Shell Oil Company

EAST BAY
MARKETING DISTRICT

P.O. Box 4023
Concord, CA 94524
(415) 676-1414

March 25, 1988

Mr. Greg Zentner
Regional Water Quality Control Board
San Francisco Bay Region
1111 Jackson Street, Room 6040
Oakland, California

SUBJECT: SHELL SERVICE STATION
3790 HOPYARD ROAD & LAS POSITAS
PLEASANTON, CALIFORNIA

Dear Mr. Zentner:

Enclosed is a copy of the report issued by Pacific Environmental Group, Inc.,dated March 10 1988, which documents the findings of a soil and groundwater investigation conducted at the subject location. Based upon the information provided in this report, we feel that the Arroyo Mocho Canal will act as a hydraulic barrier between the subject site and the water-supply wells located to the southeast.

As such, Shell Oil Company proposes the following course of action in respect to the subject site.

- Install one additional groundwater monitoring well between the subject site and Arroyo Mocho Canal to obtain additional information about the downgradient water quality.

- Initiate a quarterly groundwater sampling and analysis program for all project wells.

- Submit semi-annual reports to include any analytical results and updated groundwater contour maps.

- After a 1 year period from the initiation of this program, review all available data pertaining to this project and modify the above program if warranted.

If you have any questions, please call me at (415) 676-1414 ext. 127

Very truly yours,

Stanley J. Roller

SJR/jpw

enclosure

cc: Mr. J. Ryan, Gettler-Ryan Inc.
Mr. R. Mueller, Pleasanton Fire Department
Mr. B. Wilkins, City of Pleasanton
Mr. C. Mayfield, ACFCWCD

PACIFIC
ENVIRONMENTAL
GROUP, INC.

March 10, 1988
Project No. 101-08.02

Gettler-Ryan Inc.
1992 National Avenue
Hayward, CA 94545

Attn: Mr. Jeff Ryan

Re: Shell Service Station
Hopyard Rd. at W. Las Positas Blvd.
Pleasanton, California

Gentlemen:

This letter presents the results of a groundwater investigation conducted by Pacific Environmental Group, Inc. (PACIFIC) at the Shell Oil Company service station located at Hopyard Road and West Las Positas Boulevard in Pleasanton, California (see Figure 1). The purpose of the investigation was to further define the extent of the dissolved hydrocarbon plume previously identified at the site. Additionally, PACIFIC performed work to determine whether the Arroyo Mocho Canal appears to act as a hydraulic barrier between the site and water-supply wells located southeast of the site. The scope of this investigation included installation of three additional groundwater monitoring wells, chemical analysis of selected soil samples, groundwater sampling and analysis of all site wells, and a review of construction information and flow conditions of the Arroyo Mocho Canal.

BACKGROUND

In October, 1987 PACIFIC performed a soil and groundwater investigation at the site. The investigation included installation of two groundwater monitoring wells (S-1 and S-2) and two tank backfill interface wells (ST-1 and ST-2) at the site, at the locations shown on Figure 2. Dissolved gasoline was detected in groundwater samples obtained from Wells S-1 and S-2 on November 6, 1987 at concentrations of 920 parts per billion (ppb) and 16,000 ppb, respectively. The findings of that investigation were presented in a letter report dated December 4, 1987.

SITE INVESTIGATION

Procedures

A total of three additional groundwater monitoring wells (S-3, S-4 and S-5) were installed on January 26, 1988. The new wells were installed in an attempt to further define the extent of dissolved product at the site. The well locations are shown on Figure 2.

The borings for the monitoring wells were drilled using eight-inch diameter hollow-stem auger drilling equipment and were logged by a PACIFIC geologist using the Unified Soil Classification System. Boring logs are attached to this report. Soil samples for logging and chemical analysis were collected at five-foot intervals by advancing a California-modified split-spoon sampler with brass liners into undisturbed soil beyond the tip of the auger. The sampler was driven a maximum of 18 inches, using a 140-pound hammer with a 30-inch drop. Soil samples for chemical analysis were retained in brass liners, sealed in glass jars, chilled, and transported to the laboratory with appropriate chain-of-custody documentation.

The soil samples collected were used to perform a head-space analysis in the field for volatile organic compounds. The test procedure involved measuring approximately 30 grams from an undisturbed soil sample, placing this sub-sample in a clean glass jar, and sealing the jar with aluminum foil secured under a ring-type threaded lid. The jar was placed in a warm water bath (75 to 90 degrees F) for approximately twenty minutes. Then the foil was pierced and the head-space within the jar was tested for total organic vapor, measured in parts per million, with an H-NU photo-ionization detector. The results of these tests, in parts per million (ppm), appear on the boring logs.

Each boring was advanced approximately 20 feet into the water-bearing zone. After the drilling, monitoring wells were constructed using 3-inch diameter, Schedule 40 PVC casing and 0.020-inch factory-slotted screen. The screen was placed through the entire saturated section, extending approximately 7 to 10 feet above the static water level. Graded sand pack was placed in the annular space across the screened interval, and it extends approximately 1 to 1-1/2 feet above the screen. A bentonite and concrete seal

extends from the sand pack to the ground surface. A locking cap and protective vault box were installed by Gettler-Ryan Inc. on the top of each well. All site wells were surveyed by a licensed surveyor relative to mean sea level datum.

All site monitoring wells (S-1 through S-5) were sampled by Blaine Tech Services on February 14, 1988. The procedure consisted of first measuring the water level in each well, and checking each well for the presence of floating petroleum product using a clear acrylic bailer. No floating product was detected at the site, so groundwater samples were collected from all wells. The wells were purged of approximately four casing volumes of water using a submersible pump constructed of stainless steel and Teflon materials. Groundwater samples were then collected directly from the pump discharge into the appropriate EPA-approved containers. The sample bottles were labeled, logged onto chain-of-custody documents, and transported on ice to the laboratory for analysis.

The soil and groundwater samples were analyzed for low-boiling hydrocarbons (gasoline) and benzene, toluene, and xylene isomers (BTX). The analyses were performed by the purge-and-trap technique with final detection by gas chromatography using a flame-ionization detector as well as a photo-ionization detector. Certified analytical reports are attached to this letter.

Subsurface Conditions

Soils encountered beneath the site consisted of clay to the total depth explored of 36 feet. Groundwater was first detected at an approximate depth of 14 feet, and stabilized at depths ranging from approximately 12-1/2 to 15-1/2 feet.

No product odor was noted in soil samples collected from Boring S-3. Moderate product odor was noted in soil samples collected from Boring S-4 at 19 feet in depth, and moderate to strong odor was observed in Boring S-5 between 14 and 25-1/2 feet. The results of the H-NU analyses generally supported these observations. Total organic vapor concentrations range from 20 to 254 ppm in Borings S-4 and S-5 between the depths of 9 and 30 feet, with the highest organic vapor levels detected at 20 feet in each of these borings. All other samples collected contained headspace concentrations of 8 ppm or less.

