

July 17, 1998
941114NA

Ms. Susan Hugo
Hazardous Materials Specialist
Department of Environmental Health
Alameda County Health Agency
1131 Harbor Bay Parkway, 2nd Floor
Alameda, California 94502

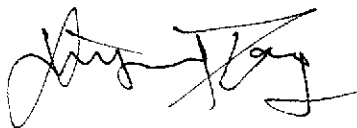
Subject: Transmittal of 2nd Quarter 1998 Groundwater Monitoring Results
at the Former Celis Alliance Gas Station Site, Emeryville, CA

Dear Ms. Hugo:

On behalf of the City of Emeryville Redevelopment Agency, transmitted herewith is the subject site quarterly groundwater monitoring results for the second quarter 1998. This is the fourth (last) monitoring event of a one-year quarterly groundwater monitoring program. The monitoring activities were performed in accordance with the Closure Workplan (Woodward-Clyde, September 1996), which was submitted to and approved by the Alameda County Department of Environmental Health.

Please feel free to call me at (510) 874-3060 or Mr. Ignacio Dayrit of the City of Emeryville Redevelopment Agency at (510) 596-4356 for questions and comments.

Sincerely,



Xinggang Tong, P.E.
Project Manager

enclosure.

cc: Ignacio Dayrit, City of Emeryville

July 17, 1998
941114NA

Mr. Ignacio Dayrit
City of Emeryville Redevelopment Agency
2200 Powell Street, 12th Floor
Emeryville, California 94608-1806

Subject: Quarterly Groundwater Monitoring Results for the 2nd Quarter 1998
The Former Celis Alliance Gas Station at 4000 San Pablo Avenue
Emeryville, California

Dear Ignacio:

Woodward-Clyde is pleased to present the second quarter 1998 groundwater monitoring results for the former Celis Alliance Gas Station UST site, which is located at 4000 San Pablo Avenue in Emeryville, California. This is the fourth (last) monitoring event of a one-year quarterly groundwater monitoring program. The monitoring activities were performed in accordance with the Closure Workplan (Woodward-Clyde, September 1996), which was submitted to and approved by the Alameda County Department of Environmental Health.

Groundwater samples were collected from the on-site monitoring well EW-1 and the off-site, downgradient monitoring well LF-4 on June 2, 1998. Samples were delivered to Curtis & Tompkins Analytical Laboratory of Berkeley for the analysis of Total Petroleum Hydrocarbons (TPH) as gasoline (TPH-g), diesel (TPH-d), and motor oil (TPH-mo); Benzene, Toluene, Ethylbenzene, & Xylenes (BTEX); Methyl Tertiary Butyl Ether (MTBE); and polyaromatic hydrocarbons (PAHs). Results are summarized in Table 1. Lead was not analyzed this quarter because it was not detected in the first two quarterly monitoring events. Concentrations of TPH-g and TPH-d continued the overall trend of decreasing from both wells. Samples from LF-4 showed TPH-d and TPH-mo concentrations below their respective reporting limits, 7.9 ug/L benzene, 0.52 ug/L toluene, 9.5 ug/L ethylbenzene, 36 ug/L total xylenes, and 14 ug/L MTBE. Concentrations of corresponding constituents in EW-1 were higher. Naphthalene was the only PAH detected in EW-1 (0.12 mg/L).

Woodward-Clyde retained Environmental Sampling Services to perform field sampling activities. Prior to purging, the depth from the top of well casing to water surface was measured using a Solinst electronic water level meter. Each of the two wells were then purged by manually bailing out at least 3 well casing volumes of groundwater using a new disposable PVC bailer. Temperature, pH, and conductivity of the purged water were



monitored during the well purging. The well monitoring data sheet is included with this report. After the water level recovered to about 80% of the static water level and water parameters stabilized, a new disposable bailer was gently lowered into a well approximately half its length past the air-water interface. The bailer was retrieved and the water was promptly transferred to appropriate sample containers supplied by the laboratory. Sample containers were promptly capped, labeled, placed in an ice-cooled container, and delivered to Curtis & Tompkins under chain-of-custody in the same day the samples were collected. For quality control, a trip blank was included in the container and was analyzed for TPH-g and BTEX.

The water level in well MW-2 was also measured for the purpose of estimating groundwater flow direction in the area. Well MW-2 was installed by Levine-Fricke for monitoring other contamination not related to this site. Elevations of the three wells were surveyed by PLS Surveys, Inc. of Oakland on July 10, 1997. Groundwater elevations are summarized in Table 1 and are shown on Figure 2. The water level was at about 7 feet below ground surface on June 2, 1998. Based on this quarter measured groundwater elevations, the groundwater flow direction is generally toward the southwest under a hydraulic gradient of approximately 0.007 ft/ft. The local groundwater flow direction may have been influenced by the groundwater extraction activities near the intersection of Hollis Street and Yerba Buena Street, which is about 3,000 feet Southwest of this site.

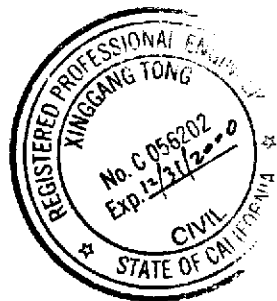
The purged water was placed in a labeled 55-gallon DOT drum for future disposal. For security reasons, the drum was moved to the City's Fire Station No. 2 site for temporary storage there.

Please call me at (510) 874-3060 if you have questions or comments.

Sincerely,



Xinggang Tong, Ph.D., P.E.
Project Manager



Enclosures:

