**Weiss Associates** Environmental and Geologic Services

5500 Shellmound Street, Emeryville, CA 94608-2411 Fax: 510-547-5043 Phone: **510-547-5420**

March 23, 1992

Ms. Juliet Shin
Alameda County Department
of Environmental Health
Hazardous Materials Division
80 Swan Way, Room 200
Oakland, CA 94621-1426

Re: Shell Service Station
WIC #204-0072-0502
2160 Otis Drive
Alameda, California
WA Job #81-429-01

Dear Ms. Shin:

This letter describes the first quarter 1992 activities at the Shell service station referenced above (Figure 1.) This status report satisfies the quarterly reporting requirements prescribed by California Administrative Code Title 23 Waters, Chapter 3, Subchapter 16, Article 5, Section 265.d. Included below are descriptions and results of activities performed in the first quarter 1992, and proposed work for the second quarter 1992.

First Quarter 1992 Activities

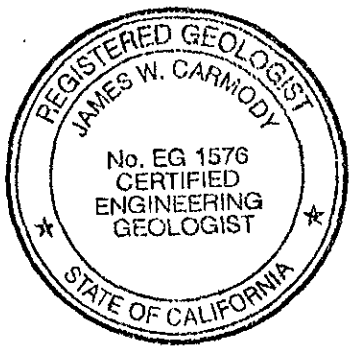
- Emcon Associates of San Jose, California measured ground water depths and collected water samples from the three site wells. Emcon's report describing these activities and the analytic results for ground water is included as Attachment A.

- Weiss Associates (WA) prepared a ground water elevation contour map (Figure 2) based on Emcon's ground water depth measurements. Ground water elevation contour maps for the past year are included as Figure 3.

Anticipated Second Quarter 1992 Activities

WA will submit a report presenting the results of ground water sampling and ground water level measurements for the second quarter 1992 sampling event. The report will include tabulated chemical analytic results and a ground water elevation contour map.

Please call if you have any questions.




Sincerely,
Weiss Associates

Jeni Martin
Staff Geologist

James W. Carmody, C.E.G.
Senior Hydrogeologist

JM/JWC:fcr

E:\ALL\SHELL\425\429QMMA2.WP

Attachments: Figures
A - Emcon Associates Ground Water Monitoring Report

cc: Kurt Miller, Shell Oil Company, P.O. Box 5278, Concord, California 94520-9998
Lester Feldman, Regional Water Quality Control Board - San Francisco Bay, 2101 Webster Street, Suite 500, Oakland, California 94612

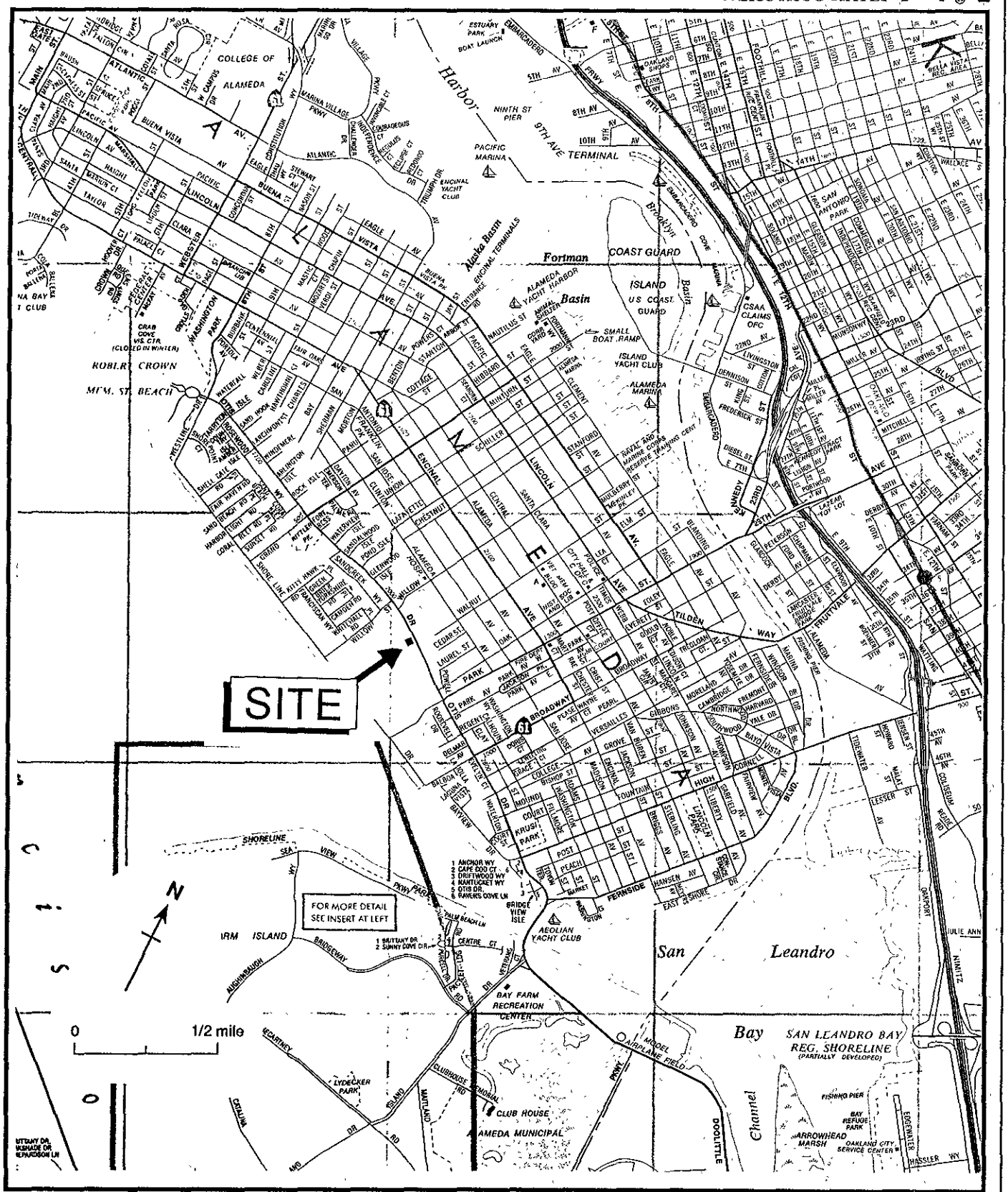



Figure 1. Site Location Map - Shell Service Station, WIC# 204-0072-0502, 2160 Otis Drive, Alameda, CA