The groundwater flow direction on site, based on water levels collected by PACIFIC on February 16, 1988, is to the south-southeast at an approximate gradient of 0.008. This

flow direction is consistent with regional trends, as reported by the Alameda County Flood Control and Water Conservation District (ACFCD).

Soil and Groundwater Analytical Results

Soil samples collected at the 19- to 20-1/2-foot depth interval in Borings S-3, S-4 and S-5 were submitted to the laboratory for analysis. Gasoline was detected in soil from Borings S-4 and S-5 at 41 parts per million (ppm) and 4,700 ppm, respectively. No gasoline was detected in the soil sample from S-3.

Laboratory analysis of groundwater samples collected on February 14, 1988 revealed dissolved gasoline concentrations ranging from none detected in Well S-3 to 5,100 ppb in Well S-4. The highest concentrations, ranging from 1,800 to 5,100 ppb, were detected in Wells S-1, S-2 and S-4, located near (and downgradient of) the underground storage tank complex. Well S-5, located at the downgradient property boundary, contained 1,000 ppb gasoline. Soil and groundwater analytical results are tabulated on Table 1, and are summarized on the attached certified analytical reports. In addition, gasoline concentrations are plotted on Figure 2.

Well Survey

PACIFIC conducted a well survey in order to identify the location and construction information of any water-supply wells within 1/2-mile of the site. Information obtained from the ACFCD indicates that there are five water-supply wells located within a 1/2-mile radius of the site (see Figure 1). These wells are located to the southeast (downgradient, as measured in the shallow aquifer) of the service station. Wells 1, 2 and 5 belong to ACFCD and are part of a municipal well field, Well 4 belongs to the City of Pleasanton, and the owner of Well 3 is unknown. Wells 1 and 2 are actively used for water supply, Well 4 was inactivated by the City due to the detection of dissolved gasoline in site Wells S-1 and S-2 during PACIFIC's October, 1987 investigation, and Well 5 has not yet had a pump installed. The operational status of Well 3 is unknown. Well depths range from 233 to 750 feet. No information was available regarding the perforated interval or seal depth of the wells. Available well information is presented on Table 2.

Arroyo Mocho Canal

The Arroyo Mocho Canal is located approximately 265 feet south of the site (see Figure 3), and flows to the east. According to Jerry Killingstad of the ACFCD, the Arroyo

Mocho is an improved canal, which has probably been diverted somewhat from its original drainage path. The canal is unlined, and occurrence of water is seasonal.

PACIFIC had the canal surveyed in order to determine the elevations of the groundwater encountered beneath the site and of the canal bottom. The elevation of the base of the canal directly south of the site is 301.6 feet, approximately 12-1/2 feet below the elevation of the groundwater table beneath the site. The water surface elevation in the canal was approximately 302.2 feet on March 4, 1988. A cross-section showing the relationship of the canal to site geology and groundwater conditions is shown on Figure 4. Based on this cross-section, the Arroyo Mocho Canal may act to provide hydraulic separation between the site and the municipal well field. Water levels in the canal and in site wells need to be monitored through the year to evaluate whether this situation is perennial or seasonal.

SUMMARY OF FINDINGS

- The project site is underlain by clay deposits to the total depth explored of 36 feet.

- Groundwater beneath the site occurs at an approximate depth of 14 feet, and flows to the south-southeast at an approximate gradient of 0.008.

- Gasoline concentrations of not-detected, 41 ppm and 4,700 ppm were found in soils from the depth interval of 19 to 20-1/2 feet in Borings S-3, S-4 and S-5, respectively.

- The highest levels of dissolved gasoline (ranging from 1,800 ppb to 5,100 ppb) were found to occur in Wells S-1, S-2 and S-4, located near (and downgradient of) the underground storage tank complex. Well S-5, located on the downgradient property boundary contained 1,000 ppb gasoline.

- There are five water-supply wells located within 1/2-mile downgradient of the site. Two of the wells are active municipal water-supply wells. The minimum well depth is 233 feet. No other construction information was available for these wells.

- The elevation of the water surface at the base of the Arroyo Mocho Canal is approximately 12 feet lower than the surface of the water table beneath the site, suggesting that the canal may act to provide hydraulic separation between the site and the municipal wells. However, this condition needs further evaluation.

If you have any questions regarding the contents of this report, please call.

Sincerely,

PACIFIC ENVIRONMENTAL GROUP, INC.

Erin Garner
Project Geologist

Susan Willhite
Senior Geologist
CEG 1272

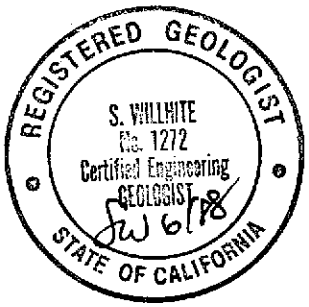


TABLE 1

Summary of Analytical Results

Soil Samples

Boring	Depth (feet)	Gasoline (ppm)	Benzene (ppm)	Toluene (ppm)	Xylenes (ppm)
S-3	19 to 20-1/2	nd	nd	nd	nd
S-4	19 to 20-1/2	41	6.2	nd	5.9
S-5	19 to 20-1/2	4700	50	170	900
Detection Limits		5	0.05	0.1	0.4

Groundwater Samples (Sample Date: 02/14/88)

Well	Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Xylenes (ppb)
S-1	3,500	1,300	<40	500
S-2	1,800	440	<10	140
S-3	nd	nd	nd	nd
S-4	5,100	160	8	730
S-5	1,000	40	86	180
Detection Limits	50	0.5	1	4

