | |
| ACC Environmental Consultants 7977 Capwell Drive, Suite 100 Oakland, California 94621 (510) 638-8400 Fax: (510) 638-8404 | |
| | |

| | |
|--|--|
| JOB NAME: | PURGE METHOD: <i>Manual Bailing</i> |
| SITE ADDRESS: <i>7101 Edgewater Dr.</i> | SAMPLED BY: <i>Eloy Cisneros</i> |
| JOB #: <i>(95407) 6442-1.0</i> | LABORATORY: <i>Chromalab</i> |
| DATE: <i>6/8/98</i> | ANALYSIS: <i>TPALg, BTEX, TEPH</i> |
| Onsite Drum Inventory SOIL: <i>3</i> | MONITORING <input checked="" type="checkbox"/> DEVELOPING <input type="checkbox"/> |
| EMPTY: <i>2</i> WATER: <i>3=100% 1=30%</i> | SAMPLING <input checked="" type="checkbox"/> |

| | PURGE VOL. | PURGE WATER READINGS | | | | | | OBSERVATIONS |
|--------------------------------|------------|----------------------|-------------|-------------|-------------|------------|-------------|--|
| | (Gal) | pH | Temp.(C) | Cond. | Sal. | Turb. | D.O. | |
| WELL: MW-8 | | | | | | | | <input type="checkbox"/> Froth |
| DEPTH OF BORING: <i>15.08'</i> | <i>0.9</i> | <i>7.01</i> | <i>18.7</i> | <i>14.7</i> | <i>0.85</i> | <i>310</i> | <i>0.29</i> | <input type="checkbox"/> Sheen |
| DEPTH TO WATER: <i>9.57'</i> | <i>1.8</i> | <i>7.13</i> | <i>18.5</i> | <i>16.5</i> | <i>0.96</i> | <i>803</i> | <i>0.79</i> | <input type="checkbox"/> Odor Type _____ |
| WATER COLUMN: <i>5.51'</i> | <i>2.7</i> | <i>7.11</i> | <i>18.5</i> | <i>17.2</i> | <i>1.01</i> | <i>999</i> | <i>0.65</i> | <input type="checkbox"/> Free Product |
| WELL DIAMETER: <i>2"</i> | <i>3.6</i> | <i>7.12</i> | <i>18.4</i> | <i>17.1</i> | <i>1.01</i> | <i>999</i> | <i>1.05</i> | <input type="checkbox"/> Amount _____ Type _____ |
| WELL VOLUME: <i>≈ 0.9 gal</i> | | | | | | | | <input type="checkbox"/> Other |
| COMMENTS: | | | | | | | | |
| WELL: MW-9 | | | | | | | | <input type="checkbox"/> Froth |
| DEPTH OF BORING: <i>14.78'</i> | <i>1.3</i> | <i>6.99</i> | <i>19.0</i> | <i>3.6</i> | <i>0.18</i> | <i>999</i> | <i>1.59</i> | <input type="checkbox"/> Sheen |
| DEPTH TO WATER: <i>7.14'</i> | <i>2.6</i> | <i>7.04</i> | <i>18.4</i> | <i>3.91</i> | <i>0.19</i> | <i>999</i> | <i>2.11</i> | <input type="checkbox"/> Odor Type _____ |
| WATER COLUMN: <i>7.64'</i> | <i>3.9</i> | <i>7.08</i> | <i>18.4</i> | <i>4.00</i> | <i>0.20</i> | <i>999</i> | <i>2.44</i> | <input type="checkbox"/> Free Product |
| WELL DIAMETER: <i>2"</i> | <i>5.2</i> | <i>7.08</i> | <i>18.3</i> | <i>4.00</i> | <i>0.20</i> | <i>999</i> | <i>1.87</i> | <input type="checkbox"/> Amount _____ Type _____ |
| WELL VOLUME: <i>≈ 1.3 gal</i> | | | | | | | | <input type="checkbox"/> Other |
| COMMENTS: | | | | | | | | |
| WELL: MW-10 | | | | | | | | <input type="checkbox"/> Froth |
| DEPTH OF BORING: <i>13.29'</i> | <i>1.0</i> | <i>7.13</i> | <i>18.3</i> | <i>4.68</i> | <i>0.24</i> | <i>840</i> | <i>1.32</i> | <input type="checkbox"/> Sheen |
| DEPTH TO WATER: <i>6.94'</i> | <i>2.0</i> | <i>7.20</i> | <i>17.9</i> | <i>4.28</i> | <i>0.21</i> | <i>999</i> | <i>1.68</i> | <input type="checkbox"/> Odor Type _____ |
| WATER COLUMN: <i>6.35'</i> | <i>3.0</i> | <i>7.23</i> | <i>17.8</i> | <i>3.93</i> | <i>0.20</i> | <i>999</i> | <i>1.78</i> | <input type="checkbox"/> Free Product |
| WELL DIAMETER: <i>2"</i> | <i>4.0</i> | <i>7.21</i> | <i>17.8</i> | <i>3.94</i> | <i>0.20</i> | <i>999</i> | <i>1.12</i> | <input type="checkbox"/> Amount _____ Type _____ |
| WELL VOLUME: <i>≈ 1.0 gal</i> | | | | | | | | <input type="checkbox"/> Other |
| COMMENTS: | | | | | | | | |