8/21/90

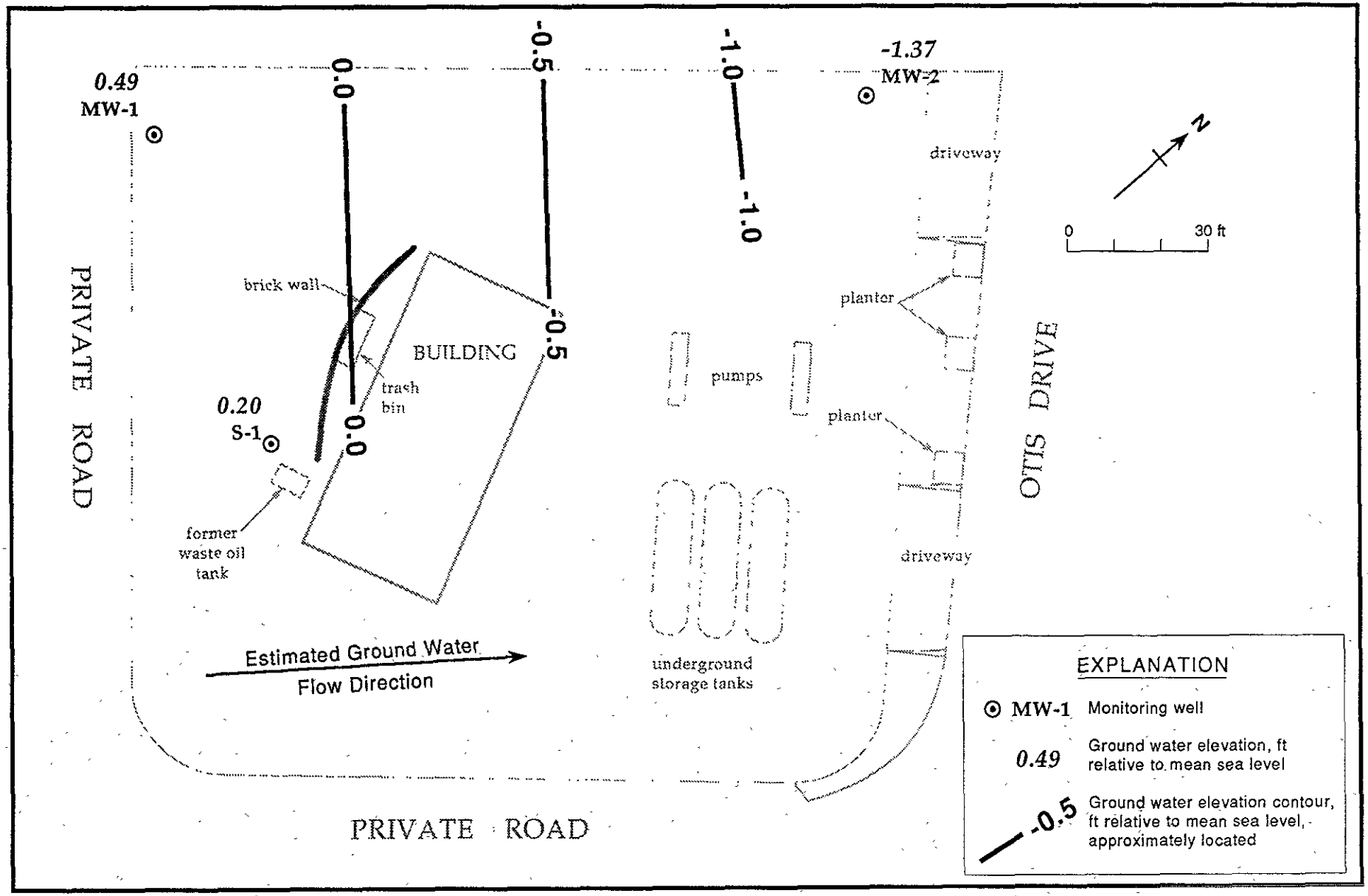



Figure 2. Ground Water Elevation Contours - January 24, 1992 - Shell Service Station WIC #204-0072-0502, 2160 Otis Drive, Alameda, California

