

ALSO  
HAZMAT

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SECOND QUARTER 1994  
GROUND WATER MONITORING REPORT  
FOR  
WORTHLEY DRIVE PARCEL  
SAN LORENZO, CALIFORNIA

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9/21/94

Extraction system  
shutoff when  
these samples  
collected.

→ -JS.  
Per Stason Foster

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**LOVNEY ASSOCIATES**  
Environmental/Geotechnical/Engineering Services

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September 6, 1994  
719-3A, MV090612

Mr. Anthony Varni  
P.O. Box 778  
Hayward, California 94543

**RE: SECOND QUARTER 1994 GROUND  
WATER MONITORING  
WORTHLEY DRIVE PARCEL  
SAN LORENZO, CALIFORNIA**

Dear Mr. Varni:

In accordance with your request, we are pleased to submit this report presenting the results of the second quarter 1994 sampling of ground water at the referenced site. The scope of work including collection and analysis of ground water samples from two on-site monitoring wells, was performed per our agreement with you dated January 18, 1994.

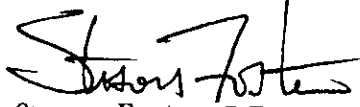
Laboratory analysis of the ground water samples collected from monitoring well MW-2 detected levels of total petroleum hydrocarbons (TPH) as gasoline at 330 parts per billion (ppb). Benzene, toluene, ethylbenzene, and xylenes were not detected. Analysis of ground water samples collected from extraction well RW-1 detected TPH as gasoline at 110 ppb, benzene at 25 ppb, ethylbenzene at 0.86 ppb, and xylenes at 3.2 ppb.

We recommend continued ground water monitoring to evaluate the natural degradation of the petroleum hydrocarbons with time.


We refer you to the text of the report for details regarding our investigation. If you have any questions, please call.

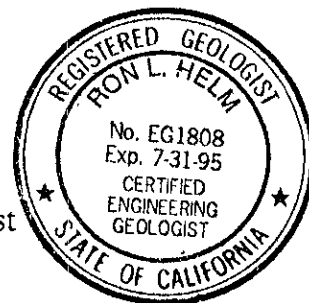
Very truly yours,

LOWNEY ASSOCIATES

  
Stason Foster, P.E.  
Environmental Engineer



  
Ron L. Helm, C.E.G.  
Environmental Geologist



RLH:SIF:BAF

Copies: Addressee (2)  
Ms. Juliet Shin, Alameda County Health Care Services (1)  
California Regional Water Quality Control Board (1)

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**SECOND QUARTER 1994 GROUND WATER MONITORING**

For

**WORTHLEY DRIVE PARCEL**  
San Lorenzo, California

To

**ANTHONY VARNI**  
P.O. Box 778  
Hayward, California 94543

September 1994

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LETTER OF TRANSMITTAL

TITLE PAGE

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**SECOND QUARTER 1994 GROUND WATER MONITORING  
FOR  
WORTHLEY DRIVE PARCEL  
SAN LORENZO, CALIFORNIA**

**1.0 INTRODUCTION**

We are pleased to present this report summarizing the second quarter 1994 ground water monitoring at 16525 Worthley Drive, San Lorenzo, California (Figure 1). The purpose of this investigation was to continue an on-going ground water quality evaluation at the site, near the vicinity of the former fuel storage tanks, by collecting and analyzing ground water samples from monitoring well MW-2 and extraction well RW-1.

The site reportedly was developed in the late 1960s as an aircraft engine maintenance facility, which operated there until 1981. Two underground gasoline fuel storage tanks (USTs) were reportedly used by this facility and were removed from the site in 1987.

Subsequent soil and ground water quality investigations have included drilling of several soil borings within and near the former UST excavation, over excavation of the tank pit to remove impacted soil, the performance of a soil vapor survey, and the installation of eight ground water monitoring wells. The results of this work were summarized in our first quarter 1994 monitoring report dated August 29, 1994.