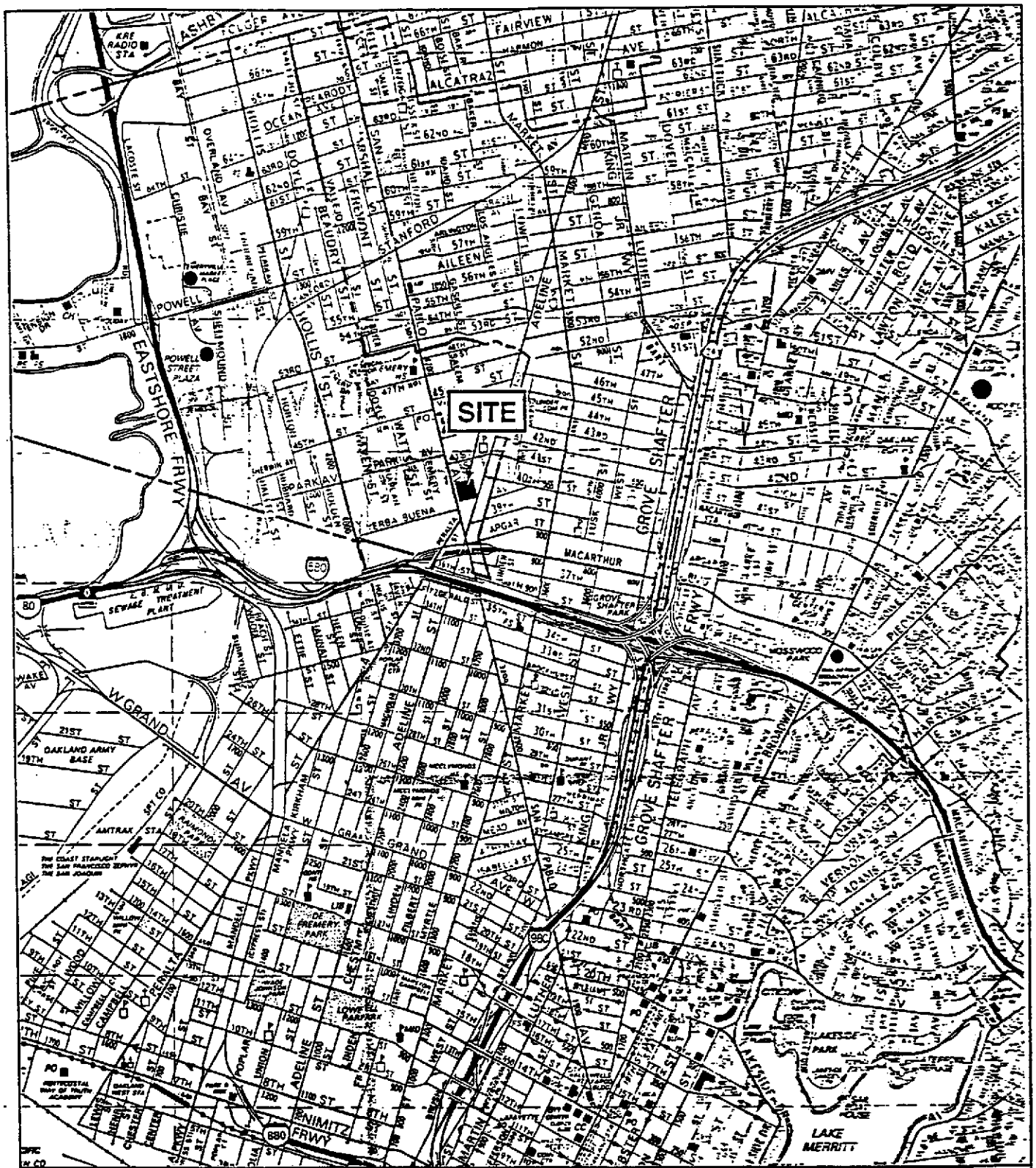
- A. Groundwater analytical results (current and historical)
- B. Site location maps
- C. Well purging data sheet
- D. Laboratory analytical report

TABLE 1
GROUNDWATER MONITORING DATA
THE FORMER CELLI'S ALLIANCE GAS STATION SITE
4000 SAN PABLO AVE., EMERYVILLE, CA

| Sample ID | Date Sampled | Water level | | TPH as gasoline (mg/l) | TPH as diesel (mg/l) | TPH as motor oil (mg/l) | TRPH (mg/l) | Benzene (ug/l) | Toluene (ug/l) | Ethyl Benzene (ug/l) | Total Xylenes (ug/l) | MTBE (ug/l) | Total Lead (ug/l) | PAHs (ug/l) |
|------------|--------------|-------------|----------|------------------------|----------------------|-------------------------|-------------|----------------|----------------|----------------------|----------------------|-------------|-------------------|---------------------|
| | | TOC (ft) | MSL (ft) | | | | | | | | | | | |
| EW-1 | 6/2/98 | 7.24 | 31.80 | 18 | 3.4 | 0.55 | NA | 2100 | 460 | 910 | 2990 | 350 | NA | naphthalene = 120 |
| EW-1 | 3/13/98 | 5.92 | 33.12 | 33 | 7.7 | ND (0.5) | NA | 2500 | 1300 | 1000 | 3400 | 570 | NA | naphthalene = 170 |
| EW-1 | 12/5/97 | 6.00 | 33.04 | 41 | 4.7 | ND (2) | NA | 2100 | 1800 | 2500 | 10000 | 340 | ND (40) | naphthalene = 420 |
| EW-1 | 9/26/97 | 8.06 | 30.98 | 110 | 180 | ND (20) | NA | 2800 | 4900 | 3100 | 12000 | ND (500) | ND (40) | naphthalene = 1,000 |
| LF-4 | 6/2/98 | 6.99 | 31.09 | 0.4 | ND (0.05) | ND (0.3) | NA | 7.9 | 0.52 | 9.5 | 36 | 14 | NA | NA |
| LF-4 | 3/13/98 | 6.58 | 31.50 | 0.91 | 0.11 | ND (0.5) | NA | 4.1 | ND (0.5) | 7.1 | 27 | 14 | NA | NA |
| LF-4 | 12/5/97 | 6.28 | 31.80 | 1.4 | 0.15 | ND (0.2) | NA | 26 | 14 | 30 | 140 | 20 | ND (40) | ND (10) |
| LF-4 | 9/26/97 | 8.25 | 29.83 | 3.2 | 0.48 | ND (0.2) | NA | 44 | 6.6 | 49 | 180 | ND (5) | ND (40) | naphthalene = 17 |
| LF-4 | 1/28/94 | 6.77 | 31.31 | 18 | 1.4 | 0.16 | NA | 1000 | 1900 | 880 | 4700 | NA | NA | NA |
| LF-4dup | 1/28/94 | 6.77 | 31.31 | 21 | 2.2 | 0.21 | NA | 1100 | 2000 | 800 | 4200 | NA | NA | NA |
| Trip Blan | 6/2/98 | | | ND (0.05) | NA | NA | NA | ND (0.5) | ND (0.5) | ND (0.5) | ND (0.5) | ND (2) | NA | NA |
| Trip Blank | 3/13/98 | | | ND (0.05) | NA | NA | NA | ND (0.5) | ND (0.5) | ND (0.5) | ND (0.5) | ND (5) | NA | NA |
| Trip Blank | 12/5/97 | | | ND (0.05) | NA | NA | NA | ND (0.5) | ND (0.5) | ND (0.5) | ND (2) | ND (5) | NA | NA |
| Trip blank | 9/26/97 | | | ND (0.05) | NA | NA | NA | ND (0.5) | ND (0.5) | ND (0.5) | ND (2) | ND (5) | NA | NA |
| MW-2 | 6/2/98 | 7.29 | 29.98 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| MW-2 | 3/13/98 | 7.09 | 30.18 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| MW-2 | 12/5/97 | 6.78 | 30.49 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| MW-2 | 9/26/97 | 8.11 | 29.16 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| LF-1AG | 8/7/93 | 9.40 | 29.55 | 100 | 41 | ND (2.5) | 11 | 13000 | 9400 | 3100 | 14000 | NA | NA | NA |
| LF-2AG | 8/7/93 | 7.97 | 32.28 | 13 | 0.095 | ND (0.5) | ND (5) | 2400 | 2900 | 500 | 2000 | NA | NA | NA |
| LF-3AG | 8/7/93 | 8.90 | 30.45 | 11 | 0.78 | ND (0.25) | ND (5) | 1500 | 170 | 2900 | 5100 | NA | NA | NA |
| GWEB1 | 1/28/94 | NA | NA | ND (0.05) | 0.081 | ND (0.05) | NA | ND (0.5) | 0.57 | ND (0.5) | 2.6 | NA | NA | NA |