3/18/92

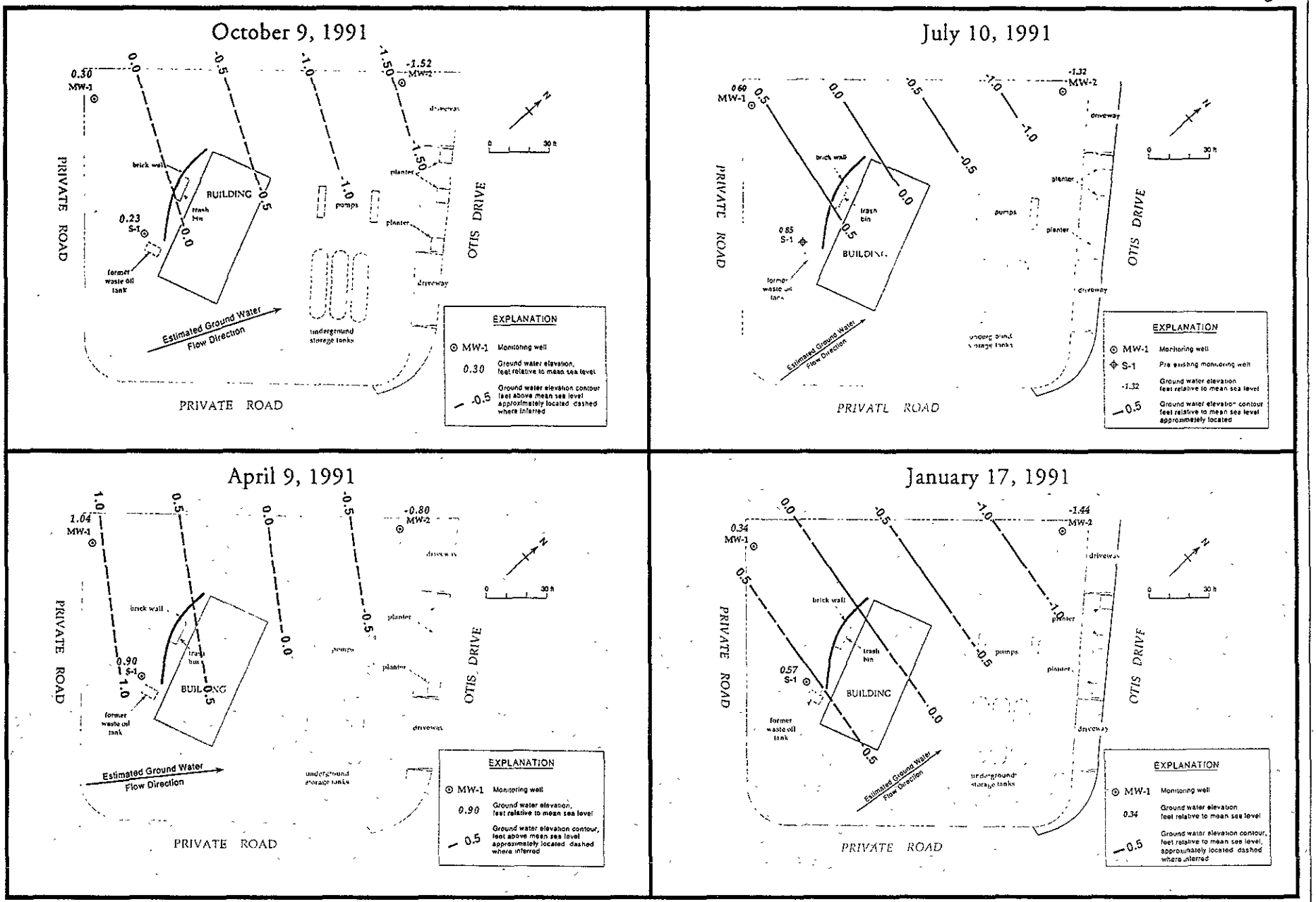



Figure 3. Previous Ground Water Elevation Contour Maps - Shell Service Station WIC #204-0072-0502, 2160 Otis Drive, Alameda, California

3/10/92

Table 1. Ground Water Elevations - Shell Service Station WIC #204-0072-0502, 2160 Otis Drive, Alameda, California

| Well ID | Date | Top-of-Casing Elevation (ft above msl) | Water Depth (ft) | Ground Water Elevation (ft relative to msl) |
|---|---|---|---|---|
| MW-1 | 04-11-90 | 6.00 | 5.23 | 0.77 |
| | 07-10-90 | | 5.40 | 0.60 |
| | 10-09-90 | | 5.61 | 0.39 |
| | 01-17-91 | | 5.66 | 0.34 |
| | 04-09-91 | | 4.96 | 1.04 |
| | 07-10-91 | | 5.52 | 0.48 |
| | 10-09-91 | | 5.70 | 0.30 |
| | **01-24-92** | | **5.51** | **0.49** |
| MW-2 | 04-11-90 | 3.29 | 4.51 | -1.22 |
| | 07-10-90 | | 4.61 | -1.32 |
| | 10-09-90 | | 4.74 | -1.45 |
| | 01-17-91 | | 4.73 | -1.44 |
| | 04-09-91 | | 4.09 | -0.80 |
| | 07-10-91 | | 4.66 | -1.37 |
| | 10-09-91 | | 4.81 | -1.52 |
| | **01-24-92** | | **4.66** | **-1.37** |
| S-1 | 09-11-90 | 5.10 | 4.29 | 0.81 |
| | 04-11-90 | | 4.00 | 1.10 |
| | 07-10-90 | | 4.25 | 0.85 |
| | 10-09-90 | | 4.46 | 0.64 |
| | 01-17-91 | | 4.53 | 0.57 |
| | 04-09-91 | | 4.20 | 0.90 |
| | 07-10-91 | | 4.42 | 0.68 |
| | 10-09-91 | | 4.87 | 0.23 |
| | **01/24/92** | | **4.90** | **0.20** |

Table 2. Analytic Results for Ground Water - Shell Service Station WIC# 204-0072-0502, 2160 Otis Drive, Alameda, California

| Well ID | Date Sampled | Depth to Water (ft) | Analytical Lab | TPH-G | TPH-D | B | E | T | X | TOG | VOCs |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | <----------parts per million (mg/L)----------> | | | | | | | |
| S-1 | 09/04/87[a] | | IT | --- | --- | <0.005 | <0.005 | <0.005 | <0.005 | --- | b |
| | 09/11/89[c] | 4.29 | IT | <0.05 | <0.1 | <0.0005 | <0.001 | <0.001 | <0.003 | <1.0 | <0.005-0.050 |
| | 04/11/90 | 4.00 | NET | <0.050 | <0.050 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <10 | d |
| | 07/10/90 | 4.25 | NET | 0.090 | --- | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <10 | <0.0004-0.010 |
| | 10/09/90 | 4.46 | IT | <0.05 | --- | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <5 | <0.0005 |
| | 01/17/91 | 4.53 | IT | <0.05 | --- | <0.0005 | <0.0005 | <0.0005 | <0.0005 | --- | --- |
| | 04/09/91 | 4.20 | IT | <0.05 | --- | <0.0005 | <0.0005 | <0.0005 | <0.0005 | --- | --- |
| | 07/10/91 | 4.42 | IT | <0.05 | --- | <0.0005 | <0.0005 | <0.0005 | <0.0005 | --- | --- |
| | 10/09/91 | 4.87 | IT | <0.05 | --- | <0.0005 | <0.0005 | <0.0005 | <0.0005 | --- | --- |
| | **01/24/92** | **4.90** | **IT** | **<0.05** | --- | **<0.0005** | **<0.0005** | **<0.0005** | **<0.0005** | --- | --- |
| MW-1 | 04/11/90 | 5.23 | NET | <0.050 | <0.050 | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <10 | <0.0004-0.010 |
| | 07/10/90 | 5.40 | NET | 0.10 | --- | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <10 | <0.0004-0.010 |
| | 10/09/90 | 5.61 | IT | <0.05 | --- | <0.0005 | <0.0005 | <0.0005 | <0.0005 | <5 | <0.0005 |
| | 01/17/91 | 5.66 | IT | <0.05 | --- | <0.0005 | <0.0005 | <0.0005 | <0.0005 | --- | --- |
| | 04/09/91 | 4.96 | IT | <0.05 | --- | <0.0005 | <0.0005 | <0.0005 | <0.0005 | --- | --- |
| | 07/10/91 | 5.52 | IT | <0.05 | --- | <0.0005 | <0.0005 | <0.0005 | <0.0005 | --- | --- |
| | 10/09/91 | 5.70 | IT | <0.05 | --- | <0.0005 | <0.0005 | <0.0005 | <0.0005 | --- | --- |
| | **01/24/92** | **5.51** | **IT** | **<0.05** | --- | **<0.0005** | **<0.0005** | **<0.0005** | **<0.0005** | --- | --- |
| MW-2 | 04/11/90 | 4.51 | NET | 0.20[e] 200ppb | 0.22 220ppb | 0.0027 | <0.0005 | 0.0005 | 0.0024 | <10 | f |
| | 07/10/90 | 4.61 | NET | 0.57[e] 570ppb | 0.45 | 0.15 150ppb | <0.0005 | 0.0009 | 0.0031 | <10 | g |
| | 10/09/90 | 4.74 | IT | 190[e] 190,000ppb | 0.051 | 55 55000ppb | <0.0005 | <0.0005 | <0.0005 | <5 | h |
| | 01/17/91 | 4.73 | IT | 0.35[e] 350ppb | <0.05 | 0.051 51ppb | <0.0005 | <0.0005 | <0.0005 | --- | i |
| | 04/09/91 | 4.09 | IT | --- | <0.05 | 0.021 21ppb | <0.005 | <0.005 | <0.005 | --- | j |
| | 07/10/91 | 4.66 | IT | 0.05[e] 50ppb | <0.05 | 0.0084 | <0.0005 | <0.0005 | <0.0005 | --- | k |
| | 10/09/91 | 4.81 | IT | 0.15 150ppb | --- | 0.022 22ppb | <0.0005 | <0.0005 | <0.0005 | --- | l |
| | **01/24/92** | **4.66** | **IT** | **<0.05** | --- | **<0.0048** 4.8ppb | **<0.0005** | **<0.0005** | **<0.0005** | --- | m |
| Trip Blank | 07/10/90 | | NET | <0.050 | --- | <0.0005 | <0.0005 | <0.0005 | <0.0005 | --- | --- |
| | 10/09/90 | | IT | <0.05 | --- | <0.0005 | <0.0005 | <0.0005 | <0.0005 | --- | --- |
| | 01/17/91 | | IT | <0.05 | --- | <0.0005 | <0.0005 | <0.0005 | <0.0005 | --- | --- |
| | 04/09/91 | | IT | <0.05 | --- | <0.0005 | <0.0005 | <0.0005 | <0.0005 | --- | --- |
| | 07/10/91 | | IT | <0.05 | --- | <0.0005 | <0.0005 | <0.0005 | <0.0005 | --- | --- |
| | 10/09/91 | | IT | <0.05 | --- | <0.0005 | <0.0005 | <0.0005 | <0.0005 | --- | --- |
| | **01/24/92** | | **IT** | **<0.05** | --- | **<0.0005** | **<0.0005** | **<0.0005** | **<0.0005** | --- | --- |
| DHS MCLs | | | | NE | NE | 0.001 | 0.680 | 0.10[n] | 1.750 | NE | o |

