



October 12, 1990

4022,182.,03

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

Attention: Mr. Rafat Shahid

Gentlemen:

WOP 3618

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
6039 College Avenue - Oakland
2996 Shattuck - Berkeley

Yours very truly,

HARDING LAWSON ASSOCIATES

Randolph Stone
Randolph Stone
Associate Hydrogeologist

RS/ere 031554P/L25

cc: Ms. Diane Lundquist
Shell Oil Company
P. O. Box 4023
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A Report Prepared for
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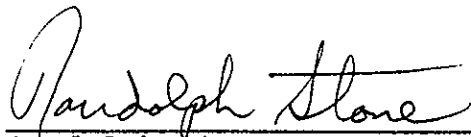
QUARTERLY TECHNICAL REPORT
THIRD QUARTER OF 1990
SHELL SERVICE STATION
5755 BROADWAY
OAKLAND, CALIFORNIA

HLA Job No. 4022,218.03

by



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October 11, 1990

INTRODUCTION

This Quarterly Technical Report (QTR) 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 third quarter of 1990, and summarizes activities we plan to undertake in the fourth quarter of 1990.

SITE HISTORY

Through conversations with employees at the service station, HLA understands that this facility was previously a Thrifty service station prior to 1972 when Shell leased the parcel for their current facilities.

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. 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 Harding Lawson Associates (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 THIRD QUARTER OF 1990

Groundwater Sampling

On July 27, 1990, HLA collected groundwater samples from the existing monitoring wells. Before sampling the groundwater monitoring wells, at least three casing volumes of water 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 total 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 700 ppb TPH as gasoline and 210 ppb benzene (Table 2).

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 FOURTH QUARTER 1990

HLA plans to perform the following tasks in the fourth 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 upon receiving encroachment permits from the City of Oakland, and sample them 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.)

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Table	3	Well-survey and Water-level Data

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TABLES

Table 1. Summary of Analyses on Soil Samples

<u>Sample Number</u>	<u>Depth (ft)</u>	<u>Sample Date</u>	<u>TPH as Gasoline (ppm)</u>	<u>Benzene (ppm)</u>	<u>Toluene (ppm)</u>	<u>Ethyl-benzene (ppm)</u>	<u>Xylenes (ppm)</u>
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)	Ethylbenzene (ppb)	Xylenes (ppb)	<i>ATW</i>
S-1	08/15/89	170	0.6	ND (.5)	ND (1.5)	ND (1.5)	
	11/13/89	90	1.2	ND (.5)	ND (1.5)	ND (1.5)	3.72
	01/18/90	ND (50)	57	3.1	5.7	10	2.87 inc
	04/11/90	520	120	2.2	.44	6.0	3.30 dec
	07/27/90	ND (30)	2.7	0.31	ND (.3)	0.47	3.60 dec
S-2	09/22/89	260	15	2	1	13	
	11/13/89	910	64	5.8	13	84	4.44
	01/18/90	1,100	74	5.6	13	45	3.41
	04/11/90	2,900	510	6.5	29	120	3.96
	07/27/90	700	210	2.5	18	33	4.13
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 (.3)	ND (.3)	ND (.3)	ND (.3)	
	07/27/90	ND (30)	ND (.3)	ND (.3)	ND (.3)	ND (.3)	