**1.1 Purpose**

**1.2 Background**

In January 1991, a ground water extraction and treatment system was installed at the site. The system extracted ground water from extraction well RW-1 at a limited rate of approximately 0.1 gallon per minute (gpm) and treated the water with activated carbon beds prior to discharge. Laboratory analyses of influent samples collected from the treatment system indicated that petroleum hydrocarbon concentrations have decreased or remained generally consistent over the past several years. Since its installation in November 1989, extraction well RW-1 appears to have been sampled/analyzed 31 times. Fourteen of 31 sampling events did not detect TPH as gasoline above the laboratory detection limit. Analytical results for the remaining 17 events revealed concentrations typically ranging from 57 ppb to 480 ppb; higher levels were only detected in three sampling events.

Quarterly sampling of ground water from well MW-2, located near the former USTs, has historically detected only low levels of TPH as gasoline and BTEX compounds. From 1987 to 1994 concentrations of TPH as gasoline have typically ranged between 57 ppb and 870 ppb. Higher concentrations were detected during two sampling events. Petroleum hydrocarbons typically have not been detected in the other on-site monitoring wells.

A summary of previous sampling results from monitoring well MW-2 and extraction well RW-1 is presented in Table 1.

The scope of work performed during this supplemental ground water quality investigation included the following:

### 1.3 Scope of Work

- ▼ Purging and sampling of ground water from monitoring well MW-2 and the on-site extraction well RW-1 located near the former fuel tank area.
- ▼ Laboratory analysis of the ground water samples for TPH as gasoline and BTEX.
- ▼ Preparation of this report.

## 2.0 SITE INVESTIGATION

Ground water from two of eight on-site monitoring wells was sampled and analyzed for TPH as gasoline and BTEX compounds. A discussion of well sampling protocol is presented in Appendix A.

### 2.1 Ground Water Quality

The laboratory analytical results for this sampling event and the previous investigations are presented in Table 1. Laboratory reports are presented in Appendix B.

TABLE 1. Ground Water Sampling Results  
(concentrations in ppb)

Well	Date	TPHg	Benzene	Toluene	Ethyl-benzene	Total Xylenes
MW-2	07/14/87	110	1.2	1.9	--	2
	11/24/87	3,600	82	47	--	13
	02/29/88	800	ND	ND	--	ND
	05/25/88	250	ND	ND	--	ND
	08/10/88	260	ND	ND	--	ND
	11/29/88	870	9.	ND	1	1

continued

TABLE 1. Ground Water Sampling Results  
(concentrations in ppb)  
(continued)

Well	Date	TPHg	Benzene	Toluene	Ethyl- benzene	Total Xylenes
MW-2 (cont)	02/07/89	710	16	ND	ND	ND
	05/12/89	260	2.8	0.76	1.3	3
	08/04/89	360	ND	ND	ND	0.48
	11/14/89	85	ND	3.5	0.36	2.5
	02/22/90	120	ND	ND	1.5	0.55
	05/17/90	240	ND	ND	ND	ND
	08/17/90	130	ND	2.9	1.2	0.68
	11/06/90	170	0.37	1.2	2	1.5
	02/01/91	57	ND	ND	ND	0.73
	05/01/91	220	1.5	0.42	0.43	0.54
	08/08/91	710	4.1	0.84	ND	0.71
	11/15/91	630	2.3	ND	3.1	0.86
	02/12/92	580	5.9	1.2	0.52	ND
	05/21/92	790	26	5.4	ND	ND
	11/13/92	230	ND	ND	ND	ND
	02/24/93	400	17	ND	ND	ND
	05/28/93	110	<0.50	<0.50	<0.50	<0.50
	08/20/93	1,000	<0.50	0.75	1.1	5.4
	11/30/93	590	<0.50	<0.50	3.8	2.3
	04/08/94	480	5.2	<0.50	<0.50	<0.50
08/08/94	330	<0.50	<0.50	<0.50	<0.50	
RW-1	11/28/89	3,200	<50	<100	<100	<100
	01/09/90	1,300	150	15	100	170
	01/16/91	78	17.0	2.7	7.7	1.3
	04/20/91	<30	<0.30	<0.30	<0.30	<0.30
	05/01/91	160	40	0.79	14	6.1
	05/24/91	<30	<0.30	<0.30	<0.30	<0.30
	06/14/91	57	12	<0.30	4.3	0.84
	07/03/91	<30	<0.30	<0.30	<0.30	<0.30
	07/22/91	18	<0.30	2.7	0.4	<0.30
	08/08/91	89	41	0.31	4.6	0.73
	11/15/91	140	41	<0.30	1.3	0.44
	12/18/91	<50	12	<0.50	0.78	<0.50
	02/12/92	260	78	.073	6.6	8.2
	03/06/92	480	81	1.2	21	21
	04/02/92	300	52	1.2	13	15
	05/21/92	57	20	ND	1.7	0.85
	06/30/92	<50	7.7	<0.50	<0.50	<0.50
	07/17/92	79	7.4	<0.50	1.2	1.4
	09/01/92	<50	4.2	<0.50	<0.50	<0.50
	11/13/92	ND	ND	ND	ND	ND
01/08/93	ND	8	ND	0.78	0.59	
01/29/93	64	22	ND	4.8	3.7	
03/18/93	2,400	330	3.3	51	17	
04/22/93	<50	13	<0.50	1.5	<0.50	
05/28/93	<50	0.76	<0.50	<0.50	<0.50	
08/20/93	57	16	<0.50	0.70	1.92	
09/15/93	<50	1.5	<0.50	<0.50	<0.50	