-- Table 2 continued on next page --

Table 2. Analytic Results for Ground Water - Shell Service Station WIC# 204-0072-0502, 2160 Otis Drive, Alameda, California

Abbreviations:

TPH-G = Total petroleum hydrocarbons as gasoline by Modified EPA Method 8015
TPH-D = Total petroleum hydrocarbons as diesel by Modified EPA Method 8015
B = Benzene by EPA Method 602, 624, 8020, or 8240
E = Ethylbenzene by EPA Method 602, 624, 8020, or 8240
T = Toluene by EPA Method 602, 624, 8020, or 8240
X = Xylenes by EPA Method 602, 624, 8020, or 8240
TOG = Total non-polar oil and grease by American Public Health Association Standard Methods 503A&E
VOCs = Volatile and halogenated volatile organic compounds by EPA Method 601, 624 or 8240
--- = Not analyzed
NE = Not established
DHS MCLs = California Department of Health Services maximum contaminant levels
<n = Not detected above detection limit of n ppm

Analytical Laboratories:

IT = International Technology Analytical Services, San Jose, California
NET = National Environment Testing Pacific Inc., Santa Rosa, California

Notes:

a = Sampled by Pacific Environmental Group, Santa Clara, California
b = 0.007 ppm unknown alcohol and 0.27 ppm acetone detected
c = 0.090 ppm chromium, 0.090 ppm lead and 0.10 ppm Zn detected; no cadium detected above detection limit of 0.010 ppm by EPA Method 6010. No semi-volatile organic compounds or PCBs detected by EPA Method 625. DHS MCLs for Cr = 0.05 ppm; Pb = 0.05 ppm; secondary MCL for Zn = 5 ppm.
d = 0.0017 ppm chloroform detected
e = Chromatographic pattern not typical for gasoline; according to the laboratory, the concentration is due mostly to lighter hydrocarbon compounds.
f = 0.0045 ppm chloroform, 0.016 ppm trans-1,2-dichloroethene (t-1,2-DCE), and 0.0012 ppm trichloroethene (TCE) detected
g = 0.0017 ppm chloroform, 0.00044 ppm 1,2-dichloroethane (1,2-DCA), 0.011 ppm t-1,2-DCE and 0.00093 ppm TCE detected
h = 0.015 ppm chloroform, 0.046 ppm cis-1,2-dichloroethene (c-1,2-DCE), 0.0067 ppm t-1,2-DCE, 0.0016 ppm tetrachloroethene (PCE), 0.0013 ppm TCE and 0.0025 ppm vinyl chloride detected
i = 0.0005 ppm chlorobenzene, 0.0026 ppm chloroform, 0.0005 ppm 1,2-DCA, 0.074 ppm c-1,2-DCE, 0.012 ppm t-1,2-DCE, 0.0006 ppm PCE, 0.0012 ppm TCE and 0.0030 ppm vinyl chloride detected
j = 0.064 ppm total 1,2-DCE detected
k = 0.014 ppm carbon disulfate, 0.043 ppm chloroform, 0.0069 ppm PCE and 0.0092 ppm benzene detected by EPA Method 8240
l = 0.0074 ppm chloroform 0.054 ppm c-1,2-DCE, 0.016 ppm t-1,2-DCE, 0.0128 ppm PCE, 0.0019 ppm TCE and 0.0017 ppm vinyl chloride detected
m = 0.0190 ppm Chloroform, 0.0006 ppm 1,2-dichloroethene (DCE), 0.0025 ppm trichloroethene, 0.0070 ppm tetrachloroethene, 0.0160 ppm cis-1,2-dichloroethene, and 0.0043 ppm trans-1,2-dichloroethene detected.
n = DHS recommended action level for drinking water; MCL not established
o = DHS MCL for chlorobenzene = 0.030 ppm; 1,2-DCA = 0.0005 ppm; chloroform = 0.100 ppm; TCE = 0.005 ppm; PCE = 0.005 ppm; vinyl chloride = 0.0005 ppm; t-1,2-DCE = 0.010 ppm; c-1,2-DCE = 0.006 ppm

.0002 ppm vinyl chloride EPA
.0005 ppm " " DHS
cis 1,2-dce proposed EPA std → .07 ppm
DHS std .006 ppm
tetrachloroethene → propose .005 ppm EPA
.005 ppm DHS

# ATTACHMENT A

## GROUND WATER MONITORING REPORT AND ANALYTIC REPORT

EMCON ASSOCIATES
Consultants in Wastes Management and Environmental Control

February 11, 1992
Project: G67-30.01
WIC#: 204-0072-0502

Mr. David Elias
Weiss Associates
5500 Shellmound Street
Emeryville, California 94608-2411

Re: First quarter 1992 ground-water monitoring report, Shell Oil Company, 2160 Otis Drive, Alameda, California

Dear Mr. Elias:

This letter presents the results of the first quarter 1992 ground-water monitoring event for the Shell Oil Company (Shell) service station located at 2160 Otis Drive, Alameda, California. First quarter monitoring was conducted on January 24, 1992. The site is monitored quarterly.