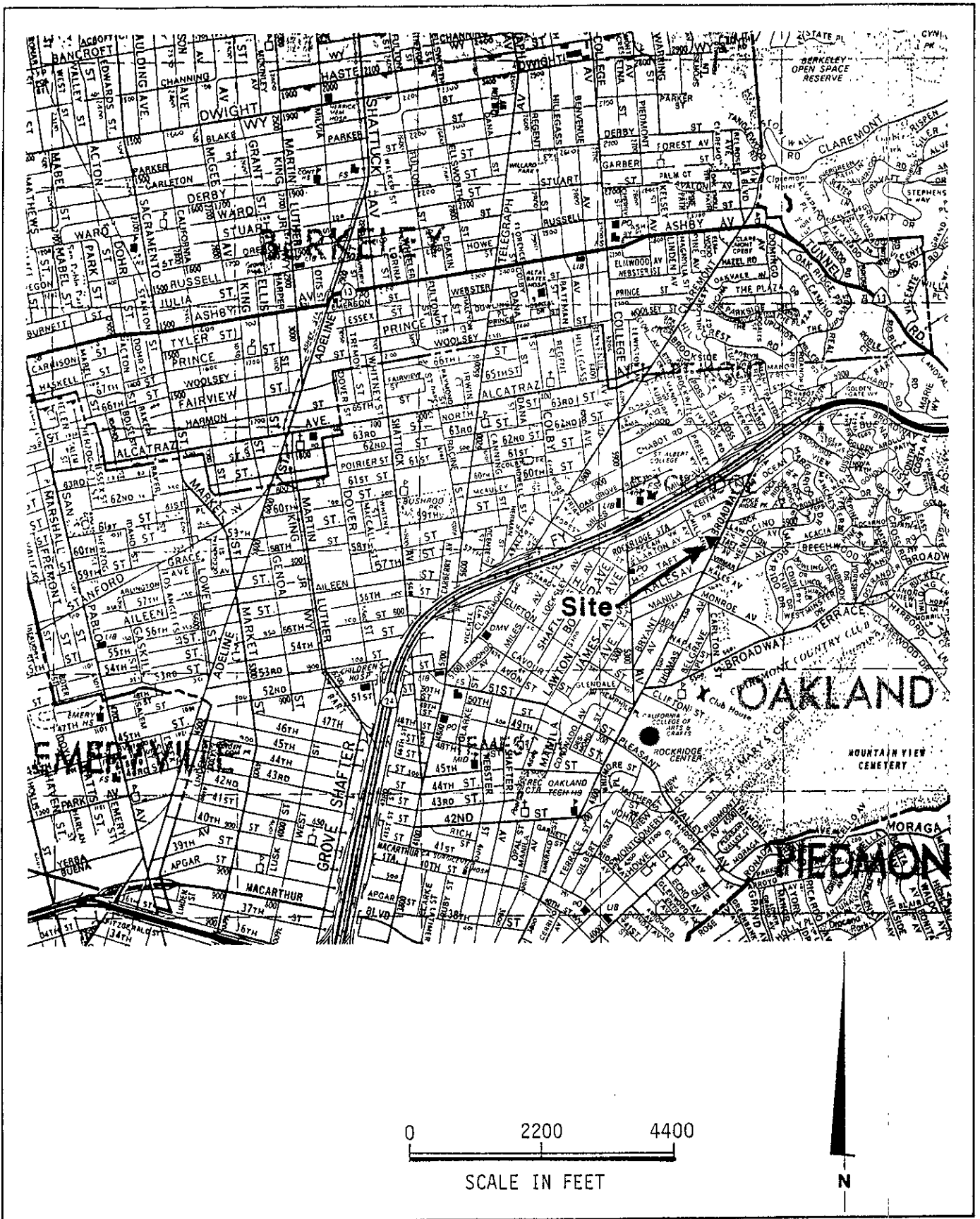
() Reporting limits in parentheses

Table 3. Well-survey and Water-level Data

<u>Well Number</u>	<u>Date</u>	<u>Top of Casing (feet)</u>	<u>Depth to Groundwater (feet)</u>	<u>Relative Groundwater Elevation (feet)</u>
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
	07/27/90		3.60	96.40
	S-2	10/05/89	98.92	4.44
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
07/27/90			4.13	94.79
S-3		10/05/89	101.67	3.97
	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
	07/27/90		3.55	98.12