continued



TABLE 1. Ground Water Sampling Results  
 (concentrations in ppb)  
 (continued)

Well	Date	TPHg	Benzene	Toluene	Ethyl- benzene	Total Xylenes
RW-1	10/08/93	<50	<0.50	<0.50	0.50	<0.50
(cont)	10/26/93	<50	<0.50	<0.50	0.50	<0.50
	12/16/93	<50	0.73	2.6	1.1	<0.50
	04/08/94	130	15	1.4	1.9	1.9
	08/08/94	110	25	<0.50	0.86	3.2

-- no data obtained  
 ND not detected

### 3.0 CONCLUSIONS AND RECOMMENDATIONS

The purpose of this investigation was to continue an on-going ground water quality evaluation at the site, near the former fuel storage tanks, by collecting and analyzing ground water samples from monitoring well MW-2 and extraction well RW-1.

Laboratory analysis of the ground water samples collected from monitoring well MW-2 detected TPH as gasoline at a concentration of 330 ppb. BTEX compounds were not detected.

Analysis of ground water samples collected from extraction well RW-1 detected TPH as gasoline at 110 ppb, benzene at 25 ppb, ethlybenzene at 0.86 ppb, and xylenes at 3.2 ppb.

We recommend continued ground water monitoring at this time to document the natural degradation of the petroleum hydrocarbons with time.