TABLE 1
GROUNDWATER MONITORING DATA
THE FORMER CELLI'S ALLIANCE GAS STATION SITE
4000 SAN PABLO AVE., EMERYVILLE, CA

Notes: NA - not analyzed; ND - not detected at or above the detection limit given in parentheses.
TOC - water level measured to top of well casing; MSL - mean sea level.
TPH gas, diesel, and motor oil are quantified by modified EPA Method 8015.
Benzene, toluene, ethylbenzene, xylenes, and MTBE are quantified by EPA Method 8020.
TRPH - total recoverable petroleum hydrocarbons quantified by Standard Method 5520 E&F.
Lead - quantified by EPA Method 3010/6010.
PAHs - polyaromatic hydrocarbons quantified by EPA Method 3520/8270.



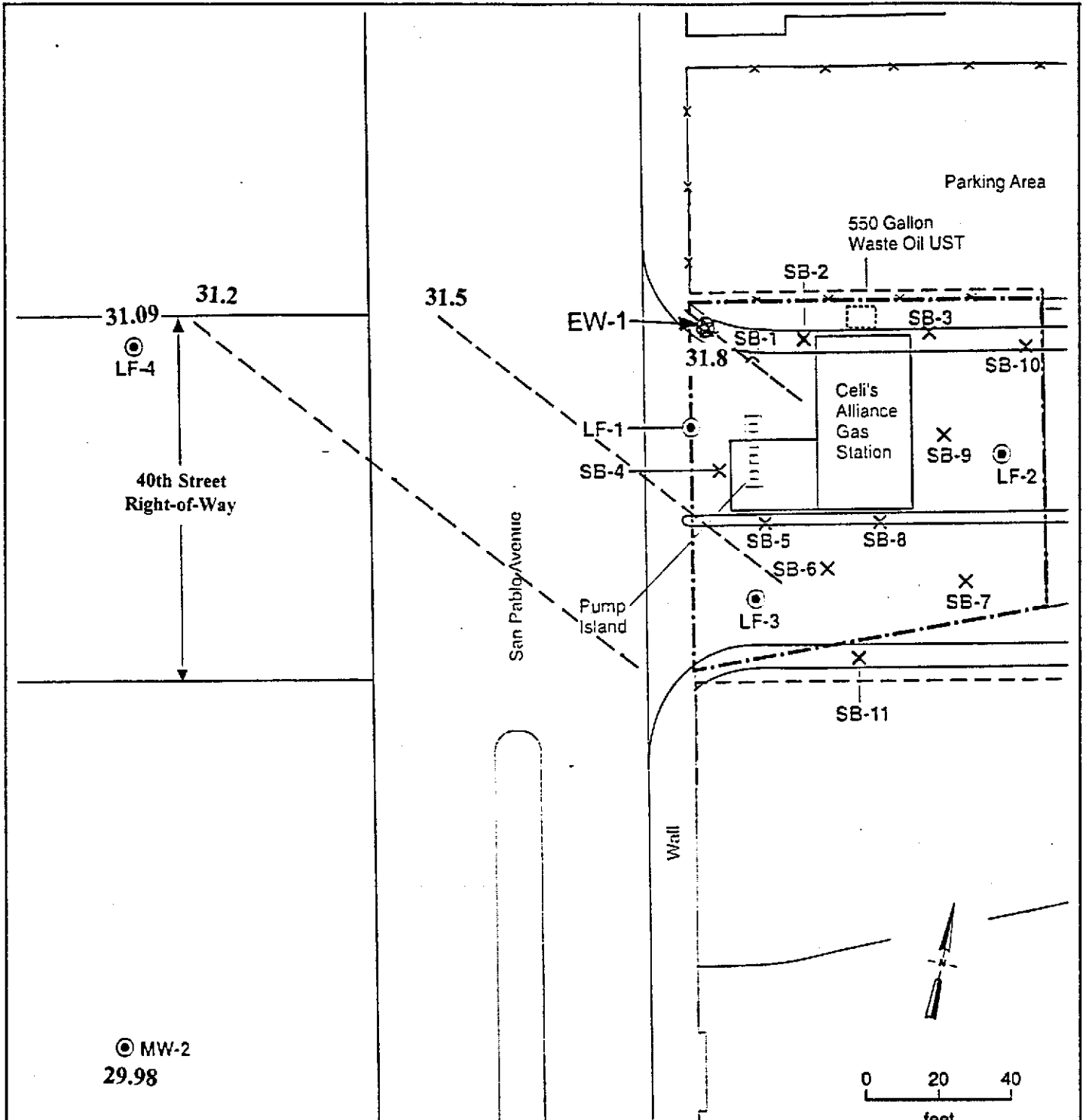
Project No.
941114NA

40th Street UST

Woodward-Clyde Consultants

SITE LOCATION MAP
CELI'S ALLIANCE GAS STATION SITE

Figure
1



EXPLANATION

- x Soil Borings by Levine-Fricke
- ⊙ Monitoring Wells by Levine-Fricke (LF-1, LF-2, & LF-3 Closed)
- ⊙ Monitoring Well by WCC (1997)

| | | | |
|-----------------------------------|--|---|-------------|
| Project No. 94114NA | 40th Street Right-of-Way (Former Celis Gas Station) | SHALLOW GROUNDWATER ELEVATION (in feet, MSL) June 2, 1998 | Figure 2 |
| Woodward-Clyde Consultants | | | |



**Environmental
Sampling Services**

June 2, 1998

Mr. Xinggang Tong
Woodward-Clyde Consultants
500-12th Street, Suite 200
Oakland, California 94607-4014

Subject: City of Emeryville, 40th Street Right-of -Way Quarterly Groundwater Sampling

Dear Mr. Tong,

Please find enclosed the Water Quality Sample Log Sheets and associated invoices for Site Numbers 1 and 2. All samples were sent to Curtis & Thompkins Limited in Berkeley, California.