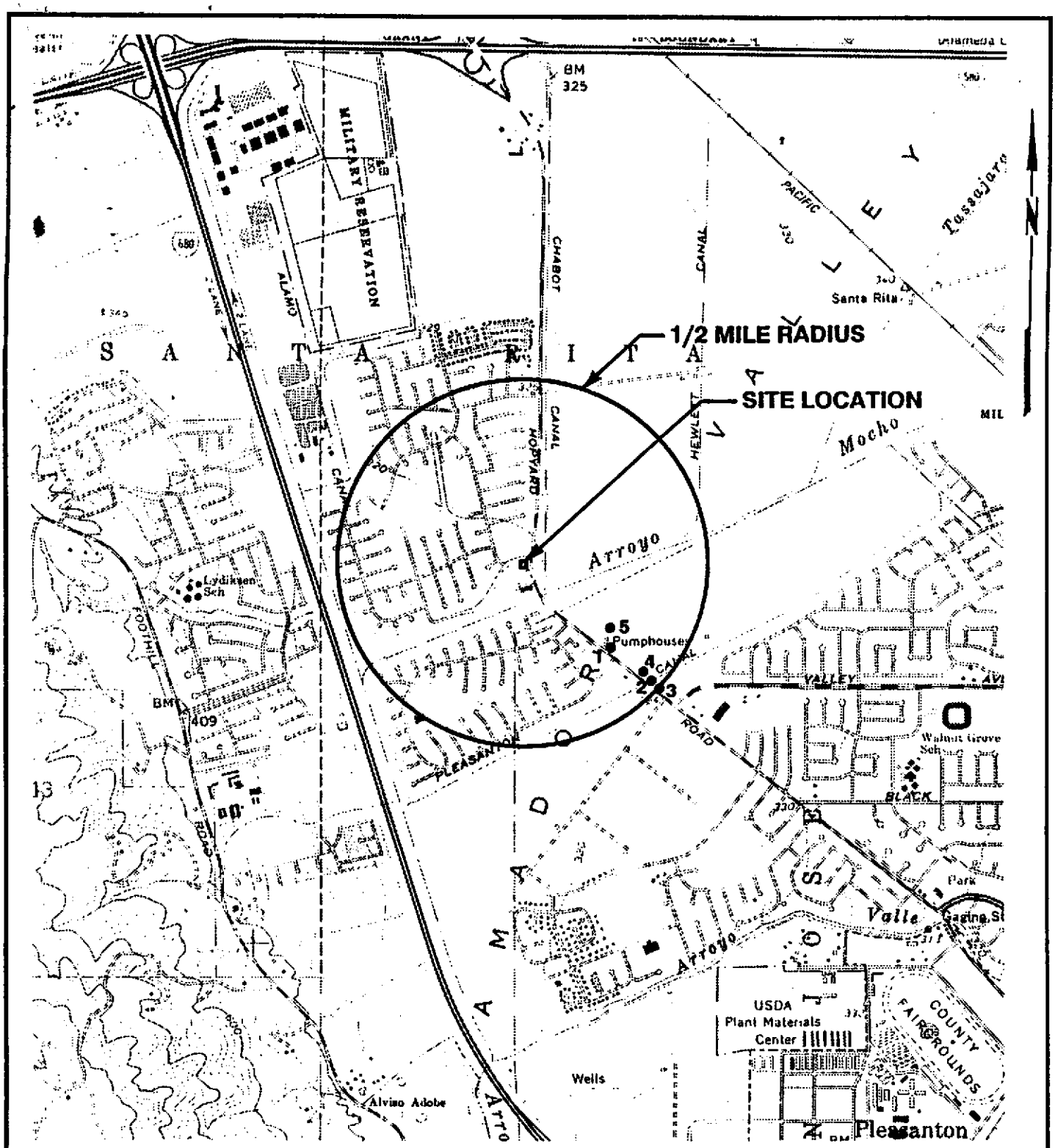
Notes: nd - not detected
ppb - parts per billion
ppm - parts per million

TABLE 2

SUMMARY OF WELL SURVEY DATA

Water-Producing Wells
Within 1/2-Mile Radius of the Site

Map Symbol	Well Number	Well Depth(ft)	Year Drilled	Usage	Status
1	3S1E18A1	389	1986	Municipal	Active
2	3S1E18A2	233	1970	Municipal	Active
3	3S1E18A4	750	1967	?	?
4	3S1E18A5	454	1977	Municipal	Inactive (temp.)
5	3S1E18A6	510	1987	Municipal	No pump yet



LEGEND

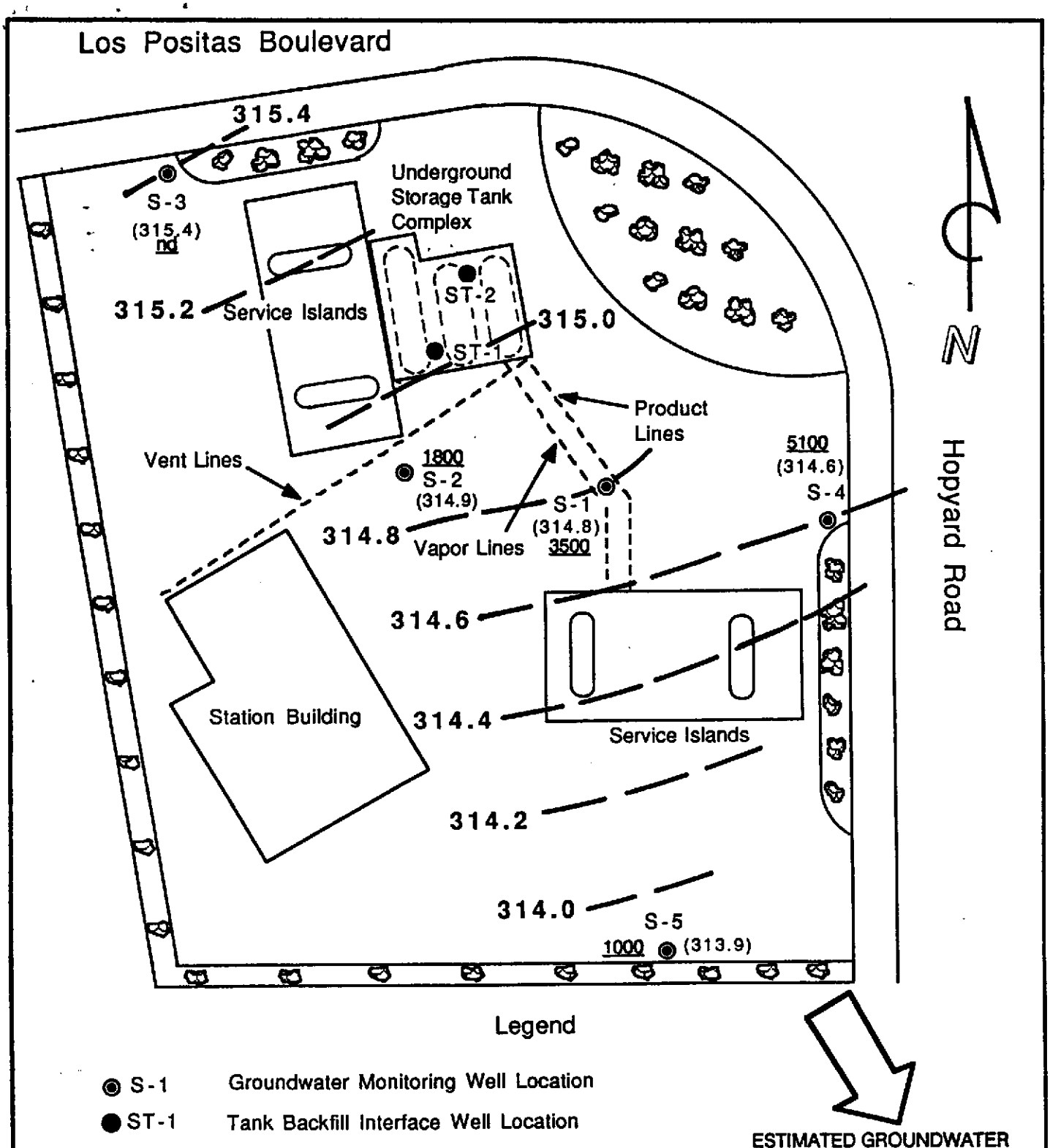
- Water-supply well location

APPROXIMATE SCALE: 1" = 2000'