* 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

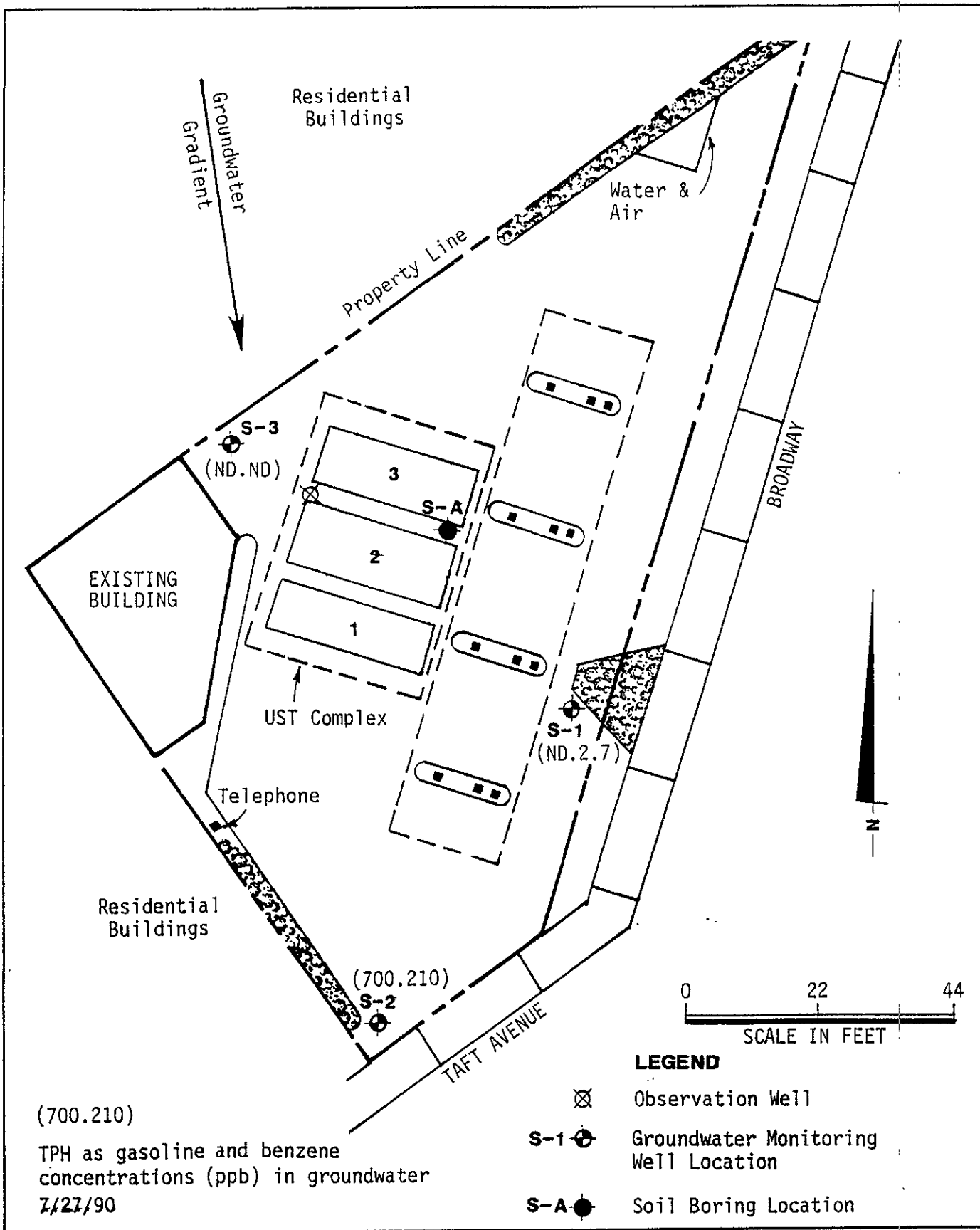
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DRAWN KH
 JOB NUMBER 4022,218,03

APPROVED
[Signature]

DATE 8/89

REVISED DATE



(700.210)
 TPH as gasoline and benzene
 concentrations (ppb) in groundwater
 7/27/90

LEGEND

- ⊗ Observation Well
- S-1 ● Groundwater Monitoring Well Location
- S-A ● Soil Boring Location