Sincerely,

Jacqueline Lee
President

Enclosure





**Environmental
Sampling Services**

WATER QUALITY SAMPLE LOG SHEET WELL IDENTIFICATION: LF-4 DATE: 6/2/98

Project Name: 40th Street Emeryville, UST Client Project Number: 941114NA
 Well Description: 2" 3" 4" 5" 6" Other 2 Well Type: PVC Stainless Steel Other: _____
 Is Well Secured? Yes No Bolt Size 1/2" Type of lock / Lock number: Master Lock
 Observations / Comments: _____

Purge Method: Teflon Disposable Bailer Centrifugal Pump GrundFos Redi-flow Pump Other: _____
 Pump Lines: NA New / Cleaned / Dedicated Bailer Line: NA New Cleaned / Dedicated

Method of Cleaning Pump: NA Alconox Liquidnox Tap Water DI Rinse Other: _____
 Method of Cleaning Bailer: NA Alconox Liquidnox Tap Water DI Rinse Other: _____

Sampling Method: Disp. Teflon Bailer Disp. PVC Bailer GrundFos Redi-flow Pump Other: _____

pH Meter Serial No.: 217254 / 330089 Spec. Cond. Meter Serial No.: 96H0203AB / AE
 Date/Time Calibrated: 4/2 @ 11:15 4/7/10 @ 25°C Spec. Cond. Meter Calibration: Self Test Other: _____

Method to Measure Water Level: Solinst Serial No.: ESS#2 P.I.D. Reading: NA

Water Level at Start (DTW): 6.99 Water Level Prior To Sampling: 7.02

TD = 18.16 - 6.99 (DTW) = 11.17 (ft. of water) x "K" = 1.8 (Gals./CV) x 3 (No. of CV) = 5.4 (Gals.)
 "K" = 0.163(2" well) "K" = 0.653(4" well) "K" = 1.02(5" well) "K" = 1.46(6" well) "K" = 2.61(8" well)

FIELD WATER QUALITY PARAMETERS

| Date | Time | Discharge (gallons) | pH | Temp. (°C) | Specific Conductance mS (US) | Turbidity (NTU's) | Color | Comments |
|--------|-------|---------------------|------|------------|------------------------------|-------------------|-----------------|----------|
| 6/2/98 | 13:44 | 1 | 6.47 | 18.9 | 749 | 174 | Red Orange | |
| | 13:46 | 2 | 6.55 | 18.9 | 728 | 79.9 | Cloudy orange | |
| | 13:49 | 3 | 6.62 | 18.9 | 730 | 51.7 | Cloudy w. Brown | |
| | 13:51 | 4 | 6.65 | 18.9 | 732 | 34.8 | Slightly cloudy | |
| | 13:53 | 5 | 6.64 | 19.0 | 730 | 21.6 | Clear | |
| | 13:55 | 6 | 6.67 | 19.1 | 725 | 24.4 | " | |
| 6/2/98 | 14:03 | After Sampling | 6.66 | 18.8 | 728 | 15.5 | Clear | |

Total Discharge: 6 gallons Casing Volumes Removed: 3.3

Method of disposal of discharged water: 55 Gallon Drum(s) Poly Tank Other: _____

Date/Time Sampled: 6/2/98 @ 13:58 Analysis/No. of Bottles: TPH gas, BTEX & MTBE
 (3-40ml VOA's W/Hcl); TPH diesel & Motor Oil, (2-1 liter bottles).

QA/QC: — @ — as an Equipment Blank Duplicate MS/MSD Lab Split Field Blank

Comments: _____

MW-2 7.29 @ 14:15

Environmental Sampling Services
 6680 Alhambra Ave. Martinez, CA 94553
 Tel/Fax: (510) 372-8108

Sampled By: S. Penman and J. Lee Initials: SP JL





**Environmental
Sampling Services**

| | |
|---|--|
| WATER QUALITY SAMPLE LOG SHEET | WELL IDENTIFICATION: EW-1 DATE: 6/2/98 |
| Project Name: <u>40th Street Emeryville, UST</u> | Client Project Number: <u>941114NA</u> |
| Well Description: 2" 3" <u>4"</u> 5" 6" Other <u>15/16"</u> | Well Type: <u>PVC</u> Stainless Steel Other: _____ |
| Is Well Secured? <u>Yes</u> / No Bolt Size _____ | Type of lock / Lock number: <u>Dolphin / 1600</u> |
| Observations / Comments: _____ | |
| Purge Method: Teflon Disposable Bailer <u>Centrifugal Pump</u> GrundFos Redi-flow Pump Other: _____ | |
| Pump Lines: NA <u>New</u> / Cleaned / Dedicated Bailer Line: NA <u>New</u> / Cleaned / Dedicated | |
| Method of Cleaning Pump: <u>NA</u> Alconox Liquidnox Tap Water DI Rinse Other: _____ | |
| Method of Cleaning Bailer: <u>NA</u> Alconox Liquidnox Tap Water DI Rinse Other: _____ | |
| Sampling Method: Disp. Teflon Bailer <u>Disp. PVC Bailer</u> GrundFos Redi-flow Pump Other: _____ | |
| pH Meter Serial No.: 217254 / <u>330089</u> Spec. Cond. Meter Serial No.: <u>96H0203AB</u> / AE | |
| Date/Time Calibrated: <u>6/2 @ 11:15</u> @ 25°C Spec. Cond. Meter Calibration: <u>Self Test</u> Other: _____ | |
| Method to Measure Water Level: Solinst Serial No.: <u>ES52</u> P.I.D. Reading: <u>NA</u> | |
| Water Level at Start (DTW): <u>7.24</u> Water Level Prior To Sampling: <u>12.49</u> | |
| TD = 20.68 - <u>7.24</u> (DTW) = <u>13.44</u> (ft. of water) x "K" = <u>8.8</u> (Gals./CV) x <u>3</u> (No. of CV) = <u>26.4</u> (Gals.) "K" = 0.163(2" well) "K" = 0.653(4" well) "K" = 1.02(5" well) "K" = 1.46(6" well) "K" = 2.61(8" well) | |

FIELD WATER QUALITY PARAMETERS

| Date | Time | Discharge (gallons) | pH | Temp. (°C) | Specific Conductance mS (uS) | Turbidity (NTU's) | Color | Comments |
|--------|------|---------------------|------|------------|------------------------------|-------------------|------------|--|
| 6/2/98 | 1244 | 5 | 6.32 | 19.6 | 1362 | 8.7 | none | ft. odor oily sheen on top |
| | 1246 | 10 | 6.44 | 19.6 | 1236 | 28.7 | v. lt gray | " |
| | 1248 | 15 | 6.42 | 20.0 | 1507 | 28.7 | " | very slight oil sheen |
| | 1251 | 20 | 6.45 | 19.9 | 1573 | 20.9 | none | " |
| | 1307 | 25 | 6.31 | 21.1 | 1611 | 27.5 | v. lt gray | oily sheen on top Dry @ 23 gals @ 1305 |
| | 1309 | 26.5 | 6.41 | 20.0 | 1581 | 13.6 | v. lt gray | oily sheen on top |
| 6/2/98 | 1330 | After Sampling | 6.43 | 19.4 | 1600 | 9.4 | v. lt gray | oily sheen on top |

Total Discharge: 28 gallons Casing Volumes Removed: 3.18

Method of disposal of discharged water: 55 Gallon Drum(s) Poly Tank Other: _____

Date/Time Sampled: 6/2/98 @ 1320 Analysis/No. of Bottles: TPH gas, BTEX & MTBE, (3-40ml VOA's W/Hcl); TPH diesel & Motor Oil, (2-1 liter bottles); EPA 8270 PAH's only, (2-1 liter bottles).

