Harding Lawson Associates

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July 13, 1990

4022,182.,03

Alameda County Environmental Health Department
80 Swan Way, Room 200
Oakland, California 94621

Attention: Mr. Rafat Shahid

Gentlemen:

Quarterly Technical Report
Three Shell Oil Company Sites
East Bay District

Enclosed are copies of quarterly technical reports for three Shell Oil Company sites on which Shell service stations are or were located. These reports are issued to you on behalf of Shell Oil Company. They have been reviewed and approved by Shell Oil Company.

The sites for which reports are enclosed are specifically:

5755 Broadway - Oakland 94611
6039 College Avenue - Oakland 94618 DB
2996 Shattuck - Berkeley 94608

Yours very truly,

HARDING LAWSON ASSOCIATES

Randolph Stone
Associate Hydrogeologist

RS/mlw 031554P/L25

cc: Ms. Diane Lundquist
Shell Oil Company
P. O. Box 4023
Concord, California 94524

A Report Prepared for

Shell Oil Company
P.O. Box 4023
Concord, California 94524

QUARTERLY TECHNICAL REPORT
SECOND QUARTER OF 1990
SHELL SERVICE STATION
5755 BROADWAY
OAKLAND, CALIFORNIA

HLA Job No. 4022,218.03

by

Daniel B. Erbes
Staff Geologist

Randolph Stone
Engineering Geologist

REGISTERED GEOLOGIST
RANDOLPH STONE
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GEOLOGIST
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July 13, 1990

INTRODUCTION

This Quarterly Technical Report (QTR) by Harding Lawson Associates (HLA) describes the status of our continuing evaluation of the presence of petroleum hydrocarbons in groundwater in the vicinity of the Shell Oil Company (Shell) service station at 5755 Broadway, Oakland, California (Plate 1). This report discusses the site history and investigation progress through the second quarter of 1990, and summarizes activities we plan to undertake in the third quarter of 1990.

SITE HISTORY

Through conversations with employees at the service station, HLA understands that this facility was previously a Thrifty service station.

In July 1985, Gettler-Ryan Inc. (GRI) installed one soil boring (S-A) and one 4-inch monitoring well (S-1) on site to approximately 12 feet (Plate 2). Boring logs, well construction details, and previous analytical reports were presented in a letter from EMCON Associates (subcontractor to GRI) dated August 1, 1985. Relatively small concentrations of up to 3 parts per million (ppm) of total petroleum hydrocarbons (TPH) as gasoline were detected in soil from borings S-A and S-1 and groundwater samples in S-1. A soil sample obtained from S-A at the maximum depth explored, 10 to 11.5 feet below grade, did not contain detectable concentrations of TPH as gasoline. These data

indicated the presence of petroleum hydrocarbons in the soil and groundwater on site.

On August 10, 1989, Shell retained HLA to complete the site assessment and evaluate the need for remediation. On August 15, 1989, HLA obtained a groundwater sample from S-1. That sample contained concentrations of TPH as gasoline and benzene in respective concentrations of 170 and 6 parts per billion (ppb).

On September 18, HLA drilled two soil borings, S-2 and S-3. Drilling was performed under the direction of an HLA field engineer, who obtained soil samples and converted the borings to groundwater monitoring wells as outlined in HLA work plan dated October 13, 1989. Results of analyses on soil and groundwater samples are summarized in Tables 1 and 2.

ACCOMPLISHMENTS DURING THE SECOND QUARTER OF 1990

Groundwater Sampling

On April 11, 1990, HLA collected groundwater samples from the existing monitoring wells, and the monitoring point in the underground storage tank (UST) backfill. Before sampling the groundwater monitoring wells, at least three casing volumes were purged from the well while monitoring temperature, pH, and conductivity. After these parameters stabilized, groundwater samples were collected with a clean Teflon bailer, and decanted directly into laboratory-prepared volatile organic analysis (VOA) vials. The samples were labeled and placed into an ice-chilled cooler for transportation, under chain-of-custody, to a state-

certified chemical testing laboratory. Samples were analyzed for TPH as gasoline and for benzene, toluene, ethylbenzene, and xylenes (BTEX). Between wells, all purging and sampling equipment was cleaned with an Alconox solution and rinsed with deionized water.