## GROUND-WATER LEVEL SURVEY

A water-level survey preceded the purging and sampling of the monitoring wells. The wells included in the survey are identified in figure 1 (supplied by Weiss Associates). During the survey, wells MW-1, MW-2, and S-1 were measured for depth to water, floating product thickness, and total depth. Depth to water and floating product thickness were measured to the nearest 0.01 foot with an oil/water interface probe. No floating product was observed in any wells. Total depth was measured to the nearest 0.1 foot. Results of the water-level survey are summarized in table 1.

## SAMPLING AND ANALYSIS

Ground-water samples were collected from wells MW-1, MW-2, and S-1 on January 24, 1992. Prior to sample collection, the wells were purged with dedicated polyvinyl chloride (PVC) bailers. During the purging operation, ground water was monitored for pH, electrical conductivity, and temperature as a function of volume of water removed. Purging continued until these parameters were stable and a minimum of three casing volumes of ground water were removed. Wells MW-2 and S-1 were evacuated to dryness before three casing volumes were removed. The wells were allowed to recharge for up to 24 hours. Samples were collected after the wells had recharged to a level sufficient for sample collection. Field measurements from first quarter monitoring are summarized in table 1. Purge water from the monitoring wells was contained in a 55-



Field Services: 1938 Junction Avenue, San Jose, California 95131-2102, (408) 453-0719, Fax (408) 453-0452

gallon drum. The drum was identified with a Shell-approved label and secured for on-site storage.

Ground water samples were collected with a Teflon® bailer, labeled, placed on ice, and transported to a Shell-approved and state-certified analytical laboratory for analysis. Shell chain-of-custody documents accompanied all samples to the laboratory.

All equipment that was placed down a well or that came in contact with ground water was steam cleaned on site with steaming hot deionized water prior to use at each well.

Quality control samples included one trip blank (TB). Ground water samples from well MW-2 were analyzed for total petroleum hydrocarbons (TPH) as gasoline, benzene, toluene, ethylbenzene, and total xylenes (BTEX), and volatile organic compounds (VOCs) by U.S. Environmental Protection Agency (EPA) method 8010/601. Water samples from wells MW-1 and S-1 and the trip blank were analyzed for TPH as gasoline and BTEX only.

## ANALYTICAL RESULTS

Analytical results for the first quarter 1992 monitoring event are summarized in table 2. Results of VOC analysis for well MW-2 are summarized in table 3. The original certified analytical report and a copy of the final chain-of-custody document are attached.

If you have any questions, please call.

Very truly yours,

EMCON Associates

David Larsen
Environmental Sampling Coordinator

Orrin Childs
Environmental Sampling Supervisor

DL/OC:dl

Attachments: Table 1 - Monitoring well field measurement data, first quarter 1992
Table 2 - Summary of analytical results, first quarter 1992
Table 3 - Volatile organic compounds for well MW-2, first quarter 1992
Figure 1 - Site map
Certified analytical report
Chain-of-custody document

# Table 1

## Monitoring Well Field Measurement Data
## First Quarter 1992

Shell Station: 2160 Otis Drive
Alameda, California

WIC#: 204-0072-0502

| Well Identification | Water Level Survey Date | Depth To Water (feet) | Well Total Depth (feet) | Floating Product Thickness (feet) | Well Sampling Date | pH (stnd. units)[1] | Electrical Conductivity (µmhos/cm)[2] | Temperature (°F)[3] | Turbidity (NTU)[4] |
|---|---|---|---|---|---|---|---|---|---|
| MW-1 | 01/24/92 | 5.51 | 16.3 | ND.[5] | 01/24/92 | 7.27 | 13,000 | 62.8 | >200 |
| MW-2 | 01/24/92 | 4.66 | 17.0 | ND. | 01/24/92 | 6.39 | >20,000 | 60.4 | >200 |
| S-1 | 01/24/92 | 4.90 | 18.7 | ND. | 01/24/92 | 8.99 | 374 | 62.7 | >200 |

1. Standard pH units
2. µmhos/cm = micromhos per centimeter
3. °F = degrees Fahrenheit
4. NTU = nephelometric turbidity units
5. ND. = not detected

Table 2

Summary of Analytical Results
First Quarter 1992
milligrams per liter (mg/l) or parts per million (ppm)

Shell Station: 2160 Otis Drive
Alameda, California

WIC#: 204-0072-0502

| Sample Designation | Sampling Date | TPH[1] as Gasoline (ppm) | Benzene (ppm) | Toluene (ppm) | Ethyl-benzene (ppm) | Total Xylenes (ppm) |
|---|---|---|---|---|---|---|
| MW-1 | 01/24/92 | <0.05 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| MW-2 | 01/24/92 | <0.05 | 0.0048 | <0.0005 | <0.0005 | <0.0005 |
| S-1 | 01/24/92 | <0.05 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |
| TB | 01/24/92 | <0.05 | <0.0005 | <0.0005 | <0.0005 | <0.0005 |