QA/QC: _____ @ _____ as an Equipment Blank Duplicate MS/MSD Lab Split Field Blank

Comments: _____

Environmental Sampling Services
6680 Alhambra Ave. Martinez, CA 94553
Tel/Fax: (510) 372-8108

Sampled By: S. Penman and J. Lee Initials: SP JL





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

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

A N A L Y T I C A L R E P O R T

Prepared for:

Woodward-Clyde Consultants
500 12th Street
Suite 100
Oakland, CA 94607

Date: 10-JUN-98
Lab Job Number: 133895
Project ID: 941114NA
Location: Emeryville Projects

Reviewed by:

Tracy B. B. 2

Reviewed by:

[Signature]

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TVH-Total Volatile Hydrocarbons

Client: Woodward-Clyde Consultants
Project#: 941114NA
Location: Emeryville Projects

Analysis Method: EPA 8015M
Prep Method: EPA 5030

| Sample # | Client ID | Batch # | Sampled | Extracted | Analyzed | Moisture |
|------------|------------|---------|----------|-----------|----------|----------|
| 133895-001 | EW-1 | 41332 | 06/02/98 | 06/08/98 | 06/08/98 | |
| 133895-002 | LF-4 | 41258 | 06/02/98 | 06/05/98 | 06/05/98 | |
| 133895-003 | MW-1 | 41258 | 06/02/98 | 06/05/98 | 06/05/98 | |
| 133895-004 | TRIP BLANK | 41258 | 06/02/98 | 06/05/98 | 06/05/98 | |

Matrix: Water

| Analyte | Units | 133895-001 | 133895-002 | 133895-003 | 133895-004 |
|--------------------|-------|------------|------------|------------|------------|
| Diln Fac: | | 20 | 1 | 1 | 1 |
| Gasoline C7-C12 | ug/L | 18000 | 400 | 78 | <50 |
| Surrogate | | | | | |
| Trifluorotoluene | %REC | 109 | 120 | 115 | 113 |
| Bromofluorobenzene | %REC | 98 | 117 | 109 | 106 |



BTXE

Client: Woodward-Clyde Consultants
Project#: 941114NA
Location: Emeryville Projects

Analysis Method: EPA 8020A
Prep Method: EPA 5030

| Sample # | Client ID | Batch # | Sampled | Extracted | Analyzed | Moisture |
|------------|------------|---------|----------|-----------|----------|----------|
| 133895-001 | EW-1 | 41332 | 06/02/98 | 06/08/98 | 06/08/98 | |
| 133895-002 | LF-4 | 41258 | 06/02/98 | 06/05/98 | 06/05/98 | |
| 133895-003 | MW-1 | 41332 | 06/02/98 | 06/08/98 | 06/08/98 | |
| 133895-004 | TRIP BLANK | 41258 | 06/02/98 | 06/05/98 | 06/05/98 | |

Matrix: Water

| Analyte | Units | 133895-001 | 133895-002 | 133895-003 | 133895-004 |
|--------------------|-------|------------|------------|------------|------------|
| Diln Fac: | | 20 | 1 | 10 | 1 |
| MTBE | ug/L | 350 | 14 | 1100 | <2 |
| Benzene | ug/L | 2100 | 7.9 | 34 | <0.5 |
| Toluene | ug/L | 460 | 0.52 | <5 | <0.5 |
| Ethylbenzene | ug/L | 910 | 9.5 | <5 | <0.5 |
| m,p-Xylenes | ug/L | 2400 | 31 | <5 | <0.5 |
| o-Xylene | ug/L | 590 | 4.7 | <5 | <0.5 |
| Surrogate | | | | | |
| Trifluorotoluene | %REC | 81 | 87 | 85 | 84 |
| Bromofluorobenzene | %REC | 79 | 91 | 81 | 83 |



TVH-Total Volatile Hydrocarbons

| | |
|------------------------------------|----------------------------|
| Client: Woodward-Clyde Consultants | Analysis Method: EPA 8015M |
| Project#: 941114NA | Prep Method: EPA 5030 |
| Location: Emeryville Projects | |

METHOD BLANK

| | |
|---------------|-------------------------|
| Matrix: Water | Prep Date: 06/05/98 |
| Batch#: 41258 | Analysis Date: 06/05/98 |
| Units: ug/L | |
| Diln Fac: 1 | |

MB Lab ID: QC72054

| Analyte | Result | |
|--------------------|--------|-----------------|
| Gasoline C7-C12 | <50 | |
| Surrogate | %Rec | Recovery Limits |
| Trifluorotoluene | 111 | 59-162 |
| Bromofluorobenzene | 99 | 59-162 |

Lab #: 133895

BATCH QC REPORT



Curtis & Tompkins, Ltd.
Page 1 of 1

BTXE

Client: Woodward-Clyde Consultants
Project#: 941114NA
Location: Emeryville Projects

Analysis Method: EPA 8020A
Prep Method: EPA 5030

METHOD BLANK

Matrix: Water
Batch#: 41258
Units: ug/L
Diln Fac: 1

Prep Date: 06/05/98
Analysis Date: 06/05/98

MB Lab ID: QC72054

| 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 | 81 | 53-124 |
| Bromofluorobenzene | 79 | 41-142 |



TVH-Total Volatile Hydrocarbons

Client: Woodward-Clyde Consultants
Project#: 941114NA
Location: Emeryville Projects

Analysis Method: EPA 8015M
Prep Method: EPA 5030

METHOD BLANK

Matrix: Water
Batch#: 41332
Units: ug/L
Diln Fac: 1

Prep Date: 06/08/98
Analysis Date: 06/08/98

MB Lab ID: QC72326

| Analyte | Result | |
|--------------------|--------|-----------------|
| Gasoline C7-C12 | <50 | |
| Surrogate | %Rec | Recovery Limits |
| Trifluorotoluene | 106 | 59-162 |
| Bromofluorobenzene | 95 | 59-162 |