#### 4.0 LIMITATIONS

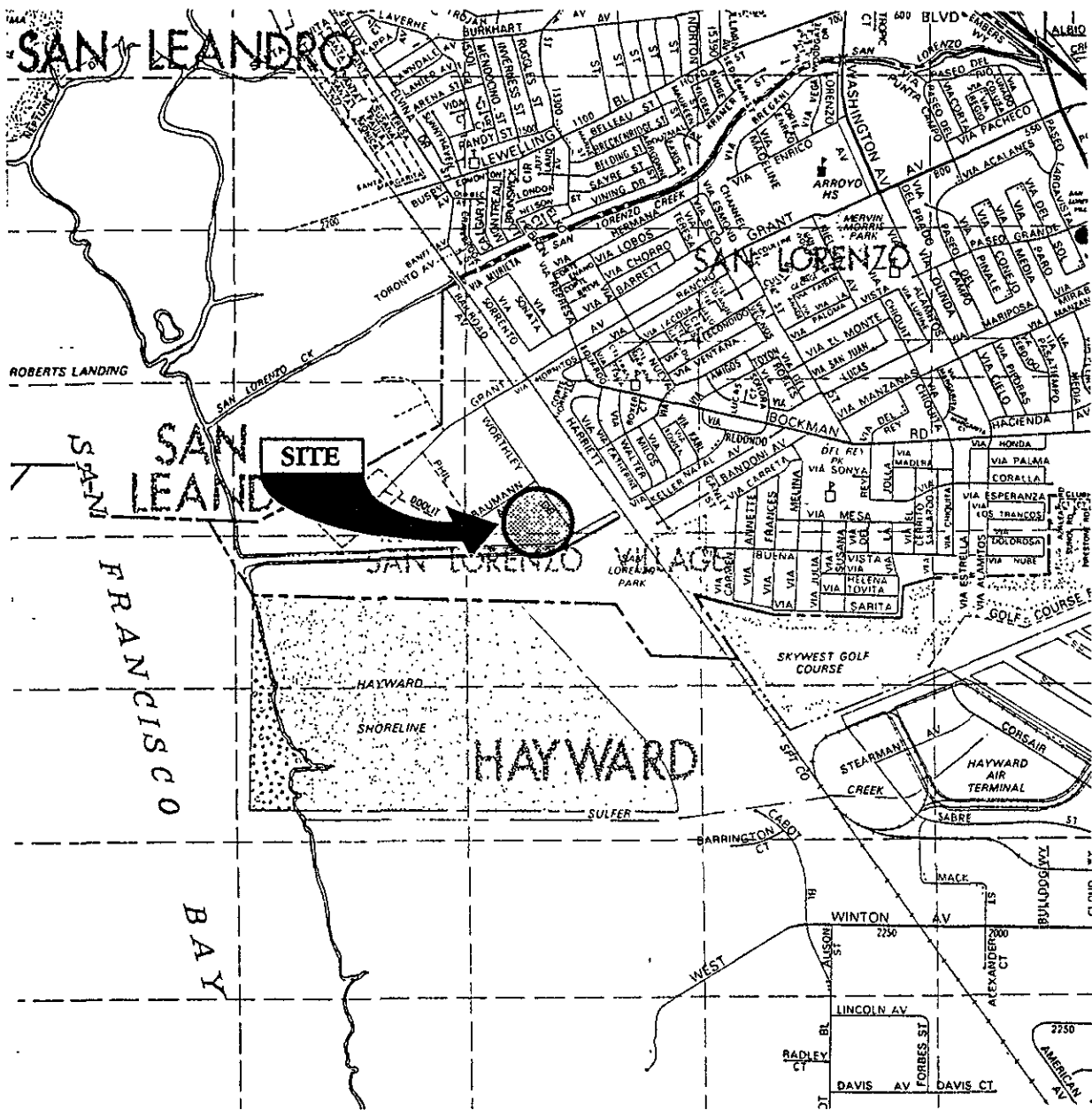
Soil deposits and rock formations may vary in type, strength, and many other important properties across any geologic area. The study that we have made assumes that the data obtained in the field and laboratory are reasonably representative of field conditions and that the subsurface conditions are reasonably susceptible to interpolation and extrapolation between sampling locations.

The accuracy and reliability of geo- or hydrochemical studies are a reflection of the number and type of samples taken and the extent of the analysis conducted, and is thus inherently limited and dependent on the resources expended. Our sampling and analytical plan was designed using accepted environmental engineering principles and our judgment for the performance of a reconnaissance soil and ground water quality investigation, and was based on the degree of investigation desired by you. It is possible to obtain a greater degree of certainty, if desired, by implementing a more rigorous sampling program or installation of additional monitoring wells.

This report was prepared for the sole use of Mr. Anthony Varni in evaluating the environmental setting and ground water quality at the referenced site at the time of this study. We make no warranty, expressed or implied, except that our services have been performed in accordance with hydrogeological and environmental engineering principles generally accepted at this time and location. The hydrochemical and other data presented in this

report can change over time and are applicable only to the time this study was performed.

\* \* \* \* \*



"Reproduced with permission granted by THOMAS BROS. MAPS."