Chemical Test Results

The results of chemical analyses on groundwater samples indicated the presence of gasoline fuel constituents in groundwater from S-1 and S-2, with concentrations of up to 2,900 ppb TPH as gasoline and 510 ppb benzene (Table 2). Groundwater from the UST backfill yielded concentrations of 1,200 ppb TPH as gasoline and 71 ppb benzene.

Groundwater Gradient

The tops of well casings were surveyed to a temporary datum with an assigned elevation of 100.00 feet. Water-level measurements were obtained using a chalked steel tape accurate to 0.01 feet. Well survey and water-level data are presented in Table 3. Our calculations indicate that the hydraulic gradient direction is toward the south. Plate 3 illustrates the surface contours of groundwater at the site.

ANTICIPATED ACTIVITIES FOR THE THIRD QUARTER 1990

HLA plans to perform the following tasks in the third quarter 1990:

- Obtain groundwater samples from on-site monitoring wells to be analyzed for the presence of BTEX and TPH as gasoline for the purpose of monitoring hydrocarbons dissolved in groundwater.

- Install two off-site monitoring wells and sample for the presence of BTEX and TPH as gasoline for the purpose of evaluating the lateral extent of hydrocarbons dissolved in groundwater.

- Reconstruct monitoring well S-1 which was installed by a previous consultant. (S-1 currently has an inadequate surface seal in the annular space between casing and borehole wall.)

LIST OF TABLES

LIST OF ILLUSTRATIONS

TABLES

Table 1. Summary of Analyses on Soil Samples

Sample Number	Depth (ft)	Sample Date	TPH as Gasoline (ppm)	Benzene (ppm)	Toluene (ppm)	Ethyl-benzene (ppm)	Xylenes (ppm)
S-2-1	3.0	09/18/89	92	.120	.800	.580	4.20
S-3-1	3.0	09/18/89	ND (10)	ND (.025)	.062 (.025)	ND (.025)	.120

( ) Reporting Limits in parentheses

Table 2. Summary of Analyses on Groundwater Samples

Well Number	Sample Date	TPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)
S-1	08/15/89	170	0.6	ND (1.5)	ND (1.5)	ND (1.5)
	11/13/89	90	1.2	ND (.5)	ND (1.5)	ND (1.5)
	01/18/90	ND (50)	57	3.1	5.7	10
	04/11/90	520	120	2.2	.44	6.0
S-2	09/22/89	260	15	2	1	13
	11/13/89	910	64	5.8	13	84
	01/18/90	1,100	74	5.6	13	45
	04/11/90	2,900	510	6.5	29	120
S-3	09/22/89	ND (50)	ND (.5)	ND (.5)	ND (1.5)	ND (1.5)
	11/13/89	ND (50)	ND (.5)	ND (.5)	ND (1.5)	ND (1.5)
	01/18/90	ND (50)	ND (.5)	ND (.5)	ND (.5)	ND (.5)
	04/11/90	ND (30)	ND (.30)	ND (.30)	ND (.30)	ND (.30)
OB-1*	04/11/90	1,200	71	1.9	2.0	3.9