1. TPH = total petroleum hydrocarbons

# Table 3

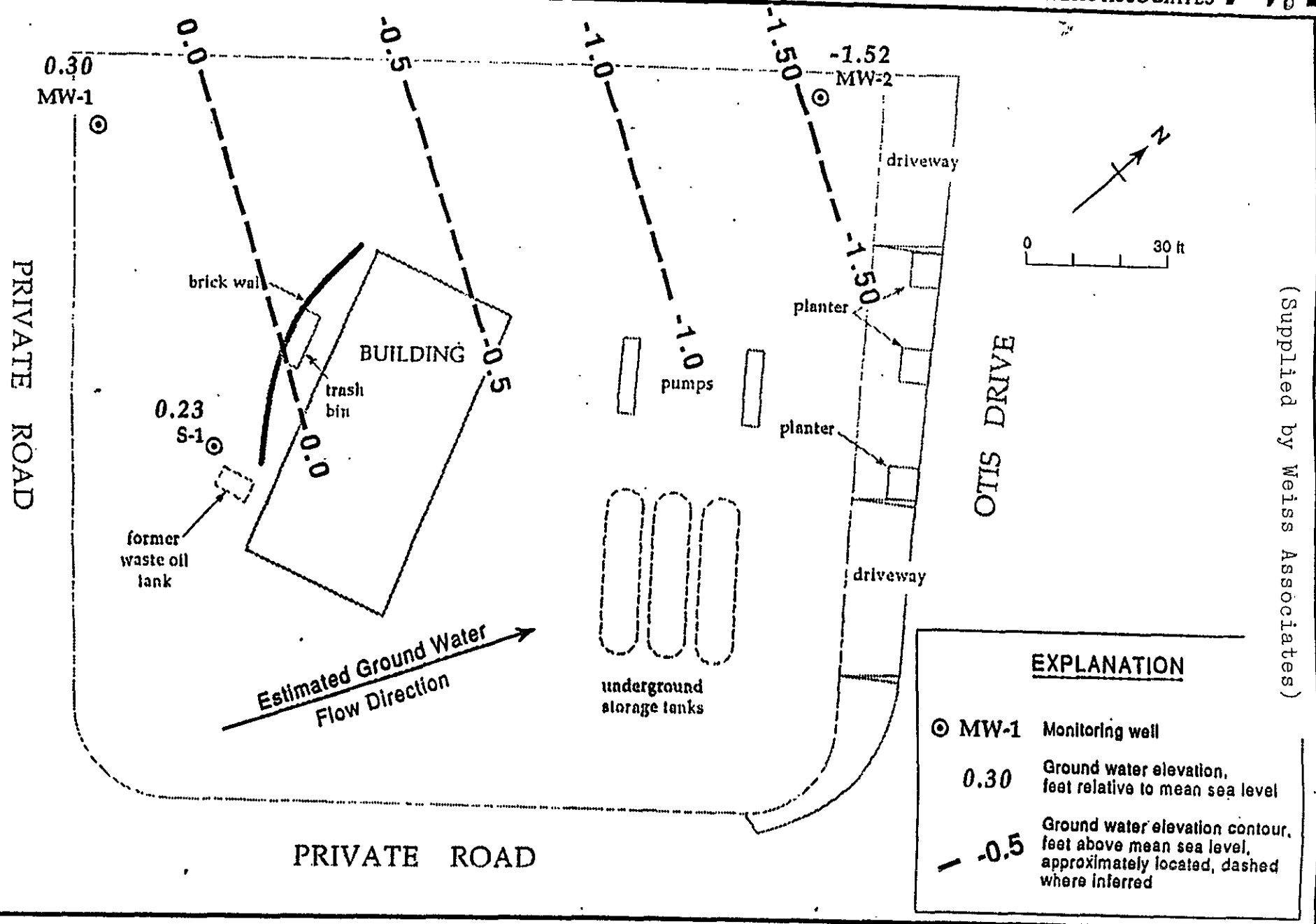
## Volatile Organic Compounds for Well MW-2
## U.S. Environmental Protection Agency method 8010/601
## First Quarter 1992
milligrams per liter (mg/l) or parts per million (ppm)

Shell Station: 2160 Otis Drive
Alameda, California

WIC#: 204-0072-0502

| Sampling Date | Chloroform (ppm) | 1,2-DCA[1] (ppm) | TCE[2] (ppm) | PCE[3] (ppm) | cis-DCE[4] (ppm) | trans-DCE[5] (ppm) |
|---|---|---|---|---|---|---|
| 01/24/92 | 0.0190 | 0.0006 | 0.0025 | 0.0070 | 0.0160 | 0.0043 |

1. 1,2-DCA = 1,2-Dichloroethane
2. TCE = Trichloroethene
3. PCE = Tetrachloroethene
4. cis-DCE = cis-1,2-Dichloroethene
5. trans-DCE = trans-1,2-Dichloroethene




(Supplied by Weiss Associates)

Figure 1

**Monitoring Well Locations and Ground Water Elevation Contours - October 9, 1991 - Shell Service Station WIC #204-0072-0502, 2160 Otis Drive, Alameda, California**

INTERNATIONAL TECHNOLOGY CORPORATION

# ANALYTICAL SERVICES

## CERTIFICATE OF ANALYSIS

Shell Oil Company
Emcon Associates
1938 Junction Ave.
San Jose, CA 95131
David Larson

Date: 02/10/92

Work Order: T2-01-160

P.O. Number: MOH 880-021 Vendor #I0002402

This is the Certificate of Analysis for the following samples:

Client Work ID: G6730, 2160 Otis Dr., Alameda
Date Received: 01/27/92
Number of Samples: 6
Sample Type: aqueous

**TABLE OF CONTENTS FOR ANALYTICAL RESULTS**



Reviewed and Approved:

David A. Pichette
Project Manager

IT ANALYTICAL SERVICES
SAN JOSE, CA
(408) 943-1540

Company: Shell Oil Company
Date: 02/10/92
Client Work ID: G6730, 2160 Otis Dr., Alameda

Work Order: T2-01-160

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: **MW-1**
SAMPLE DATE: **01/24/92**
LAB SAMPLE ID: T201160-01
SAMPLE MATRIX: aqueous
RECEIPT CONDITION: Cool pH < 2

**RESULTS in Milligrams per Liter:**

| | METHOD | EXTRACTION DATE | ANALYSIS DATE |
|---|---|---|---|
| BTEX | 8020 | | 01/29/92 |
| Low Boiling Hydrocarbons | Mod.8015 | | 01/29/92 |

| PARAMETER | DETECTION LIMIT | DETECTED |
|---|---|---|
| Low Boiling Hydrocarbons calculated as Gasoline | 0.05 | None |
| BTEX | | |
| Benzene | 0.0005 | None |
| Toluene | 0.0005 | None |
| Ethylbenzene | 0.0005 | None |
| Xylenes (total) | 0.0005 | None |

| SURROGATES | % REC |
|---|---|
| 1,3-Dichlorobenzene (Gasoline) | 93. |
| 1,3-Dichlorobenzene (BTEX) | 97. |

IT ANALYTICAL SERVICES
SAN JOSE, CA
(408) 943-1540

Company: Shell Oil Company
Date: 02/11/92
Client Work ID: G6730, 2160 Otis Dr., Alameda

Work Order: T2-01-160

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: **S-1**
SAMPLE DATE: **01/24/92**
LAB SAMPLE ID: **T201160-02**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool pH < 2**