719-3A, 8/8 BAF'EB

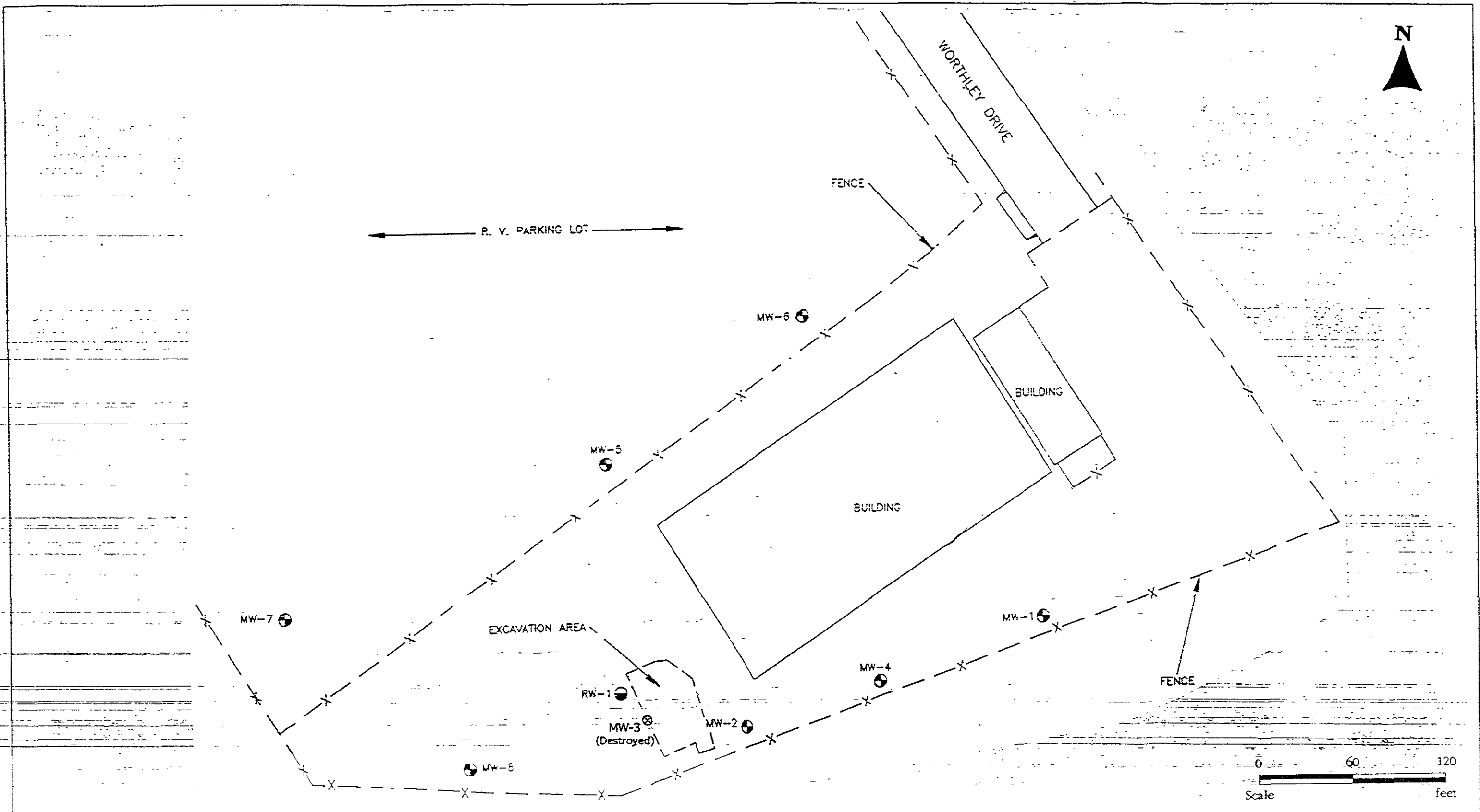
VICINITY MAP

PACIFIC INTERNATIONAL STEEL  
San Lorenzo, California

**LOVNEY ASSOCIATES**  
Environmental/Geotechnical/Engineering Services

FIGURE 1

719-3A, September 1994



- LEGEND**
- - Approximate location of ground water monitoring well by Resna (1993)
  - - Approximate location of ground water recovery well by Resna (1993)

Base by Resna, dated 8/93.

**SITE PLAN**  
**PACIFIC INTERNATIONAL STEEL**  
 San Lorenzo, California

**LOWNEY ASSOCIATES**  
 Environmental / Geotechnical / Engineering Services

**FIGURE 2**  
 719-3A, September 1994

**APPENDIX A**  
**GROUND WATER SAMPLING**

Prior to ground water sampling, the static water level was measured using an electronic water level measurement device. A minimum of three well casing volumes of water from each well was purged prior to sampling. After each well volume, pH, conductivity, and temperature were recorded. The pH and conductivity generally stabilize after three to ten well volumes. If, after the third well volume, the pH and conductivity did not stabilize, additional well volumes were removed until these measurements did stabilize. All well developing and sampling equipment was cleaned with an aqueous tri-sodium phosphate solution and distilled water or steam cleaned prior to entering the well.