Base Map From USGS Topographic Map

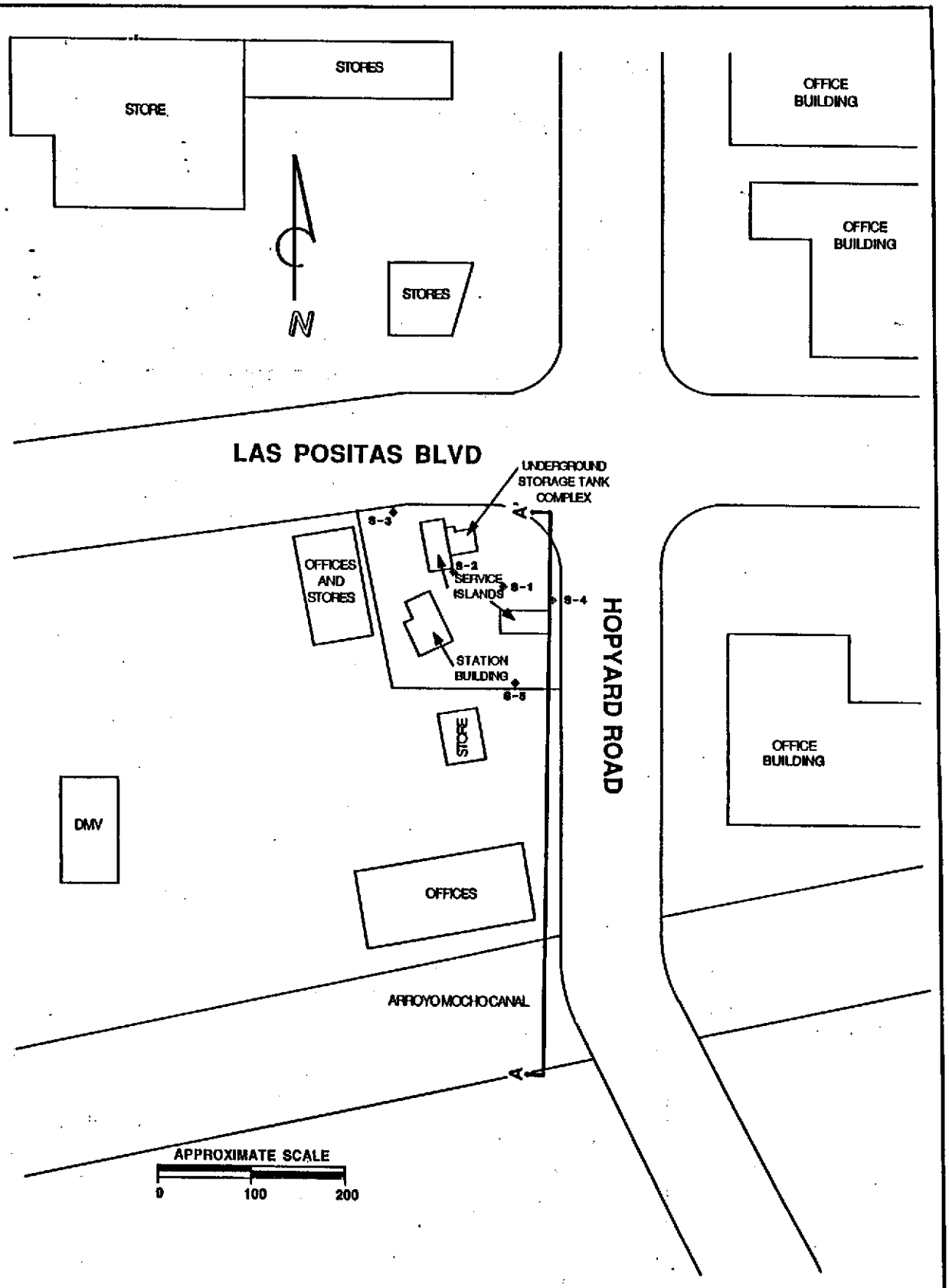
PACIFIC ENVIRONMENTAL GROUP, INC.	**SHELL SERVICE STATION** Hopyard Road and West Las Positas Boulevard Pleasanton, California	FIGURE: **1**
	SITE LOCATION MAP	PROJECT: 101-08.02

SAN JOSE BLUEPRINT CO.
PRINTED ON 1000H-10

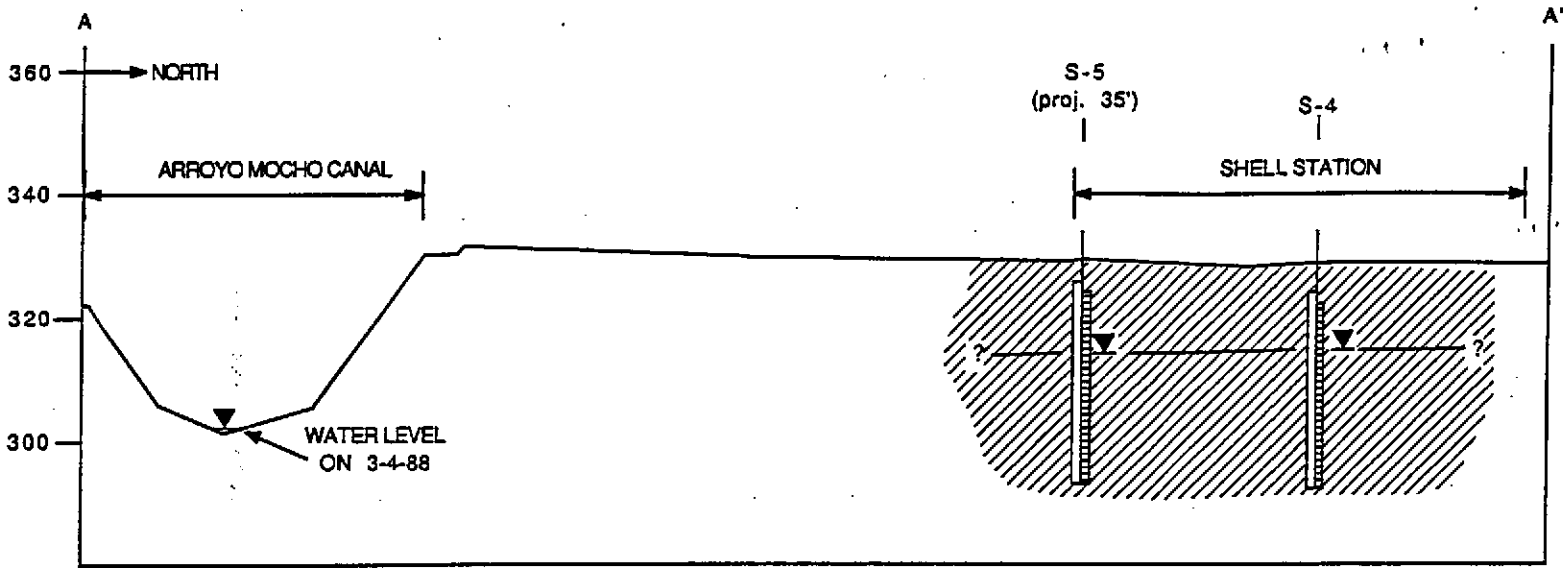


PACIFIC ENVIRONMENTAL GROUP, INC.	**SHELL SERVICE STATION** Hopyard Road and West Las Positas Boulevard Pleasanton, California **SITE MAP**	FIGURE: **2** PROJECT: 101-08.02

SAN JOSE BLUEPRINT CO.
PRINTED ON 1000H-10



PACIFIC ENVIRONMENTAL GROUP, INC.	**SHELL SERVICE STATION** Hopyard Road and West Las Positas Boulevard Pleasanton, California **EXTENDED SITE MAP**	**FIGURE:** 3 **PROJECT:** 101-08.02



LEGEND

GROUNDWATER MONITORING WELL

SCREENDED INTERVAL

GRAVEL PACK

WATER LEVEL (2/14/88)

CLAY DEPOSITS (CL, CH)

NOTE: REFER TO FIGURE 3 FOR CROSS-SECTION LOCATION.