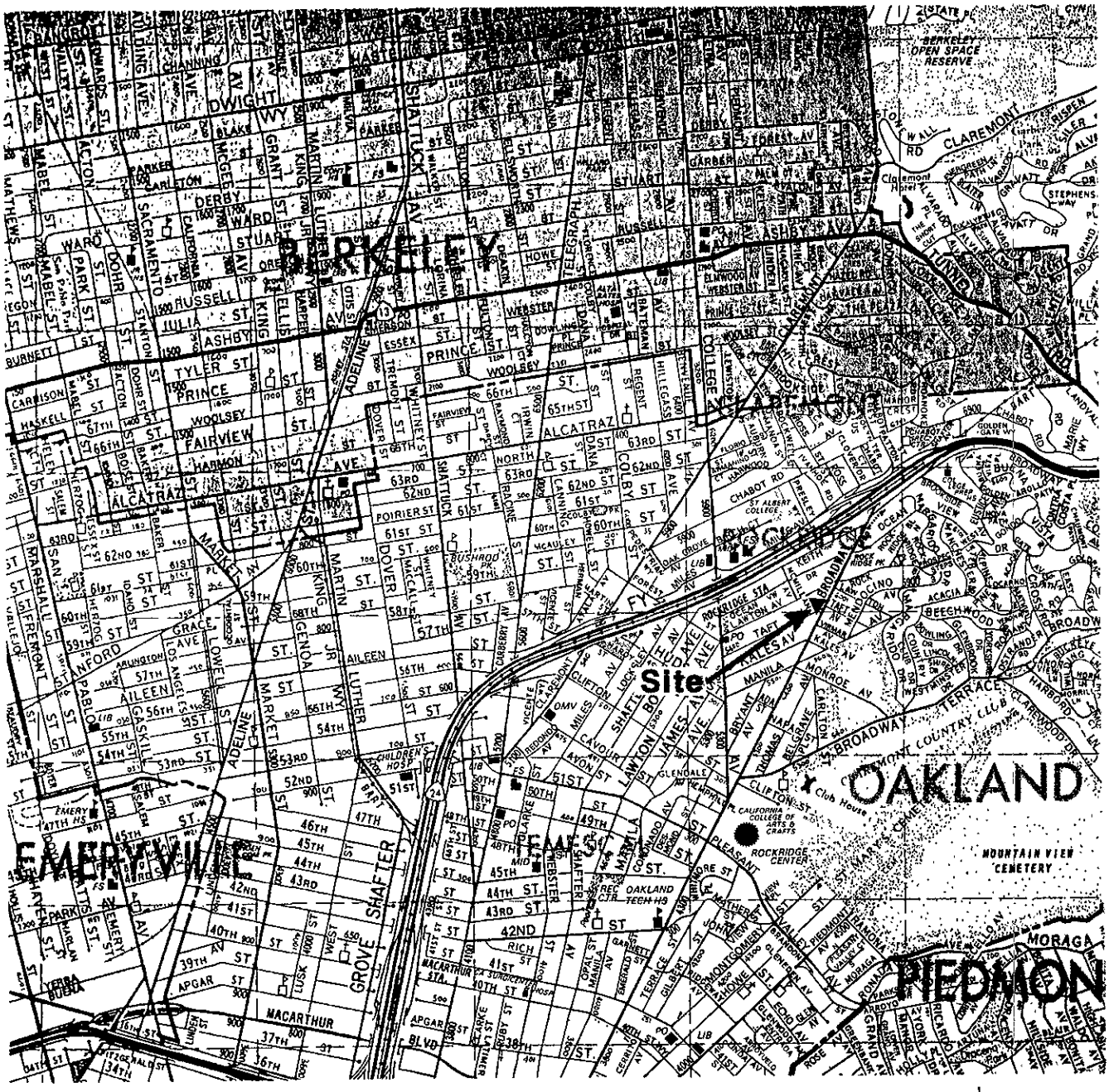
( ) Reporting limits in parentheses
* Monitoring point in UST backfill

Table 3. Well-survey and Water-level Data

Well Number	Date	Top of Casing (feet)	Depth to Groundwater (feet)	Relative Groundwater Elevation (feet)
S-1	10/05/89	*100.00	3.80	96.20
	11/13/89		3.72	96.12
	01/18/90		2.87	97.13
	02/20/90		2.71	97.29
	04/11/90		3.36	96.64
S-2	10/05/89	98.92	4.44	94.48
	11/13/89		4.44	94.48
	01/18/90		3.41	95.51
	02/20/90		3.19	95.73
	04/11/90		3.94	94.98
S-3	10/05/89	101.67	3.97	97.70
	11/13/89		3.76	97.91
	01/18/90		2.43	99.24
	02/20/90		2.27	99.40
	04/11/90		2.88	98.79