The ground water samples were subsequently collected in appropriate sample bottles, labeled, and immediately placed on ice until delivered to an analytical laboratory certified by the California Department of Health Services for chemical analysis of drinking water and hazardous waste. Carried along with the ground water samples was a chain of custody form that was maintained for all well samples.

Purged ground water was stored on-site in labeled 55-gallon drums.



# LOVNEY ASSOCIATES

## RECORD OF WELL DEVELOPMENT/SAMPLING

Project Number 79-3A  
 Project Name Pacific International Steel  
 Field Geologist/Engineer TJAF

Well Number RW-1 Boring Diameter \_\_\_\_\_ (inches)

Well Total Depth (completed) \_\_\_\_\_ (feet) Casing Diameter \_\_\_\_\_ (inches)

Development Date \_\_\_\_\_ Method \_\_\_\_\_ Volume Produced \_\_\_\_\_ (liter/gal)

### WELL VOLUME CONVERSION FACTORS:

#### 2-INCH CASING DIAMETER

VOL (GALLONS) = FEET OF WATER x 0.17  
 VOL (LITERS) = FEET OF WATER x 0.62

#### 4-INCH CASING DIAMETER

VOL (GALLONS) = FEET OF WATER x 0.66  
 VOL (LITERS) = FEET OF WATER x 2.5

Sampling Date 8-8-74 Time 2:00 Method PORT OF EXTRACTION SYSTEM

Static Water Level Prior to Purging \_\_\_\_\_ (ft) Water Level After Recovery \_\_\_\_\_ (ft)  
 (Measured from top of casing)

80 Percent Recharged Yes  No

Well Volume \_\_\_\_\_ (liter/gal)

Three Well Volumes \_\_\_\_\_ (liter/gal)

Total Produced \_\_\_\_\_ (liter/gal)

Number of Well Volumes \_\_\_\_\_

Production Time \_\_\_\_\_ (min)

Production Rate \_\_\_\_\_ ( /min)

Well Volumes	pH	Conductivity $\mu S \times 10$	Temp $^{\circ}F$
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

Sample Description RW-1

Laboratory Sequoia

Deliver  Pick-Up  Date \_\_\_\_\_

Comments

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_



**APPENDIX B**  
**ANALYTICAL RESULTS**

The refrigerated ground water samples and the chain of custody form were delivered to Sequoia Analytical Laboratory located in Redwood City, California. Ground water samples were analyzed for TPH as gasoline plus additional scans to detect BTEX (EPA Test Method 8015/8020). Attached are copies of these results and the chain of custody documentation. The laboratory is certified by the State of California as a Hazardous Waste Testing Laboratory and Approved Water and Wastewater Laboratory.



Lowney Associates  
405 Clyde Avenue  
Mountain View, CA 94043

Attention: Brock Foster

Client Proj. ID: 719-3A  
Sample Descript: RW-1  
Matrix: LIQUID  
Analysis Method: 8015Mod/8020  
Lab Number: 9408650-01

Sampled: 08/08/94  
Received: 08/09/94  
Analyzed: 08/12/94  
Reported: 08/22/94

**Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX**

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	50	110
Benzene	0.50	25
Toluene	0.50	N.D.
Ethyl Benzene	0.50	0.86
Xylenes (Total)	0.50	3.2
Chromatogram Pattern: Discrete Peak		gas C6-C7

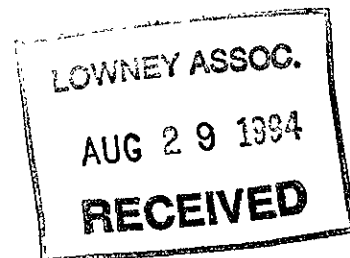
  

Surrogates	Control Limits %	% Recovery
Trifluorotoluene	70 130	103

Analytes reported as N.D. were not present above the stated limit of detection.