CHROMALAB, INC.

Environmental Services (SDB)

June 15, 1998

Submission #: 9806162

ACC ENVIRONMENTAL CONSULTANTS

Atten: David DeMent

Project: 7101 EDGEWATER DRIVE
Received: June 9, 1998

Project#: 6442-001.00

re: 1 sample for TEPH analysis.
Method: EPA 8015M

Sampled: June 8, 1998

Matrix: WATER
Run#: 13225

Extracted: June 11, 1998
Analyzed: June 12, 1998

| Spl# | CLIENT SPL ID | Kerosene (ug/L) | Diesel (ug/L) | Motor Oil (ug/L) |
|--------|---------------|--------------------|------------------|---------------------|
| 189976 | MW-8 | N.D. | 1200 | 1000 |

Note: Hydrocarbon reported as Diesel is in the late Diesel Range and does not match our Diesel Standard. Hydrocarbon reported as Motor Oil does not match the pattern of our Motor Oil Standard.

| | | | |
|------------------------|----|------|------|
| Reporting Limits | 50 | 50 | 500 |
| Blank Result | | N.D. | N.D. |
| Blank Spike Result (%) | -- | 106 | -- |

Carol House
Carolyn House
Analyst

BH
Bruce Havlik
Analyst

CHROMALAB, INC.

Environmental Services (SDB)

June 17, 1998

Submission #: 9806162

ACC ENVIRONMENTAL CONSULTANTS

Atten: David DeMent

Project: 7101 EDGEWATER DRIVE
Received: June 9, 1998

Project#: 6442-001.00

re: 2 samples for TEPH analysis.
Method: EPA 8015M

Sampled: June 8, 1998 Matrix: WATER Extracted: June 12, 1998
Run#: 13241 Analyzed: June 12, 1998

| Spl# | CLIENT SPL ID | Kerosene (ug/L) | Diesel (ug/L) | Motor Oil (ug/L) |
|--------|---------------|--------------------|------------------|---------------------|
| 189977 | MW-9 | N.D. | 1800 | 890 |

Note: Hydrocarbon reported as Diesel does not match the pattern of our Diesel Standard. Hydrocarbon reported as Motor Oil does not match the pattern of our Motor Oil Standard. Surrogate high due to matrix interference.


Sampled: June 8, 1998 Matrix: WATER Extracted: June 12, 1998
Run#: 13241 Analyzed: June 13, 1998

| Spl# | CLIENT SPL ID | Kerosene (ug/L) | Diesel (ug/L) | Motor Oil (ug/L) |
|--------|---------------|--------------------|------------------|---------------------|
| 189978 | MW-10 | N.D. | 500 | N.D. |

Note: Hydrocarbon reported is in the late Diesel Range and does not match our Diesel Standard.

| | | | |
|------------------------|------|------|------|
| Reporting Limits | 50 | 50 | 500 |
| Blank Result | N.D. | N.D. | N.D. |
| Blank Spike Result (%) | -- | 96.4 | -- |


Carolyn House
Analyst


Bruce Havlik
Analyst

CHROMALAB, INC.

Environmental Services (SDB)

June 16, 1998

Submission #: 9806162

ACC ENVIRONMENTAL CONSULTANTS

Atten: David DeMent

Project: 7101 EDGEWATER DRIVE

Project#: 6442-001.00

Received: June 9, 1998

re: One sample for Fuel Oxygenates by GC/MS analysis.