* Temporary datum of 100.00 feet assigned to top casing at Well Number S-1

ILLUSTRATIONS

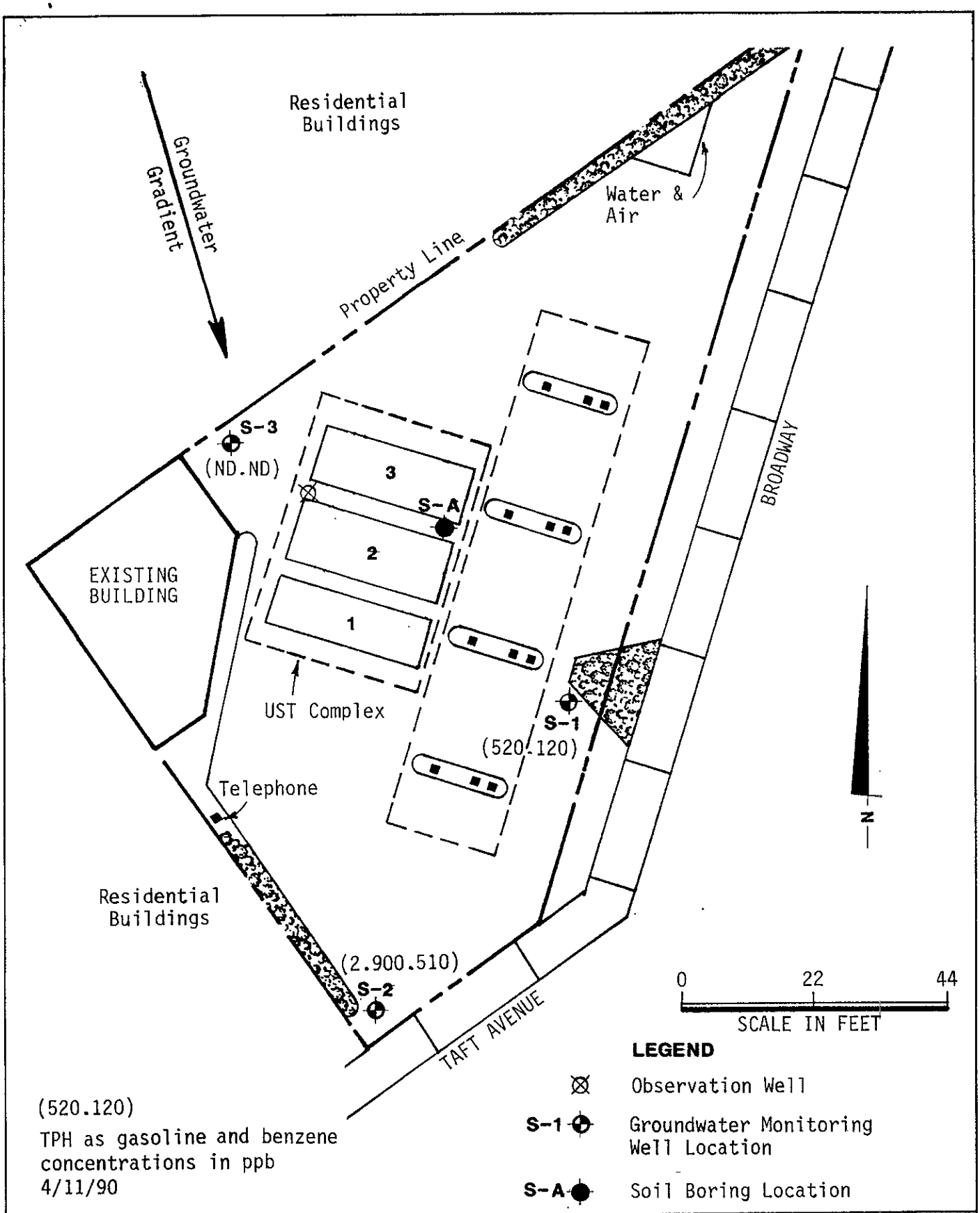


Harding Lawson Associates
Engineering and
Environmental Services

Vicinity Map
Shell Service Station
5755 Broadway
Oakland, California

PLATE
1

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
KH	4022,218.03		8/89	



Harding Lawson Associates
Engineering and Environmental Services

Site Plan
Shell Service Station
5755 Broadway
Oakland, California

PLATE **2**

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