HORIZONTAL SCALE

0 50 100

PROJECT NUMBER

DRAWN BY DATE/NUMBER

REVISIONS

PACIFIC ENVIRONMENTAL GROUP, INC.

SHELL SERVICE STATION
Hopyard Road and West Las Positas Boulevard
Pleasanton, California

CROSS-SECTION A-A'

FIGURE: 4

PROJECT: 101-08.02

WELL LOG
KEY TO ABBREVIATIONS

Drilling Method

HSA - Hollow stem auger
CFA - Continuous flight auger
Air - Reverse air circulation

Gravel Pack

CA - Coarse aquarium sand

Sampling Method

Cal. Mod. - California modified split-spoon sampler (2" inner diameter) driven 18" by a 140-pound hammer having a 30" drop. Where penetration resistance is designated "P," sampler was instead pushed by drill rig.
Disturbed - Sample taken from drill-return materials as they surfaced.
n/a - Not applicable.

Moisture Content

Dr - Dry
Dp - Damp
Mst - Moist
Wt - Wet
Sat - Saturated

Sorting

PS - Poorly sorted
MS - Moderately sorted
WS - Well sorted

Plasticity

L - Low
M - Moderate
H - High

H-NU (ppm)

ND - No detection

Symbols

▽ - First encountered ground water

▼ - Static ground water level

Density

Sands and gravels		Silts and clays	
0 - 4	- Very Loose	0 - 2	- Very Soft
5 - 10	- Loose	3 - 4	- Soft
11 - 30	- Medium dense	5 - 8	- Firm
31 - 50	- Dense	9 - 16	- Stiff
over 50	- Very dense	17 - 32	- Very stiff
		over 32	- Hard

GRAIN-SIZE SCALE

GRADE LIMITS U.S. Standard inches	sieve size	GRADE NAME
		Boulders
12.0		
		Cobbles
3.0	3.0 in.	
		Gravel
0.19	No. 4	
	coarse	
0.08	No. 10	
	medium	Sand
	No. 40	
	fine	
	No. 200	
		Silt
		Clay Size

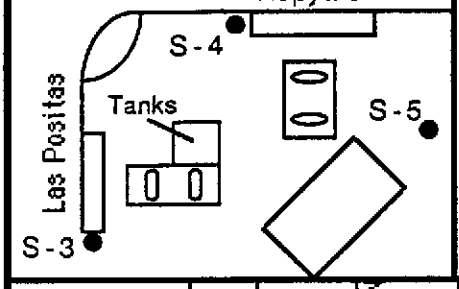
PACIFIC ENVIRONMENTAL GROUP, INC.

Unified Soil Classification System

Primary Divisions			Group Symbol/Graphic	Typical Names
COARSE GRAINED SOILS more than half is larger than #200 sieve	GRAVELS half of coarse fraction larger than #4 sieve	CLEAN GRAVELS (less than 5% fines)	G W	Well graded gravels, gravel-sand mixtures; little or no fines
			G P	Poorly graded gravels or gravel-sand mixtures; little or no fines
		GRAVEL WITH FINES	G M	Silty gravels, gravel-sand-silt mixtures
			G C	Clayey gravels, gravel-sand-clay mixtures
	SANDS half of coarse fraction smaller than #4 sieve	CLEAN SANDS (less than 5% fines)	S W	Well graded sands, gravelly sands, little or no fines
			S P	Poorly graded sands or gravelly sands, little or no fines
		SANDS WITH FINES	S M	Silty sands, sand-silt mixtures
			S C	Clayey sands, sand-clay mixtures, plastic fines
FINE GRAINED SOILS more than half is smaller than #200 sieve	SILTS AND CLAYS liquid limit less than 50%		M L	Inorganic silts and very fine sand, rock flour, silty or clayey fine sands or clayey silts, with slight plasticity
			C L	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
			O L	Organic silts and organic silty clays of low plasticity
	SILTS AND CLAYS liquid limit more than 50%		M H	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
			C H	Inorganic clays of high plasticity, fat clays
			O H	Organic clays of medium to hight plasticity, organic silts
HIGHLY ORGANIC SOILS			P t	Peat and other highly organic soils

Pacific Environmental Group, Inc.

LOCATION MAP



PACIFIC ENVIRONMENTAL GROUP, INC.

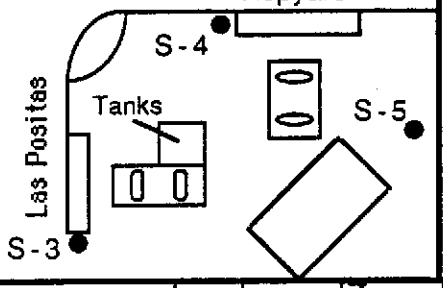
WELL / S-3
BORING NO.
PAGE 1 OF 1

PROJECT NO. 101-08.02
LOGGED BY: C.P.
DRILLING METHOD: HSA
SAMPLING METHOD: CAL MOD
CASING TYPE: Sch 40 PVC
SLOT SIZE: 0.020
GRAVEL PACK: 12 X 20 SAND

CLIENT: G.R. Shell
DATE DRILLED: 1-26-88
LOCATION: Hopyard & Las Positas
HOLE DIAMETER: 8"
HOLE DEPTH: 36'
WELL DEPTH: 36'
WELL DIAMETER: 3"

WELL COMPLETION	MOISTURE CONTENT	H-NU READING	PENETRATION RESISTANCE (BLOWS/FT)	DEPTH (FEET)	SAMPLE	GRAPHIC	SOIL TYPE	LITHOLOGY / REMARKS
CONCRETE				2				ASPHALT & BASEROCK - FILL.
							CL	CLAY; dark olive gray; moderate plasticity; trace coarse sand; roots; firm; no product odor.
BENTONITE	Dp	0.6	PUSH	4				
				6				
				8				
	Dp	3.0	13	10				@9'; as above; ; stiff; no product odor.
				12				
	Dp	2.0	4	14				@14'; as above; medium olive gray; rootholes; soft; no product odor.
				16				
				18				
12 X 20 SAND	Mst	0.0	5	20			CH	CLAY; mottled olive and gray; high plasticity; trace-5% organics; soft; no product odor.
				22				
	Mst	4.0	7	24				@24'; as above; mottled olive gray and black; trace organics; iron oxide staining; firm; no product odor.
				26				
				28				
	Mst	0.3	10	30			CL	CLAY; low plasticity; mottled olive and gray; 10-15% coarse sand; stiff; no product odor.
				32				
	Mst	0.0	11	34				@34'; as above; olive; trace organics; no sand; no product odor.
				36				BOTTOM OF BORING AT 36'
				38				
				40				
				42				
				44				

LOCATION MAP



PACIFIC ENVIRONMENTAL GROUP, INC.