Method: EPA SW846 Method 8260 Modified

Client Sample ID: MW-8

Spl#: 189976


Matrix: WATER


Sampled: June 8, 1998

Run#: 13299

Analyzed: June 15, 1998

| ANALYTE | RESULT (ug/L) | REPORTING LIMIT (ug/L) | BLANK RESULT (ug/L) | BLANK SPIKE (%) | DILUTION FACTOR |
|---------------------------------------|------------------|------------------------------|---------------------------|-----------------------|--------------------|
| TERTIARY BUTYL ALCOHOL (TBA) | N.D. | 5.0 | N.D. | -- | 1 |
| METHYL TERTIARY BUTYL ETHER (MTBE) | N.D. | 5.0 | N.D. | 109 | 1 |
| DI-ISOPROPYL ETHER (DIPE) | N.D. | 10 | N.D. | -- | 1 |
| ETHYL TERTIARY BUTYL ETHER (ETBE) | N.D. | 5.0 | N.D. | -- | 1 |
| TERTIARY AMYL METHYL ETHER (TAME) | N.D. | 5.0 | N.D. | -- | 1 |


Alex Tam
Analyst


Michael Verona
Operations Manager

CHROMALAB, INC.

Environmental Services (SDB)

June 16, 1998

Submission #: 9806162

ACC ENVIRONMENTAL CONSULTANTS

Atten: David DeMent

Project: 7101 EDGEWATER DRIVE

Project#: 6442-001.00

Received: June 9, 1998

re: One sample for Fuel Oxygenates by GC/MS analysis.

Method: EPA SW846 Method 8260 Modified

Client Sample ID: MW-9

Spl#: 189977

Matrix: WATER


Sampled: June 8, 1998


Run#: 13299

Analyzed: June 15, 1998

| ANALYTE | RESULT (ug/L) | REPORTING LIMIT (ug/L) | BLANK RESULT (ug/L) | BLANK SPIKE (%) | DILUTION FACTOR |
|---------------------------------------|------------------|------------------------------|---------------------------|-----------------------|--------------------|
| TERTIARY BUTYL ALCOHOL (TBA) | N.D. | 5.0 | N.D. | -- | 1 |
| METHYL TERTIARY BUTYL ETHER (MTBE) | N.D. | 5.0 | N.D. | 109 | 1 |
| DI-ISOPROPYL ETHER (DIPE) | N.D. | 10 | N.D. | -- | 1 |
| ETHYL TERTIARY BUTYL ETHER (ETBE) | N.D. | 5.0 | N.D. | -- | 1 |
| TERTIARY AMYL METHYL ETHER (TAME) | N.D. | 5.0 | N.D. | -- | 1 |

Note: Surrogate recovery demonstrates matrix interference.


Alex Tam
Analyst


for *Oleg Neubor*
Michael Verona
Operations Manager

CHROMALAB, INC.

Environmental Services (SDB)

June 16, 1998

Submission #: 9806162

ACC ENVIRONMENTAL CONSULTANTS

Atten: David DeMent

Project: 7101 EDGEWATER DRIVE

Project#: 6442-001.00

Received: June 9, 1998

re: One sample for Fuel Oxygenates by GC/MS analysis.

Method: EPA SW846 Method 8260 Modified

Client Sample ID: MW-10

Spl#: 189978

Matrix: WATER

Sampled: June 8, 1998

Run#: 13299

Analyzed: June 15, 1998

| ANALYTE | RESULT (ug/L) | REPORTING LIMIT (ug/L) | BLANK RESULT (ug/L) | BLANK SPIKE (%) | DILUTION FACTOR |
|---------------------------------------|------------------|------------------------------|---------------------------|--------------------|--------------------|
| TERTIARY BUTYL ALCOHOL (TBA) | 6.7 | 5.0 | N.D. | -- | 1 |
| METHYL TERTIARY BUTYL ETHER (MTBE) | N.D. | 5.0 | N.D. | 109 | 1 |
| DI-ISOPROPYL ETHER (DIPE) | N.D. | 10 | N.D. | -- | 1 |
| ETHYL TERTIARY BUTYL ETHER (ETBE) | N.D. | 5.0 | N.D. | -- | 1 |
| TERTIARY AMYL METHYL ETHER (TAME) | N.D. | 5.0 | N.D. | -- | 1 |


Alex Tam
Analyst


Michael Verona
Operations Manager

CHROMALAB, INC.