KH	4022,218.03		7/90	

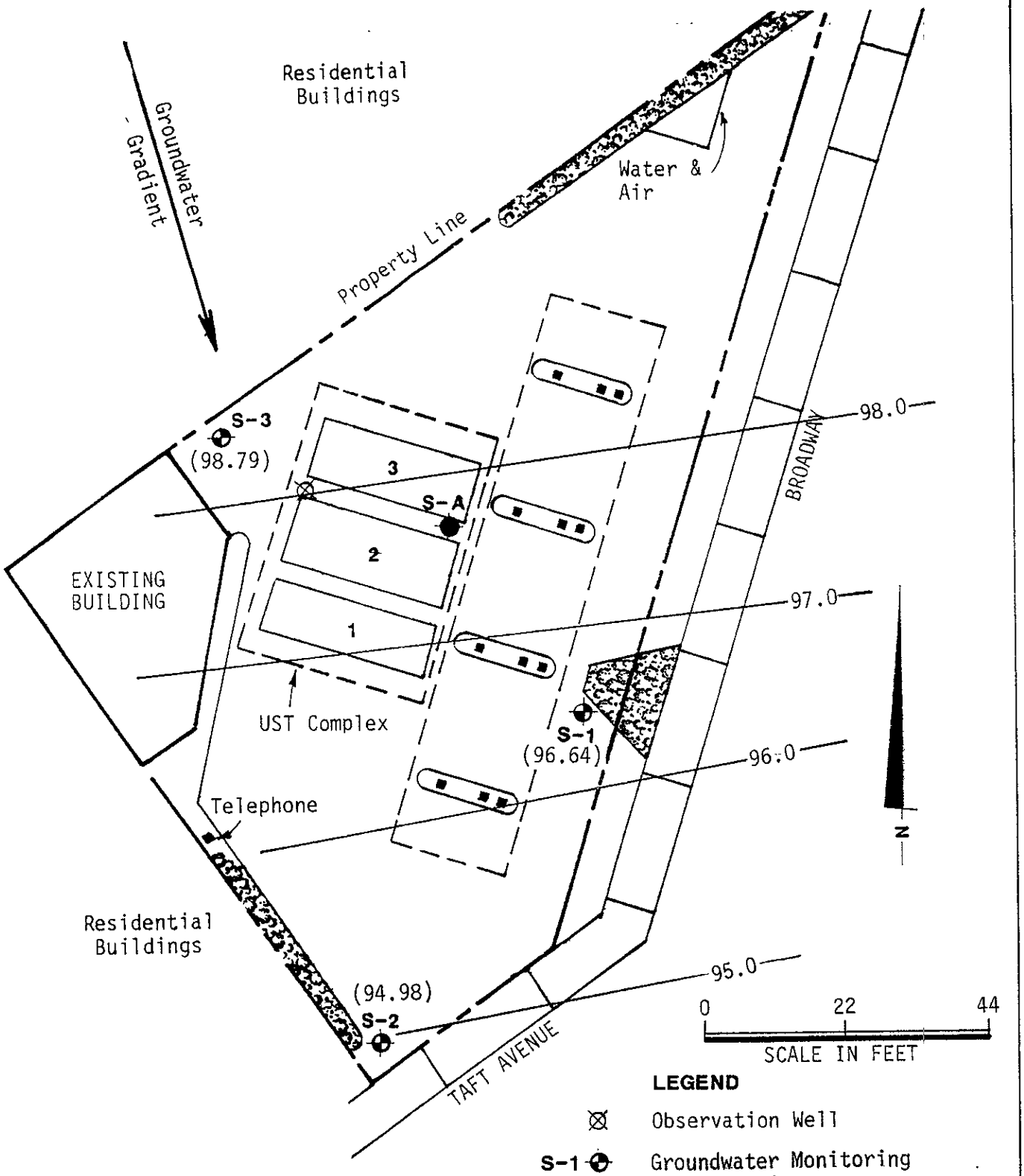


PLATE 3

Harding Lawson Associates
Engineering and Environmental Services

Shell Service Station
5755 Broadway
Oakland, California

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
KH	4022,218.03		7/90	

DISTRIBUTION

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1 copy: Shell Oil Company
P. O. Box 4023
Concord, California 94524
Attention: Ms. Lisa Foster

GSY/RS/pkp 031736L/R39

QUALITY CONTROL REVIEWER

Donald G. Gray, P.E.
Principal Engineer