**RESULTS in Milligrams per Liter:**

| | METHOD | EXTRACTION DATE | ANALYSIS DATE |
|---|---|---|---|
| BTEX | 8020 | | 01/30/92 |
| Low Boiling Hydrocarbons | Mod.8015 | | 01/30/92 |

| PARAMETER | DETECTION LIMIT | DETECTED |
|---|---|---|
| Low Boiling Hydrocarbons calculated as Gasoline | 0.05 | None. |
| BTEX | | |
| Benzene | 0.0005 | None. |
| Toluene | 0.0005 | None. |
| Ethylbenzene | 0.0005 | None. |
| Xylenes (total) | 0.0005 | None. |

| SURROGATES | % REC |
|---|---|
| 1,3-Dichlorobenzene (Gasoline) | 92. |

IT ANALYTICAL SERVICES
SAN JOSE, CA
(408) 943-1540

Company: Shell Oil Company
Date: 02/10/92
Client Work ID: G6730, 2160 Otis Dr., Alameda

Work Order: T2-01-160

TEST NAME: **Halocarbons by 8010/601**

SAMPLE ID: **MW-2**
SAMPLE DATE: **01/24/92**
LAB SAMPLE ID: **T201160-03**
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool pH < 2**
EXTRACTION DATE: **N/A**
ANALYSIS DATE: **01/31/91**

**RESULTS in Milligrams per liter**

| PARAMETER | DETECTION LIMIT | DETECTED |
|---|---|---|
| Chloromethane | 0.0005 | None |
| Bromomethane | 0.0005 | None |
| Vinyl chloride | 0.0005 | None |
| Chloroethane | 0.0005 | None |
| Methylene Chloride | 0.0005 | None |
| 1,1-Dichloroethene | 0.0005 | None |
| 1,1-Dichloroethane | 0.0005 | None |
| Chloroform | 0.0005 | .0190 |
| 1,2-Dichloroethane | 0.0005 | .0006 |
| 1,1,1-Trichloroethane | 0.0005 | None |
| Carbon tetrachloride | 0.0005 | None |
| Bromodichloromethane | 0.0005 | None |
| 1,1,2,2-Tetrachloroethane | 0.0005 | None |
| 1,2-Dichloropropane | 0.0005 | None |
| cis-1,3-dichloropropene | 0.0005 | None |
| Trichloroethene | 0.0005 | .0025 |
| Dibromochloromethane | 0.0005 | None |
| 1,1,2-Trichloroethane | 0.0005 | None |
| trans-1,3-Dichloropropene | 0.0005 | None |
| Bromoform | 0.0005 | None |
| Tetrachloroethene | 0.0005 | .0070 |
| Dichlorodifluoromethane | 0.0005 | None |
| Trichlorofluoromethane | 0.0005 | None |
| cis-1,2-Dichloroethene | 0.0005 | .0160 |
| trans-1,2-Dichloroethene | 0.0005 | .0043 |
| Chlorobenzene | 0.0005 | None |
| 1,2-Dichlorobenzene | 0.0005 | None |
| 1,3-Dichlorobenzene | 0.0005 | None |
| 1,4-Dichlorobenzene | 0.0005 | None |
| 1,1,2-Trichlorotrifluoroethane | 0.0005 | None |
| 1-Chloro-2-fluorobenzene (Surr) | 70-120% | 96 |

IT ANALYTICAL SERVICES
SAN JOSE, CA
(408) 943-1540

Company: Shell Oil Company
Date: 02/10/92
Client Work ID: G6730, 2160 Otis Dr., Alameda

Work Order: T2-01-160

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: **MW-2**
SAMPLE DATE: **01/24/92**
LAB SAMPLE ID: T201160-03
SAMPLE MATRIX: aqueous
RECEIPT CONDITION: Cool pH < 2

**RESULTS in Milligrams per Liter:**

| | METHOD | EXTRACTION DATE | ANALYSIS DATE |
|---|---|---|---|
| BTEX | 8020 | | 01/30/92 |
| Low Boiling Hydrocarbons | Mod.8015 | | 01/30/92 |

| PARAMETER | DETECTION LIMIT | DETECTED |
|---|---|---|
| Low Boiling Hydrocarbons calculated as Gasoline | 0.05 | None |
| BTEX | | |
| Benzene | 0.0005 | 0.0048 |
| Toluene | 0.0005 | None |
| Ethylbenzene | 0.0005 | None |
| Xylenes (total) | 0.0005 | None |

| SURROGATES | % REC |
|---|---|
| 1,3-Dichlorobenzene (Gasoline) | 96. |
| 1,3-Dichlorobenzene (BTEX) | 97. |

IT ANALYTICAL SERVICES
SAN JOSE, CA
(408) 943-1540

Company: Shell Oil Company
Date: 02/10/92
Client Work ID: G6730, 2160 Otis Dr., Alameda

Work Order: T2-01-160

TEST NAME: **Petroleum Hydrocarbons**

SAMPLE ID: **TRIP BLANK**
SAMPLE DATE: **not spec**
LAB SAMPLE ID: T201160-04
SAMPLE MATRIX: **aqueous**
RECEIPT CONDITION: **Cool pH < 2**

**RESULTS in Milligrams per Liter:**

| | METHOD | EXTRACTION DATE | ANALYSIS DATE |
|---|---|---|---|
| BTEX | 8020 | | 01/29/92 |
| Low Boiling Hydrocarbons | Mod.8015 | | 01/29/92 |

| PARAMETER | DETECTION LIMIT | DETECTED |
|---|---|---|
| Low Boiling Hydrocarbons calculated as Gasoline | 0.05 | None |
| BTEX | | |
| Benzene | 0.0005 | None |
| Toluene | 0.0005 | None |
| Ethylbenzene | 0.0005 | None |
| Xylenes (total) | 0.0005 | None |

| SURROGATES | % REC |
|---|---|
| 1,3-Dichlorobenzene (Gasoline) | 95. |
| 1,3-Dichlorobenzene (BTEX) | 96. |

IT ANALYTICAL SERVICES
SAN JOSE, CA
(408) 943-1540

Company: Shell Oil Company
Date: 02/10/92
Client Work ID: G6730, 2160 Otis Dr., Alameda

Work Order: T2-01-160

TEST NAME: **Spike and Spike Duplicates**

SAMPLE ID: **Quality Control**
SAMPLE DATE: **not spec**
LAB SAMPLE ID: **T201160-05A**
EXTRACTION DATE:
ANALYSIS DATE: **01/29/92**
ANALYSIS METHOD: **Mod.8015**

QUALITY CONTROL REPORT

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Analyses

**RESULTS in Micrograms per Liter**

| PARAMETER | Sample Amt | Spike Amt | MS Result | MSD Result | MS %Rec | MSD %Rec | RPD |
|---|---|---|---|---|---|---|---|
| Benzene | None | 50.0 | 41.6 | 42.7 | 83 | 85 | 2 |
| Toluene | None | 50.0 | 43.0 | 44.0 | 86 | 88 | 2 |
| Ethylbenzene | None | 50.0 | 43.0 | 44.1 | 86 | 88 | 2 |
| Total Xylenes | None | 150 | 136 | 140 | 91 | 93 | 2 |

| SURROGATES | MS %Rec | MSD %Rec |
|---|---|---|
| 1,3-Dichlorobenzene | 101 | 99 |