Environmental Services (SDB)

June 16, 1998

Submission #: 9806162

ACC ENVIRONMENTAL CONSULTANTS

Atten: David DeMent

Project: 7101 EDGEWATER DRIVE
Received: June 9, 1998

Project#: 6442-001.00


re: One sample for Gasoline BTEX analysis.
Method: SW846 8020A Nov 1990 / 8015Mod

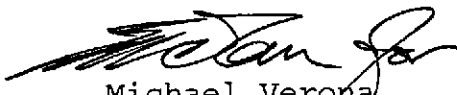
Client Sample ID: MW-8
Spl#: 189976
Sampled: June 8, 1998

Matrix: WATER
Run#: 13237

Analyzed: June 11, 1998

| ANALYTE | RESULT (ug/L) | REPORTING LIMIT (ug/L) | BLANK RESULT (ug/L) | BLANK SPIKE (%) | DILUTION FACTOR |
|---------------|------------------|------------------------------|---------------------------|-----------------------|--------------------|
| GASOLINE | N.D. | 50 | N.D. | 99 | 1 |
| BENZENE | N.D. | 0.50 | N.D. | 99 | 1 |
| TOLUENE | N.D. | 0.50 | N.D. | 98 | 1 |
| ETHYL BENZENE | N.D. | 0.50 | N.D. | 104 | 1 |
| XYLENES | N.D. | 0.50 | N.D. | 102 | 1 |


Vincent Vancil
Analyst


Michael Verona
Operations Manager

510-638-8404

1220 Quarry Lane • Pleasanton, California 94566-4756
(925) 484-1919 • Facsimile (925) 484-1096
Federal ID #68-0140157

PM V132 O: BTEXQC0220
VINCE 17:25

CHROMALAB, INC.

Environmental Services (SDB)

June 16, 1998

Submission #: 9806162

ACC ENVIRONMENTAL CONSULTANTS

Atten: David DeMent

Project: 7101 EDGEWATER DRIVE
Received: June 9, 1998

Project#: 6442-001.00

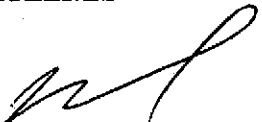
re: One sample for Gasoline BTEX analysis.
Method: SW846 8020A Nov 1990 / 8015Mod

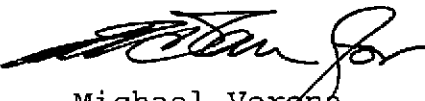
Client Sample ID: MW-9
Spl#: 189977
Sampled: June 8, 1998

Matrix: WATER
Run#:13237

Analyzed: June 11, 1998

| <u>ANALYTE</u> | <u>RESULT</u> (ug/L) | <u>REPORTING</u> <u>LIMIT</u> (ug/L) | <u>BLANK</u> <u>RESULT</u> (ug/L) | <u>BLANK</u> <u>SPIKE</u> (%) | <u>DILUTION</u> <u>FACTOR</u> |
|----------------|-------------------------|--|---|-------------------------------------|----------------------------------|
| GASOLINE | 840 | 50 | N.D. | 99 | 1 |
| BENZENE | 450 | 0.50 | N.D. | 99 | 1 |
| TOLUENE | 6.1 | 0.50 | N.D. | 98 | 1 |
| ETHYL BENZENE | 3.3 | 0.50 | N.D. | 104 | 1 |
| XYLENES | 5.3 | 0.50 | N.D. | 102 | 1 |


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Federal ID #68-0140157

PM V132 O:BTEXQC0220
VINCE 17:25

CHROMALAB, INC.

Environmental Services (SDB)

June 16, 1998

Submission #: 9806162

ACC ENVIRONMENTAL CONSULTANTS

Atten: David DeMent

Project: 7101 EDGEWATER DRIVE
Received: June 9, 1998

Project#: 6442-001.00

re: One sample for Gasoline BTEX analysis.
Method: SW846 8020A Nov 1990 / 8015Mod

Client Sample ID: MW-10

Spl#: 189978


Matrix: WATER


Sampled: June 8, 1998

Run#:13316

Analyzed:

| ANALYTE | RESULT (ug/L) | REPORTING LIMIT (ug/L) | BLANK RESULT (ug/L) | BLANK SPIKE (%) | DILUTION FACTOR |
|---------------|------------------|------------------------------|---------------------------|-----------------------|--------------------|
| GASOLINE | N.D. | 50 | N.D. | 88 | 1 |
| BENZENE | 7.3 | 0.50 | N.D. | 97 | 1 |
| TOLUENE | N.D. | 0.50 | N.D. | 97 | 1 |
| ETHYL BENZENE | N.D. | 0.50 | N.D. | 96 | 1 |
| XYLENES | N.D. | 0.50 | N.D. | 97 | 1 |


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Federal ID #68-0140157

PM V132 0:BTEXQC0220
VINCE 17:25

Environmental Services (SDB) (DOHS 1094)