**SEQUOIA ANALYTICAL - ELAP #1210**

Andrea Fulcher  
Project Manager





Lowney Associates  
405 Clyde Avenue  
Mountain View, CA 94043

Client Proj. ID: 719-3A  
Sample Descript: MW-2  
Matrix: LIQUID  
Analysis Method: 8015Mod/8020  
Lab Number: 9408650-02

Sampled: 08/08/94  
Received: 08/09/94  
Analyzed: 08/12/94  
Reported: 08/22/94

Attention: Brock Foster


**Total Purgeable Petroleum Hydrocarbons (TPPH) with BTEX**

Analyte	Detection Limit ug/L	Sample Results ug/L
TPPH as Gas	50	330
Benzene	0.50	N.D.
Toluene	0.50	N.D.
Ethyl Benzene	0.50	N.D.
Xylenes (Total)	0.50	N.D.
Chromatogram Pattern:		C7-C11

Surrogates	Control Limits %	% Recovery
Trifluorotoluene	70 130	178 Q

Analytes reported as N.D. were not present above the stated limit of detection.

**SEQUOIA ANALYTICAL - ELAP #1210**

  
Andrea Fulcher  
Project Manager





Lowney Associates  
405 Clyde Avenue  
Mountain View, CA 94043  
Attention: Brock Foster

Client Project ID: 719-3A  
Matrix: Liquid

QC Sample Group: 9408650 01-02

Reported: Aug 19, 1994

**QUALITY CONTROL DATA REPORT**

ANALYTE	Benzene	Toluene	Ethyl Benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	J. Minkel	J. Minkel	J. Minkel	J. Minkel

MS/MSD Batch#:	940829510	940829510	940829510	940829510
Date Prepared:	N.A.	N.A.	N.A.	N.A.
Date Analyzed:	8/12/94	8/12/94	8/12/94	8/12/94
Instrument I.D.#:	GCHP-17	GCHP-17	GCHP-17	GCHP-17
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L	30 µg/L
Matrix Spike % Recovery:	93	93	96	97
Matrix Spike Duplicate % Recovery:	99	100	97	97
Relative % Difference:	6.3	7.3	1.0	0.0

LCS Batch#:

Date Prepared:  
Date Analyzed:  
Instrument I.D.#:

LCS % Recovery:

% Recovery Control Limits:	71-133	72-128	72-130	71-120
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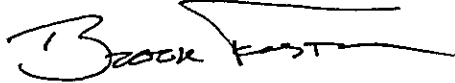
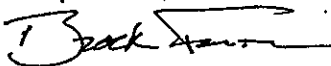
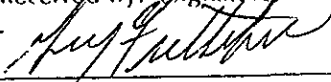
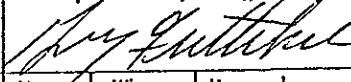
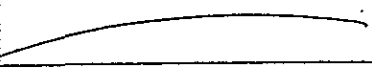
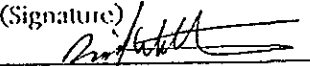
SEQUOIA ANALYTICAL

  
Andrea Fulcher  
Project Manager

**Please Note:**  
The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents, preparation, and analytical methods employed for the samples. The matrix spike is an aliquot of sample fortified with known quantities of specific compounds and subjected to the entire analytical procedure. If the recovery of analytes from the matrix spike does not fall within specified control limits due to matrix interference, the LCS recovery is to be used to validate the batch.



# LOWNEY ASSOCIATES CHAIN OF CUSTODY RECORD

JOB NO. 7A-3A		PROJECT NAME/LOCATION Pacific International Steel			NO. OF CON- TAINERS	ANALYSIS REQUIRED					SHIP TO:			
SAMPLER(S): (Signature) 						GAS/BTEX	/	/	/	/	/	LOWNEY ASSOCIATES 405 Clyde Avenue Mountain View, CA 94043 415-967-2365 415-967-2785 (FAX)		
DATE	TIME	SAMPLE DESCRIPTION										REMARKS		
8/8/94	2:00	RW-1			3	X						9408650		
	2:30	MW-2			3	X						Normal Response Time		
												CONTACT: Brock Foster		
Relinquished by: (Signature) 		Date 8/9/94	Time 10:35	Received By: (Signature) 		Relinquished by: (Signature) 		Date 8-9-94	Time	Received By: (Signature) 				
Laboratory of Record:		Date	Time	Received for Laboratory By: (Signature) 		Date 8/9/94	Time 1049	Remarks:						