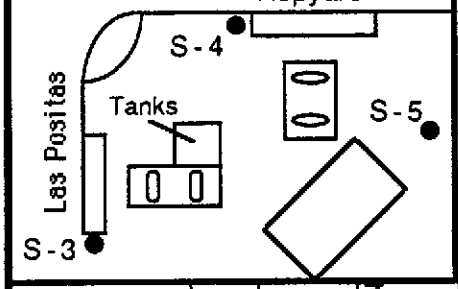
WELL / S-4
BORING NO.
PAGE 1 OF 1

PROJECT NO. 101-08.02
LOGGED BY: C.P.
DRILLING METHOD: HSA
SAMPLING METHOD: CAL MOD
CASING TYPE: Sch 40 PVC
SLOT SIZE: 0.020
GRAVEL PACK: 12 X 20 SAND

CLIENT: G.R. Shell
DATE DRILLED: 1-26-88
LOCATION: Hopyard & Las Positas
HOLE DIAMETER: 8"
HOLE DEPTH: 36'
WELL DEPTH: 36'
WELL DIAMETER: 3"

WELL COMPLETION	MOISTURE CONTENT	H-NU READING	PENETRATION RESISTANCE (BLOWS/FT)	DEPTH (FEET)	SAMPLE	GRAPHIC	SOIL TYPE	LITHOLOGY / REMARKS
CONCRETE								ASPHALT, GRAVEL, & BRICK.
				2			CL	CLAY; olive gray; low plasticity; trace coarse sand; trace organics; trace coarse gravel; firm; no product odor.
BENTONITE	Dp	12.2	PUSH	4				
				6				
				8				
	Dp	20	14	10				@9'; as above; moderate plasticity; no gravel; stiff; no product odor.
				12				
	Dp	78	5	14				@14'; as above; mottled medium brown and olive; low plasticity; trace medium sand; iron oxide staining; charcoal; roots; low plasticity; firm; no product odor; peat lens @14 1/2'.
				16				
				18				
12 X 20 SAND	Dp	188	8	20				@19'; as above; mottled green & olive; 5-10% silt; rootholes; firm; moderate product odor.
				22				
	Mst	110	12	24				@24'; as above; black; moderate plasticity; stiff; no product odor.
				26				
				28				
	Mst	22	14	30			CH	CLAY; dark gray; trace fine gravel; trace fine sand; no product odor.
				32				
	Mst	2.2	10	34				@34'; as above; olive; high plasticity; rootholes; trace organics; stiff; no prodcut odor.
				36				BOTTOM OF BORING AT 36'
				38				
				40				
				42				
				44				

LOCATION MAP



PACIFIC ENVIRONMENTAL GROUP, INC.

WELL / S-5
BORING NO.
PAGE 1 OF 1

PROJECT NO. 101-08.02
LOGGED BY: C.P.
DRILLING METHOD: HSA
SAMPLING METHOD: CAL MOD
CASING TYPE: Sch 40 PVC
SLOT SIZE: 0.020
GRAVEL PACK: 12 X 20 SAND

CLIENT: G.R. Shell
DATE DRILLED: 1-26-88
LOCATION: Hopyard & Las Positas
HOLE DIAMETER: 8"
HOLE DEPTH: 36'
WELL DEPTH: 35 1/2'
WELL DIAMETER: 3"

WELL COMPLETION	MOISTURE CONTENT	H-NU READING	PENETRATION RESISTANCE (BLOWS/FT)	DEPTH (FEET)	SAMPLE	GRAPHIC	SOIL TYPE	LITHOLOGY / REMARKS
								ASPHALT & BASEROCK/GRAVEL.
CONCRETE				2			CL	CLAY; dark olive gray; 10-15% fine gravel; medium plasticity; trace organics; trace medium sand; firm; no product odor.
BENTONITE	Dp	5.9	PUSH	4				
				6				
				8				
	Dp	42	14	10				@9'; as above; dark olive silty; no gravel; trace medium to coarse sand; clay sheared through center of sampler; stiff; faint product odor.
				12				
				14				
	Dp	35	8	16			CH	CLAY; dark bluish gray; medium to high plasticity; trace coarse sand; peaty; 10-15% organics; stiff; moderate product odor (oil).
				18				
12 X 20 SAND	Dp	254	9	20			CL	CLAY; medium brownish gray; moderate plasticity; trace-5% organics; iron oxide staining; rootholes; stiff; visible product sheen; strong product odor.
				22				
	Dp	50	7	24				@24'; as above; mottled gray and olive brown; firm; moderate product odor.
				26				
				28				
	Dp	58	8	30				@29'; as above; dark olive; trace organics; trace medium sand; firm; faint product odor.
				32				@30.5; silt lens.
CAVED				34				
	Dp	8.0	10	36				@34'; as above; medium olive gray; firm; thin lens of silty clay; no product odor.
				38				BOTTOM OF BORING AT 36'
				40				
				42				
				44				

INTERNATIONAL TECHNOLOGY CORPORATION

Gettler-Ryan
1992 National Avenue
Hayward, CA 94545

February 22, 1988

ATTN: Christa Lopez

Following are the results of analyses on the samples described below.

Project Number:	G-R #9685/BTS #88045F1, Shell, Hopyard & West Los Positas, Pleasanton
Lab Numbers:	S8-02-120-01 thru S8-02-120-05
Number of Samples:	5
Sample Type:	Water
Date Received:	2/16/88
Analyses Requested:	Low Boiling Hydrocarbons

The method of analysis for low boiling hydrocarbons is taken from EPA Methods 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 as well as a photoionization detector.

The result for total low boiling hydrocarbons is calculated as gasoline and includes benzene, toluene, ethyl benzene and xylenes.

The E.P.A.'s method for aromatic hydrocarbons (method 602) specifies that the sample be preserved by acidification to pH2 or less as well as refrigeration of the volatile organics analysis containers. The samples listed below had pHs above 2.