SUBN #: 9806162 REP: RM
 CLIENT: ACC
 DUL: 06/16/98
 REF #: 40261

40261
 Chain of Custody

DATE 6/8/98 PAGE 1 of 1

ANALYSIS REPORT

PROJ. MGR Dave DeMeat
 COMPANY ACC Environmental
 ADDRESS 7977 Crowell Dr, Suite 100
Oakland, CA 94621
 SAMPLERS (SIGNATURE) [Signature] (PHONE NO.) (510)638-8400
 (FAX NO.) (510)638-8404

| SAMPLE ID. | DATE | TIME | MATRIX | PRESERV. |
|------------|--------|-------|------------------|----------|
| MW-8 | 6/8/98 | 14:15 | H ₂ O | HCL |
| MW-9 | 6/8/98 | 15:00 | H ₂ O | HCL |
| MW-10 | 6/8/98 | 16:00 | H ₂ O | HCL |

| TPH - Gasoline (EPA 5030, 8015) | TPH - Gasoline (5030, 8015) w/BTEX (EPA 602, 8020) | TPH - Diesel (EPA 3510/3530, 8015) | PURGEABLE AROMATICS BTEX (EPA 602, 8020) | PURGEABLE HALOCARBONS (EPA 601, 8010) | VOLATILE ORGANICS (EPA 624, 8240, 524.2) | BASE/NEUTRALS, ACIDS (EPA 625/627, 8270, 525) | TOTAL OIL & GREASE (EPA 5520, 8+F, E+F) | PCB (EPA 608, 8080) | PESTICIDES (EPA 608, 8080) | TOTAL RECOVERABLE HYDROCARBONS (EPA 418.1) | Fuel Oxygenates | LUFT METALS: Cd, Cr, Pb, Zn, Ni | CAM METALS (17) | PRIORITY POLLUTANT METALS (13) | TOTAL LEAD | EXTRACTION (ICLP, STLC) | NUMBER OF CONTAINERS |
|---------------------------------|--|------------------------------------|--|---------------------------------------|--|---|---|---------------------|----------------------------|--|-----------------|---------------------------------|-----------------|--------------------------------|------------|-------------------------|----------------------|
| | X | X | X | X | | | | | | | X | | | | | | 6 |

PROJECT INFORMATION
 PROJECT NAME 7101 Edgewater Drive
 PROJECT NUMBER 6442-001.00
 P.O. # 98-6442-001.00
 TAT STANDARD 5-DAY
 SPECIAL INSTRUCTIONS/COMMENTS:

SAMPLE RECEIPT
 TOTAL NO. OF CONTAINERS 18
 HEAD SPACE
 REC'D GOOD CONDITION/COLD
 CONFORMS TO RECORD
 24 48 72 OTHER

RELINQUISHED BY 1. [Signature] 16:30
 (SIGNATURE) (TIME)
Ely Lisneros 6/9/98
 (PRINTED NAME) (DATE)
ACC Environmental
 (COMPANY)

RELINQUISHED BY 2. [Signature]
 (SIGNATURE) (TIME)
P. M... 6-9
 (PRINTED NAME) (DATE)
 (COMPANY)

RECEIVED BY 1. [Signature] 16:30
 (SIGNATURE) (TIME)
P. M... 6/9
 (PRINTED NAME) (DATE)
 (COMPANY)

RECEIVED BY (LABORATORY) 2. [Signature] 18:30
 (SIGNATURE) (TIME)
P. Cassidy
 (PRINTED NAME) (DATE)
6-9-98
 (LAB)

CHROMALAB, INC.

Environmental Service (SDB)

Sample Receipt Checklist

Client Name: ACC ENVIRONMENTAL CONSULTANTS Date/Time Received: 06/09/98 | 16:30

Reference/Submis: 40261 | 9806162 Received by: C.F. ^{6:10 PM} P.M.

Checklist completed by: Chris Rowley Signature Date: 6/10/98 Reviewed by: AC-10-98 Initials | Date

Matrix: H₂O Carrier name: Client - (C/L)

- Shipping container/cooler in good condition? Yes No Not Present
- Custody seals intact on shipping container/cooler? Yes No Not Present
- Custody seals intact on sample bottles? Yes No Not Present
- Chain of custody present? Yes No
- Chain of custody signed when relinquished and received? Yes No
- Chain of custody agrees with sample labels? Yes No
- Samples in proper container/bottle? Yes No
- Sample containers intact? Yes No
- Sufficient sample volume for indicated test? Yes No
- All samples received within holding time? Yes No
- Container/Temp Blank temperature in compliance? Temp: 5.3 °C Yes No
- Water - VOA vials have zero headspace? No VOA vials submitted Yes No
- Water - pH acceptable upon receipt? YES Adjusted? Checked by CR Chemist for VOAs

Any No and/or NA (not applicable) response must be detailed in the comments section below.

Client contacted: _____ Date contacted: _____ Person contacted: _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action: _____