Lab #: 133895

BATCH QC REPORT



Curtis & Tompkins, Ltd.
page 1 of 1

BTXE

Client: Woodward-Clyde Consultants
Project#: 941114NA
Location: Emeryville Projects

Analysis Method: EPA 8020A
Prep Method: EPA 5030

METHOD BLANK

Matrix: Water
Batch#: 41332
Units: ug/L
Diln Fac: 1

Prep Date: 06/08/98
Analysis Date: 06/08/98

MB Lab ID: QC72326

| 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 | 79 | 53-124 |
| Bromofluorobenzene | 75 | 41-142 |

Lab #: 133895

BATCH QC REPORT



Curtis & Tompkins Ltd
Page 1 of 1

TVH-Total Volatile Hydrocarbons

Client: Woodward-Clyde Consultants
Project#: 941114NA
Location: Emeryville Projects

Analysis Method: EPA 8015M
Prep Method: EPA 5030

LABORATORY CONTROL SAMPLE

Matrix: Water
Batch#: 41258
Units: ug/L
Diln Fac: 1

Prep Date: 06/05/98
Analysis Date: 06/05/98

LCS Lab ID: QC72052

| Analyte | Result | Spike Added | %Rec # | Limits |
|--------------------|--------|-------------|--------|--------|
| Gasoline C7-C12 | 1968 | 2000 | 98 | 80-119 |
| Surrogate | %Rec | Limits | | |
| Trifluorotoluene | 142 | 59-162 | | |
| Bromofluorobenzene | 104 | 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 #: 133895

BATCH QC REPORT



BTXE

Client: Woodward-Clyde Consultants Analysis Method: EPA 8020A
Project#: 941114NA Prep Method: EPA 5030
Location: Emeryville Projects

LABORATORY CONTROL SAMPLE

Matrix: Water Prep Date: 06/05/98
Batch#: 41258 Analysis Date: 06/05/98
Units: ug/L
Diln Fac: 1

LCS Lab ID: QC72053

| Analyte | Result | Spike Added | %Rec # | Limits |
|--------------------|--------|-------------|--------|--------|
| MTBE | 19.61 | 20 | 98 | 65-135 |
| Benzene | 17.96 | 20 | 90 | 69-109 |
| Toluene | 18.49 | 20 | 92 | 72-116 |
| Ethylbenzene | 17.86 | 20 | 89 | 67-120 |
| m,p-Xylenes | 19.49 | 20 | 97 | 69-117 |
| o-Xylene | 18.71 | 20 | 94 | 75-122 |
| Surrogate | %Rec | Limits | | |
| Trifluorotoluene | 81 | 53-124 | | |
| Bromofluorobenzene | 79 | 41-142 | | |

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

* Values outside of QC limits

Spike Recovery: 0 out of 6 outside limits

Lab #: 133895

BATCH QC REPORT



Curtis & Tompkins, Ltd.
Page 1 of 1

TVH-Total Volatile Hydrocarbons

Client: Woodward-Clyde Consultants
Project#: 941114NA
Location: Emeryville Projects

Analysis Method: EPA 8015M
Prep Method: EPA 5030

LABORATORY CONTROL SAMPLE

Matrix: Water
Batch#: 41332
Units: ug/L
Diln Fac: 1

Prep Date: 06/08/98
Analysis Date: 06/08/98

LCS Lab ID: QC72325

| Analyte | Result | Spike Added | %Rec # | Limits |
|--------------------|--------|-------------|--------|--------|
| Gasoline C7-C12 | 1875 | 2000 | 94 | 80-119 |
| Surrogate | %Rec | Limits | | |
| Trifluorotoluene | 144 | 59-162 | | |
| Bromofluorobenzene | 109 | 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



BTXE

Client: Woodward-Clyde Consultants
 Project#: 941114NA
 Location: Emeryville Projects

Analysis Method: EPA 8020A
 Prep Method: EPA 5030

BLANK SPIKE/BLANK SPIKE DUPLICATE

Matrix: Water
 Batch#: 41332
 Units: ug/L
 Diln Fac: 1

Prep Date: 06/08/98
 Analysis Date: 06/08/98

BS Lab ID: QC72327

| Analyte | Spike Added | BS | %Rec # | Limits |
|--------------------|-------------|--------|--------|--------|
| MTBE | 20 | 19.86 | 99 | 65-135 |
| Benzene | 20 | 17.87 | 89 | 69-109 |
| Toluene | 20 | 18.34 | 92 | 72-116 |
| Ethylbenzene | 20 | 17.91 | 90 | 67-120 |
| m,p-Xylenes | 20 | 19.01 | 95 | 69-117 |
| o-Xylene | 20 | 18.61 | 93 | 75-122 |
| Surrogate | %Rec | Limits | | |
| Trifluorotoluene | 83 | 53-124 | | |
| Bromofluorobenzene | 80 | 41-142 | | |

BSD Lab ID: QC72328

| Analyte | Spike Added | BSD | %Rec # | Limits | RPD # | Limit |
|--------------------|-------------|--------|--------|--------|-------|-------|
| MTBE | 20 | 19.71 | 99 | 65-135 | 1 | 20 |
| Benzene | 20 | 18.54 | 93 | 69-109 | 4 | 11 |
| Toluene | 20 | 18.98 | 95 | 72-116 | 3 | 11 |
| Ethylbenzene | 20 | 18.34 | 92 | 67-120 | 2 | 12 |
| m,p-Xylenes | 20 | 19.6 | 98 | 69-117 | 3 | 11 |
| o-Xylene | 20 | 19.05 | 95 | 75-122 | 2 | 12 |
| Surrogate | %Rec | Limits | | | | |
| Trifluorotoluene | 81 | 53-124 | | | | |
| Bromofluorobenzene | 80 | 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



TVH-Total Volatile Hydrocarbons

Client: Woodward-Clyde Consultants
 Project#: 941114NA
 Location: Emeryville Projects

Analysis Method: EPA 8015M
 Prep Method: EPA 5030

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Field ID: ZZZZZZ
 Lab ID: 133891-001
 Matrix: Water
 Batch#: 41258
 Units: ug/L
 Diln Fac: 1

Sample Date: 05/29/98
 Received Date: 06/02/98
 Prep Date: 06/05/98
 Analysis Date: 06/05/98

MS Lab ID: QC72055

| Analyte | Spike Added | Sample | MS | %Rec # | Limits |
|--------------------|-------------|--------|------|--------|--------|
| Gasoline C7-C12 | 2000 | <50 | 2065 | 103 | 71-131 |
| Surrogate | %Rec | Limits | | | |
| Trifluorotoluene | 149 | 59-162 | | | |
| Bromofluorobenzene | 113 | 59-162 | | | |