IT Santa Clara Laboratory Number	Sample Identification
S8-02-120-01	S-1
S8-02-120-02	S-2
S8-02-120-03	S-3
S8-02-120-04	S-4
S8-02-120-05	S-5

Fred Rouse

FR/gg

5 Pages Following - Tables of Results

cc: Rich Blaine, Blaine Tech Services

IT Santa Clara to Gettler-Ryan
ATTN: Christa Lopez

February 22, 1988

Lab Number: S8-02-120-01
Sample Identification: S-1
Project Number: G-R #9685/BTS #88045F1, Shell,
Hopyard & West Los Positas, Pleasanton

Results - Micrograms per Liter

Total Petroleum Hydrocarbons	Detected	Detection Limit	Identity	Calculated as
Low Boiling Hydrocarbons	3,500.	2,000.	Gasoline	Gasoline
Benzene	1,300.	20.	.....Not Applicable.....	
Toluene	None	40.	.....Not Applicable.....	
Xylenes and ethyl benzene	500.	200.	.....Not Applicable.....	

IT Santa Clara to Gettler-Ryan
ATTN: Christa Lopez

February 22, 1988

Lab Number: S8-02-120-02
Sample Identification: S-2
Project Number: G-R #9685/BTS #88045F1, Shell,
Hopyard & West Los Positas, Pleasanton

Results - Micrograms per Liter

Total Petroleum Hydrocarbons	Detected	Detection Limit	Identity	Calculated as
Low Boiling Hydrocarbons	1,800.	500.	Gasoline	Gasoline
Benzene	440.	5.	.....Not Applicable.....	
Toluene	None	10.	.....Not Applicable.....	
Xylenes and ethyl benzene	140.	40.	.....Not Applicable.....	

IT Santa Clara to Gettler-Ryan
ATTN: Christa Lopez

February 22, 1988

Lab Number: S8-02-120-03
Sample Identification: S-3
Project Number: G-R #9685/BTS #88045F1, Shell,
Hopyard & West Los Positas, Pleasanton

Results - Micrograms per Liter

Total Petroleum Hydrocarbons	Detected	Detection Limit	Identity	Calculated as
Low Boiling Hydrocarbons	None	50.	--	--
Benzene	None	0.5	.....Not Applicable.....	
Toluene	None	1.	.....Not Applicable.....	
Xylenes and ethyl benzene	None	4.	.....Not Applicable.....	

IT Santa Clara to Gettler-Ryan
ATTN: Christa Lopez

February 22, 1988
Page 4 of 5

Lab Number: S8-02-120-04
Sample Identification: S-4
Project Number: G-R #9685/BTS #88045F1, Shell, Hopyard & West Los Positas, Pleasanton

Results - Micrograms per Liter

Total Petroleum Hydrocarbons	Detected	Detection Limit	Identity	Calculated as
Low Boiling Hydrocarbons	5,100.	200.	Gasoline	Gasoline
Benzene	160.	2.	.....Not Applicable.....	
Toluene	8.	5.	.....Not Applicable.....	
Xylenes and ethyl benzene	730.	20.	.....Not Applicable.....	

IT Santa Clara to Gettler-Ryan
ATTN: Christa Lopez

February 22, 1988
Page 5 of 5

Lab Number: S8-02-120-05
Sample Identification: S-5
Project Number: G-R #9685/BTS #88045F1, Shell,
Hopyard & West Los Positas, Pleasanton

Results - Micrograms per Liter

Total Petroleum Hydrocarbons	Detected	Detection Limit	Identity	Calculated as
Low Boiling Hydrocarbons	1,000.	100.	Gasoline	Gasoline
Benzene	40.	1.	.....Not Applicable.....	
Toluene	86.	2.	.....Not Applicable.....	
Xylenes and ethyl benzene	180.	10.	.....Not Applicable.....	

INTERNATIONAL TECHNOLOGY CORPORATION

February 26, 1988

Gettler-Ryan
1992 National Avenue
Hayward, CA 94545

ATTN: Christa Lopez

Following are the results of analyses on the samples described below.

Project Number:	G-R #9685/PEG #101-08.02, Shell, Hopyard & Los Positas, Pleasanton
Lab Numbers:	S8-02-069-01 thru S8-02-069-03
Number of Samples:	3
Sample Type:	Soils
Date Received:	2/8/88
Analyses Requested:	Low Boiling Hydrocarbons

The method of analysis for low boiling hydrocarbons is taken from EPA Methods 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 as well as a photoionization detector.

The result for total low boiling hydrocarbons is calculated as gasoline and includes benzene, toluene, ethyl benzene and xylenes.

Fred Rouse

FR/gg

3 Pages Following - Tables of Results

IT Santa Clara to Gettler-Ryan
ATTN: Christa Lopez

February 26, 1988

Lab Number: S8-02-069-01
Sample Identification: S-3 19-20.5
Project Number: G-R #9685/PEG #101-08.02, Shell, Hopyard & Los Positas, Pleasanton
Extraction Date: 2/9/88

Results

Total Petroleum Hydrocarbons	Parts per Million - dry soil basis			
	Detected	Detection Limit	Identity	Calculated as
Low Boiling Hydrocarbons	None	5.	—	—
Benzene	None	0.05	.....Not Applicable.....	
Toluene	None	0.1	.....Not Applicable.....	
Xylenes and ethyl benzene	None	0.4	.....Not Applicable.....	

IT Santa Clara to Gettler-Ryan
ATTN: Christa Lopez

February 26, 1988

Lab Number: S8-02-069-02
Sample Identification: S-4 19-20.5
Project Number: G-R #9685/PEG #101-08.02, Shell, Hopyard & Los Positas, Pleasanton
Extraction Date: 2/9/88

Results

Total Petroleum Hydrocarbons	Parts per Million - dry soil basis Detected	Detection Limit	Identity	Calculated as
Low Boiling Hydrocarbons	41.	10.	Gasoline	Gasoline
Benzene	6.2	0.1	.....Not Applicable.....	
Toluene	None	0.2	.....Not Applicable.....	
Xylenes and ethyl benzene	5.9	0.8	.....Not Applicable.....	