IT ANALYTICAL SERVICES
SAN JOSE, CA
(408) 943-1540

Company: Shell Oil Company
Date: 02/10/92
Client Work ID: G6730, 2160 Otis Dr., Alameda

Work Order: T2-01-160

TEST NAME: **Spike and Spike Duplicates**

SAMPLE ID: **Quality Control**
SAMPLE DATE: **not spec**
LAB SAMPLE ID: T201160-06A
EXTRACTION DATE:
ANALYSIS DATE: 01/30/92
ANALYSIS METHOD: 8010/8020

QUALITY CONTROL REPORT

Laboratory Spike(LS) and Laboratory Spike Duplicate(LSD) Analyses

**RESULTS in Micrograms per liter**

| PARAMETER | Sample Amt | Spike Amt | LS Result | LSD Result | LS %Rec | LSD %Rec | RPD |
|---|---|---|---|---|---|---|---|
| CHLOROBENZE | None | 10 | 9.82 | 9.84 | 98 | 98 | 0 |
| 1,1 DICHLOROETHENE | None | 10 | 8.77 | 9.31 | 88 | 93 | 6 |
| TRICHLOROETHENE | None | 10 | 11.2 | 12.2 | 112 | 122 | 9 |
| BENZENE | None | 10 | 11.2 | 11.3 | 112 | 113 | 1 |
| TOLUENE | None | 10 | 10.8 | 10.8 | 108 | 108 | 0 |

| SURROGATES | LS %Rec | LSD %Rec |
|---|---|---|
| 8010 | 107 | 105 |
| 8020 | 99 | 96 |

IT ANALYTICAL SERVICES
SAN JOSE, CA
(408) 943-1540

Company: Shell Oil Company
Date: 02/10/92
Client Work ID: G6730, 2160 Otis Dr., Alameda

Work Order: T2-01-160

TEST CODE **601** TEST NAME **Halocarbons by 8010/601**

The method of analysis for volatile halocarbons is taken from EPA Methods 601 and 8010. Samples are examined using the purge and trap technique. Final detection is by gas chromatography using an electrolytic conductivity detector.

TEST CODE **QC** TEST NAME **Quality Control**

Quality control (QC) samples are analyzed and used to assess the laboratory control measures. Routine QC samples include method blanks, spikes and duplicates. The purpose of the method blank (MB) analysis is to demonstrate that artifacts of the test do not yield false positives. The laboratory control spike (LS) and /or matrix spike (MS) analysis is used to evaluate the ability of the test to recover analytes of interest, i.e. accuracy. Accuracy is expressed as percent (%) recovery. The laboratory spike duplicate (LSD), matrix spike duplicate (MSD), or duplicate sample (DUP) is used to determine the precision of the test, by comparing the result from the original spike (or sample) to the duplicate spike (or sample). Precision is expressed as relative percent difference (RPD).

The results of appropriate QC samples from QC batches associated with the listed samples are included in this report.

TEST CODE **TPHVB** TEST NAME **TPH Gas,BTEX by 8015/8020**

The method of analysis for low boiling hydrocarbons is taken from EPA Methods modified 8015, 8020 and 5030. The sample is examined using the purge and trap technique. Final detection is by gas chromatography using a flame ionization detector in series with a photoionization detector. The result for total low boiling hydrocarbons is calculated as gasoline. Results in soils are corrected for moisture content and are reported on a dry soil basis unless otherwise noted.

# SHELL OIL COMPANY
## RETAIL ENVIRONMENTAL ENGINEERING - WEST

## CHAIN OF CUSTODY RECORD
Serial No.: T2-01-160

Date:
Page | of |

**Site Address:** 2160 Otis Drive, Alameda, CA

**WIC#:** 204-0072-0502

**Shell Engineer:** Kurt Miller — **Phone No.** (510)685-3853 **Fax #:**

**Consultant Name & Address:** EMCON Assoc. — 1938 Junction Ave, San Jose, CA 95131

**Consultant Contact:** David Larsen — **Phone No.** 453-2269 **Fax #:** 453-0452

**Comments:** Late start, provide results ASAP

**Sampled By:** JBUTERA

**Printed Name:** JBUTERA

**LAB:** IT - San Jose

| CHECK ONE (1) BOX ONLY | | CT/DT |
|---|---|---|
| Quarterly Monitoring | X | 5461 |
| Site Investigation | | 5441 |
| Soil for disposal | | 5442 |
| Water for disposal | | 5443 |
| Air Sample- Sys O&M | | 5452 |
| Water Sample - Sys O&M | | 5453 |
| Other | | |

| TURN AROUND TIME | |
|---|---|
| 24 hours | |
| 48 hours | |
| 15 days | X (Normal) |
| Other | |

NOTE: Notify Lab as soon as possible of 24/48 hrs. TAT.

**Analysis Required**

| Sample ID | Date | Soil | Water | Air | No. of conts. | TPH (EPA 8015 Mod. Gas) | TPH (EPA 8015 Mod. Diesel) | BTEX (EPA 8020/602) | Volatile Organics (EPA 8240) | Test for Disposal | EPA 601 | Container Size | Preparation Used | Composite Y/N | MATERIAL DESCRIPTION | SAMPLE CONDITION/ COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-1 | 1-24-92 | | X | | 3 | X | | X | | | | 40ml | HCl | N | | Cool & Intact SJ 1-27-92 |
| S-1 | " | | X | | 3 | X | | X | | | | " | " | N | | |
| MW-2 | " | | X | | 6 | X | | X | | | X | " | " | N | | |
| TB | " | | X | | 1 | X | | X | | | | " | " | N | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |

| | | | |
|---|---|---|---|
| Relinquished By (signature): X JButera | Printed name: X JButera | Date: 1/27/92 Time: 0845 | Received (signature): M. LeGrande FMS/SJ |
| Relinquished By (signature): | Printed name: | Date: Time: | Received (signature): |
| Relinquished By (signature): | Printed name: | Date: Time: | Received (signature): |

| | |
|---|---|
| Printed name: M. LeGrande | Date: 1-27 Time: 845 |
| Printed name: | Date: Time: |
| Printed name: | Date: Time: |

THE LABORATORY MUST PROVIDE A COPY OF THIS CHAIN-OF-CUSTODY WITH INVOICE AND RESULTS

Last Revision Date: 10/15/91