MSD Lab ID: QC72056

| Analyte | Spike Added | MSD | %Rec # | Limits | RPD # | Limit |
|--------------------|-------------|--------|--------|--------|-------|-------|
| Gasoline C7-C12 | 2000 | 2086 | 104 | 71-131 | 1 | 26 |
| Surrogate | %Rec | Limits | | | | |
| Trifluorotoluene | 154 | 59-162 | | | | |
| Bromofluorobenzene | 117 | 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

Lab #: 133895

BATCH QC REPORT

TVH-Total Volatile Hydrocarbons

| | |
|------------------------------------|----------------------------|
| Client: Woodward-Clyde Consultants | Analysis Method: EPA 8015M |
| Project#: 941114NA | Prep Method: EPA 5030 |
| Location: Emeryville Projects | |

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

| | |
|--------------------|-------------------------|
| Field ID: ZZZZZZ | Sample Date: 06/02/98 |
| Lab ID: 133898-011 | Received Date: 06/02/98 |
| Matrix: Water | Prep Date: 06/09/98 |
| Batch#: 41332 | Analysis Date: 06/09/98 |
| Units: ug/L | |
| Diln Fac: 1 | |

MS Lab ID: QC72329

| Analyte | Spike Added | Sample | MS | %Rec # | Limits |
|--------------------|-------------|--------|------|--------|--------|
| Gasoline C7-C12 | 2000 | <50 | 2049 | 102 | 71-131 |
| Surrogate | %Rec | Limits | | | |
| Trifluorotoluene | 153 | 59-162 | | | |
| Bromofluorobenzene | 117 | 59-162 | | | |

MSD Lab ID: QC72330

| Analyte | Spike Added | MSD | %Rec # | Limits | RPD # | Limit |
|--------------------|-------------|--------|--------|--------|-------|-------|
| Gasoline C7-C12 | 2000 | 2002 | 100 | 71-131 | 2 | 26 |
| Surrogate | %Rec | Limits | | | | |
| Trifluorotoluene | 152 | 59-162 | | | | |
| Bromofluorobenzene | 117 | 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



TEH-Tot Ext Hydrocarbons

Client: Woodward-Clyde Consultants
Project#: 941114NA
Location: Emeryville Projects

Analysis Method: EPA 8015M
Prep Method: EPA 3520

| Sample # | Client ID | Batch # | Sampled | Extracted | Analyzed | Moisture |
|------------|-----------|---------|----------|-----------|----------|----------|
| 133895-001 | EW-1 | 41274 | 06/02/98 | 06/03/98 | 06/05/98 | |
| 133895-002 | LF-4 | 41274 | 06/02/98 | 06/03/98 | 06/05/98 | |

Matrix: Water

| Analyte | Units | 133895-001 | 133895-002 |
|-------------------|-------|------------|------------|
| Diln Fac: | | 1 | 1 |
| Diesel C12-C22 | ug/L | 3400 YL | <47 |
| Motor Oil C22-C50 | ug/L | 550 YL | <280 |
| Surrogate | | | |
| Hexacosane | %REC | 74 | 67 |

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

Lab #: 133895

BATCH QC REPORT



Curtis & Tompkins, Ltd.
Page 1 of 1

TEH-Tot Ext Hydrocarbons

Client: Woodward-Clyde Consultants
Project#: 941114NA
Location: Emeryville Projects

Analysis Method: EPA 8015M
Prep Method: EPA 3520

METHOD BLANK

Matrix: Water
Batch#: 41274
Units: ug/L
Diln Fac: 1

Prep Date: 06/03/98
Analysis Date: 06/04/98

MB Lab ID: QC72110

| Analyte | Result |
|-------------------|--------|
| Diesel C12-C22 | <50 |
| Motor Oil C22-C50 | <300 |

| Surrogate | %Rec | Recovery Limits |
|------------|------|-----------------|
| Hexacosane | 69 | 53-136 |

Lab #: 133895

BATCH QC REPORT



Curtis & Tompkins Ltd.
Page 1 of 1

TEH-Tot Ext Hydrocarbons

Client: Woodward-Clyde Consultants
Project#: 941114NA
Location: Emeryville Projects

Analysis Method: EPA 8015M
Prep Method: EPA 3520

LABORATORY CONTROL SAMPLE

Matrix: Water
Batch#: 41274
Units: ug/L
Diln Fac: 1

Prep Date: 06/03/98
Analysis Date: 06/05/98

LCS Lab ID: QC72111

| Analyte | Result | Spike Added | %Rec # | Limits |
|----------------|--------|-------------|--------|--------|
| Diesel C12-C22 | 1952 | 2475 | 79 | 58-110 |
| Surrogate | %Rec | Limits | | |
| Hexacosane | 70 | 53-136 | | |

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 #: 133895

BATCH QC REPORT



TEH-Tot Ext Hydrocarbons

Client: Woodward-Clyde Consultants
Project#: 941114NA
Location: Emeryville Projects

Analysis Method: EPA 8015M
Prep Method: EPA 3520

MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Field ID: EW-1
Lab ID: 133895-001
Matrix: Water
Batch#: 41274
Units: ug/L
Diln Fac: 1

Sample Date: 06/02/98
Received Date: 06/02/98
Prep Date: 06/03/98
Analysis Date: 06/05/98

MS Lab ID: QC72114

| Analyte | Spike Added | Sample | MS | %Rec # | Limits |
|----------------|-------------|--------|------|--------|--------|
| Diesel C12-C22 | 2475 | 3374 | 4722 | 54 * | 58-110 |
| Surrogate | %Rec | Limits | | | |
| Hexacosane | 86 | 53-136 | | | |

MSD Lab ID: QC72115

| Analyte | Spike Added | MSD | %Rec # | Limits | RPD # | Limit |
|----------------|-------------|--------|--------|--------|-------|-------|
| Diesel C12-C22 | 2475 | 4597 | 49 * | 58-110 | 3 | 21 |
| Surrogate | %Rec | Limits | | | | |
| Hexacosane | 85 | 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: 2 out of 2 outside limits



Polynuclear Aromatic Hydrocarbons by GC/MS

Client: Woodward-Clyde Consultants
Project#: 941114NA
Location: Emeryville Projects

Analysis Method: EPA 8270B
Prep Method: EPA 3520

Field ID: EW-1
Lab ID: 133895-001
Matrix: Water
Batch#: 41300
Units: ug/L
Diln Fac: 1