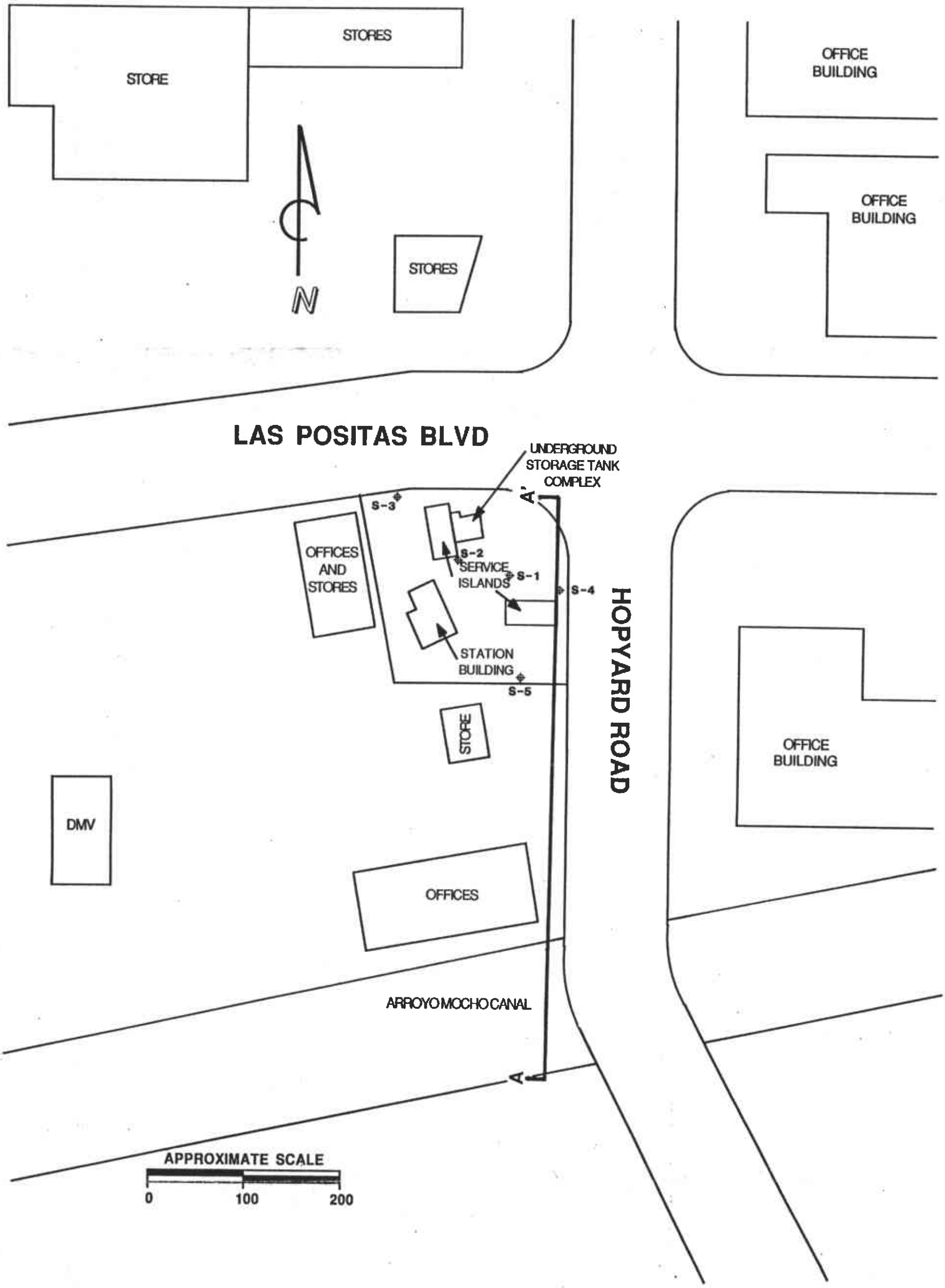
IT Santa Clara to Gettler-Ryan
ATTN: Christa Lopez

February 26, 1988

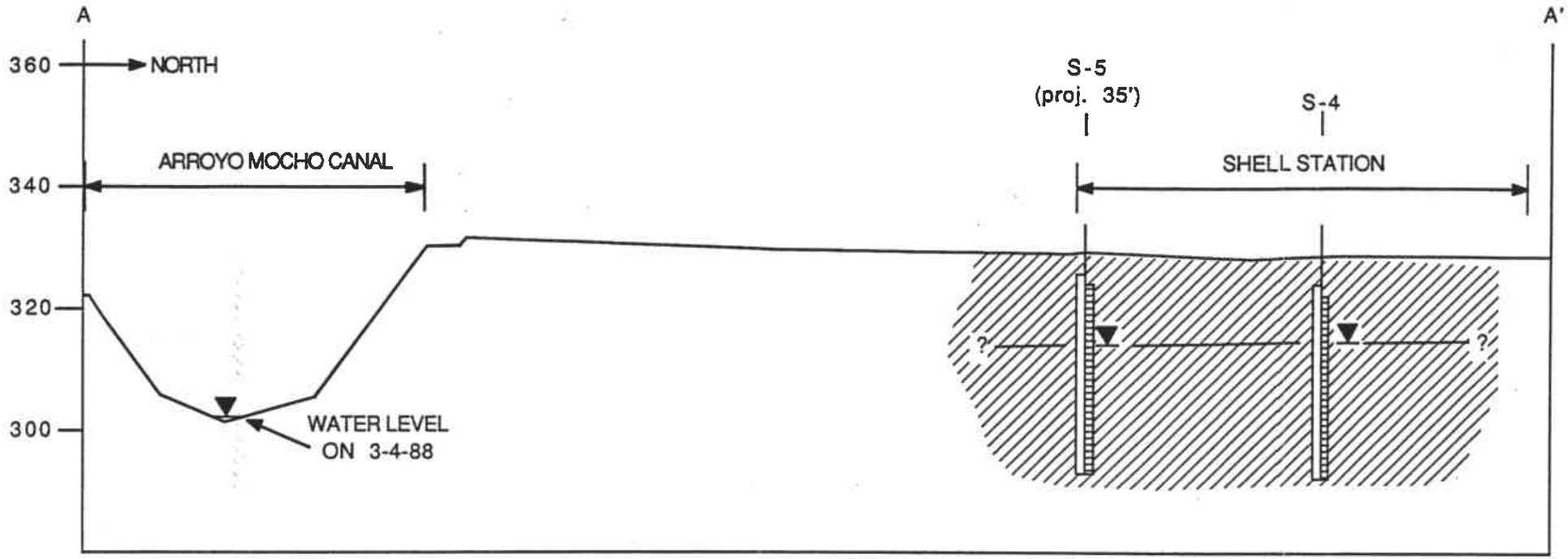
Lab Number: S8-02-069-03
Sample Identification: S-5 19-20.5
Project Number: G-R #9685/PEG #101-08.02, Shell, Hopyard & Los Positas, Pleasanton
Extraction Date: 2/9/88

Results

	Parts per Million - dry soil basis			
Total Petroleum Hydrocarbons	Detected	Detection Limit	Identity	Calculated as
Low Boiling Hydrocarbons	4,700.	1,000.	Gasoline	Gasoline
Benzene	50.	10.	.....Not Applicable.....	
Toluene	170.	20.	.....Not Applicable.....	
Xylenes and ethyl benzene	900.	100.	.....Not Applicable.....	



PACIFIC ENVIRONMENTAL GROUP, INC.	**SHELL SERVICE STATION** Hopyard Road and West Las Positas Boulevard Pleasanton, California	**FIGURE:** **3**
	EXTENDED SITE MAP	**PROJECT:** 101-08.02



LEGEND

GROUNDWATER MONITORING WELL

SCREENDED INTERVAL

GRAVEL PACK

WATER LEVEL (2/14/88)

CLAY DEPOSITS (CL, CH)

NOTE: REFER TO FIGURE 3 FOR CROSS-SECTION LOCATION.

HORIZONTAL SCALE

0 50 100

PROJECT NUMBER

DRAWN BY DATE/NUMBER

REVISIONS

PACIFIC ENVIRONMENTAL GROUP, INC.

SHELL SERVICE STATION
Hopyard Road and West Las Positas Boulevard
Pleasanton, California

CROSS-SECTION A-A'

FIGURE: 4

PROJECT: 101-08.02

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