Harding Lawson Associates
 Engineering and
 Environmental Services

Site Plan
 Shell Service Station
 5755 Broadway
 Oakland, California

PLATE

2

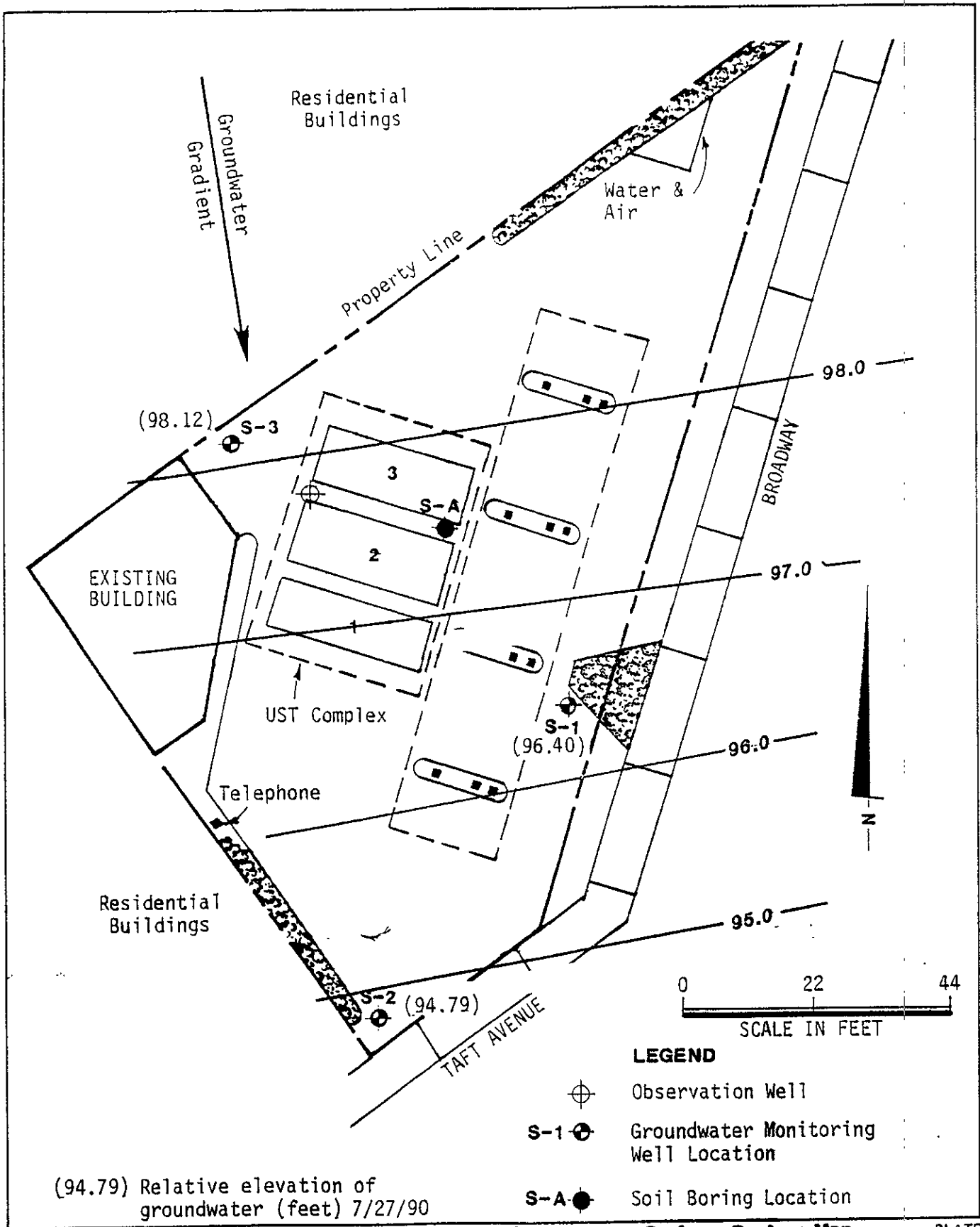
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DATE 7/90

REVISED DATE



Harding Lawson Associates
 Engineering and
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Groundwater Surface Contour Map
 Shell Service Station
 5755 Broadway
 Oakland, California

PLATE

3

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KH

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7/90

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DISTRIBUTION

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QUALITY CONTROL REVIEWER



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