Sampled: 06/02/98
Received: 06/02/98
Extracted: 06/04/98
Analyzed: 06/09/98

| Analyte | Result | Reporting Limit |
|----------------------------|--------|-----------------|
| Naphthalene | 120 | 9.4 |
| Acenaphthylene | ND | 9.4 |
| Acenaphthene | ND | 9.4 |
| Fluorene | ND | 9.4 |
| Phenanthrene | ND | 9.4 |
| Anthracene | ND | 9.4 |
| Fluoranthene | ND | 9.4 |
| Pyrene | ND | 9.4 |
| Benzo (a) anthracene | ND | 9.4 |
| Chrysene | ND | 9.4 |
| Benzo (b, k) fluoranthene | ND | 9.4 |
| Benzo (a) pyrene | ND | 9.4 |
| Indeno (1, 2, 3-cd) pyrene | ND | 9.4 |
| Dibenz (a, h) anthracene | ND | 9.4 |
| Benzo (g, h, i) perylene | ND | 9.4 |

| Surrogate | %Recovery | Recovery Limits |
|------------------|-----------|-----------------|
| Nitrobenzene-d5 | 73 | 35-114 |
| 2-Fluorobiphenyl | 80 | 43-116 |
| Terphenyl-d14 | 58 | 33-141 |



Lab #: 133895

BATCH QC REPORT

Polynuclear Aromatic Hydrocarbons by GC/MS

Client: Woodward-Clyde Consultants
Project#: 941114NA
Location: Emeryville Projects

Analysis Method: EPA 8270B
Prep Method: EPA 3520

METHOD BLANK

Matrix: Water
Batch#: 41300
Units: ug/L
Diln Fac: 1

Prep Date: 06/04/98
Analysis Date: 06/09/98

MB Lab ID: QC72210

| Analyte | Result | Reporting Limit |
|----------------------------|--------|-----------------|
| Naphthalene | ND | 10 |
| Acenaphthylene | ND | 10 |
| Acenaphthene | ND | 10 |
| Fluorene | ND | 10 |
| Phenanthrene | ND | 10 |
| Anthracene | ND | 10 |
| Fluoranthene | ND | 10 |
| Pyrene | ND | 10 |
| Benzo (a) anthracene | ND | 10 |
| Chrysene | ND | 10 |
| Benzo (b, k) fluoranthene | ND | 10 |
| Benzo (a) pyrene | ND | 10 |
| Indeno (1, 2, 3-cd) pyrene | ND | 10 |
| Dibenz (a, h) anthracene | ND | 10 |
| Benzo (g, h, i) perylene | ND | 10 |

| Surrogate | %Rec | Recovery Limits |
|------------------|------|-----------------|
| Nitrobenzene-d5 | 85 | 35-114 |
| 2-Fluorobiphenyl | 85 | 43-116 |
| Terphenyl-d14 | 78 | 33-141 |

Lab #: 133895

BATCH QC REPORT



Curtis & Associates, Inc. 1

Polynuclear Aromatic Hydrocarbons by GC/MS

| | |
|------------------------------------|----------------------------|
| Client: Woodward-Clyde Consultants | Analysis Method: EPA 8270B |
| Project#: 941114NA | Prep Method: EPA 3520 |
| Location: Emeryville Projects | |

BLANK SPIKE/BLANK SPIKE DUPLICATE

| | |
|---------------|-------------------------|
| Matrix: Water | Prep Date: 06/04/98 |
| Batch#: 41300 | Analysis Date: 06/09/98 |
| Units: ug/L | |
| Diln Fac: 1 | |

BS Lab ID: QC72211

| Analyte | Spike Added | BS | %Rec # | Limits |
|------------------|-------------|--------|--------|--------|
| Acenaphthene | 50 | 40.17 | 80 | 50-110 |
| Pyrene | 50 | 35.86 | 72 | 43-110 |
| Surrogate | %Rec | Limits | | |
| Nitrobenzene-d5 | 86 | 35-114 | | |
| 2-Fluorobiphenyl | 84 | 43-116 | | |
| Terphenyl-d14 | 77 | 33-141 | | |

BSD Lab ID: QC72212

| Analyte | Spike Added | BSD | %Rec # | Limits | RPD # | Limit |
|------------------|-------------|--------|--------|--------|-------|-------|
| Acenaphthene | 50 | 38.97 | 78 | 50-110 | 3 | 18 |
| Pyrene | 50 | 35.32 | 71 | 43-110 | 2 | 19 |
| Surrogate | %Rec | Limits | | | | |
| Nitrobenzene-d5 | 85 | 35-114 | | | | |
| 2-Fluorobiphenyl | 81 | 43-116 | | | | |
| Terphenyl-d14 | 76 | 33-141 | | | | |

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

* Values outside of QC limits

RPD: 0 out of 2 outside limits

Spike Recovery: 0 out of 4 outside limits

133045

Woodward-Clyde Consultants

500 12th Street, Suite 200, Oakland, CA 94607-4014
(510) 893-3600

Chain of Custody Record

PROJECT NO. *Emeryville Projects*
941114 NA & 961276 NA

SAMPLERS: (Signature)
[Signature]

ANALYSES

| DATE | TIME | SAMPLE NUMBER | Sample Matrix (Soil, Water, Air) | ANALYSES | | | | | | | Number of Containers | REMARKS (Sample preservation, handling procedures, etc.) | |
|--------------------------------|---------------|---------------|-------------------------------------|------------|------------|------------|------------|-------------------------|------------------------|--------------------|----------------------------|---|---|
| | | | | EPA Method | EPA Method | EPA Method | EPA Method | TPH as Gas, BTEX & MTBE | TPH diesel & motor oil | EPA 8270 PAHs only | | | |
| <i>40th St Site</i> | | | | | | | | | | | | | |
| -1 | <i>6/2/98</i> | <i>1320</i> | <i>EW-1</i> | <i>W</i> | | | | | <i>X</i> | <i>X</i> | <i>X</i> | <i>7</i> | <i>Question/Results to: Xinggang Tang (510)874-3060</i> |
| -2 | <i>6/2/98</i> | <i>1358</i> | <i>LF-4</i> | <i>W</i> | | | | | <i>X</i> | <i>X</i> | | <i>5</i> | |
| <i>Fire station No. 2 Site</i> | | | | | | | | | | | | | |
| -3 | <i>6/2/98</i> | <i>1205</i> | <i>MW-1</i> | | | | | | <i>X</i> | | | <i>3</i> | <i>Samples to Curtis & Tompkins Contact Tracy Bobjar @ (510) 486-0900</i> |
| -4 | <i>6/2/98</i> | <i>11:00</i> | <i>Trip Blank</i> | | | | | | <i>X</i> | | | <i>2</i> | |
| | | | | | | | | | | | TOTAL NUMBER OF CONTAINERS | <i>17</i> | |

10 Day TAT

RELINQUISHED BY: (Signature)
[Signature]

DATE/TIME
6/2/98 1:35

RECEIVED BY: (Signature)
[Signature]

6-2-98 2:35pm

RELINQUISHED BY: (Signature)

DATE/TIME

RECEIVED BY: (Signature)

METHOD OF SHIPMENT:

HAND DELIVER

SHIPPED BY: (Signature)

COURIER: (Signature)

RECEIVED FOR LAB BY: (Signature)

DATE/TIME