Oakland City Center
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(415) 893-3600

Woodward-Clyde Consultants

April 7, 1989
8820011A/0127

Mr. John Werfal
Gettler-Ryan Inc.
1992 National Avenue
Hayward, CA 94545-1787

Subject: Proposed Work Plan
Shell Service Station
5251 Hopyard Road
Pleasanton, California

Dear Mr. Werfal:

Gettler-Ryan Inc., as an acting agent for Shell Oil Company, requested Woodward-Clyde Consultants (WCC) to propose a work plan for the subject site to define the extent of shallow soil and shallow groundwater hydrocarbon contamination and collect information necessary to design a remedial plan. The proposed activities described below are designed to determine the groundwater flow direction and rate beneath the site, define the horizontal and vertical extent of contamination, and define the hydrostratigraphic units. The following actions are recommended at the site:

1. Install four groundwater monitoring wells, PS-2 through PS-5, at the locations shown on Figure 1. The soil borings for the wells should be drilled to a depth of not greater than 25 feet below grade to avoid contaminating a potential second aquifer below a depth of 30 feet. Monitoring wells should be screened from a depth of approximately 5 feet to the bottom of the borehole.

2. Collect soil samples in the borings at minimum intervals of 5 feet in Borings PS-2, PS-3, and PS-5. Soil samples should be collected continuously from a depth of 5 to 20 feet below grade in Boring PS-4 to provide detailed stratigraphic information in the estimated down gradient direction from the storage tank complex. One soil sample should be collected from the saturated zone of Boring PS-4 for possible grain size and falling-head permeability analyses. Selected soil samples from all four borings should be analyzed for low boiling hydrocarbons (calculated as gasoline), BTEX, and high boiling hydrocarbons (calculated as diesel).

3. Measure depths to groundwater and/or hydrocarbons in the wells, properly develop the wells, and collect groundwater samples from all the wells at the site. The groundwater samples should also be analyzed for gasoline, BTEX, and diesel. This should be part of a periodic monitoring program.

4. Perform slug tests in Wells S-1, PS-2 and PS-4. This will provide an estimate of the hydraulic conductivity of the soils behind the well screen. This data should aid in designing a remediation system for the site.

5. If significant contamination is detected in any of the soil or groundwater samples, additional borings and/or wells may need to be installed.

The existing structures and monitoring wells at the site are shown on Figure 1. Three vadose zone monitoring wells (V-1, V-2, and V-3) were installed within the fuel storage tank backfill and one groundwater monitoring well (S-1) was installed in the estimated groundwater flow direction from the tank complex by Pacific Environmental Group (1988). Hydrocarbon constituents were not detected by laboratory analysis of soil samples from the site. However, gasoline was detected at 17 milligrams per liter (mg/L) and benzene at 5.1 mg/L in the groundwater sample from Well S-1.

The native soils encountered while drilling were described by PEG as consisting predominantly of dark gray clay from the surface to approximately 30 feet below grade, with clayey sand from 30 to 30.5 feet, the maximum depth drilled at the site. Groundwater was encountered while drilling at approximately 13 feet below grade and stabilized at a depth of 9 feet in Well S-1.

On December 14, 1988, groundwater from all 4 wells at the site was sampled by Gettler-Ryan Inc. Laboratory analyses detected hydrocarbon constituents in all four samples. Gasoline, benzene, and diesel concentrations from each sample are plotted on Figure 1. Well elevations were not provided to WCC to develop this proposal, so a groundwater gradient map is not included. The Gettler-Ryan Inc. groundwater sampling and IT Corporation analytical reports are attached to this letter.

The proposed well locations are designed to define the horizontal extent of soil and groundwater contamination in the estimated upgradient (PS-2), lateral (PS-3 and PS-5), and downgradient (PS-4) groundwater flow directions from the fuel storage tank complex. The vertical extent of contamination should be defined by analyzing selected soil samples for hydrocarbon constituents. If soil contamination is detected at the base of any boring, an additional deep monitoring well should be needed with a narrow screened interval to investigate the vertical extent of contamination.

The soil borings should be drilled using 8-inch diameter hollow-stem, continuous flight augers. Soil samples should be collected in Borings PS-2, PS-3, and PS-5 at depth intervals of not more than 5 feet, starting from the surface. In Boring PS-4, soil samples should be collected continuously

from 5 to 20 feet below grade. The samples should be collected using a modified California sampler driven through the hollow stem of the augers. One sample from each drive should be preserved for laboratory analysis, one sample should be used for a field head-space analysis, and all the samples should be described by a geologist working under the supervision of a California state certified engineering geologist. The sampler should be decontaminated between each drive and the augers should be steam cleaned between each boring.

The well casing should consist of a lower section of 0.020-inch slotted casing with a 6-inch long screw cap on bottom from the base of the boring to approximately 5 feet below grade, with blank casing to near surface grade. Number 2/12 Lonestar Monterey-type sand should be poured in the annulus between the borehole wall and the well casing from the bottom of the well to approximately 1 to 2 feet above the well screen. One foot of bentonite pellets should be added on top of the sand, then water from a municipal supply should be poured into the annulus to hydrate the pellets. The well should then be sealed by filling the remaining annulus with cement grout. A water-tight plug should be inserted into the well casing and a locking cap should be placed on the casing, which should be secured beneath a traffic-rated vault box. The well should later be developed and sampled.

Selected soil samples and one groundwater sample from each well should be sent using chain-of-custody procedures to a Department of Health Services certified laboratory. The samples should be analyzed for low boiling hydrocarbons calculated as gasoline, benzene, toluene, ethyl benzene, and xylenes (EPA Test Methods 8015, 8020, and 5030), and high boiling hydrocarbons calculated as diesel (EPA Test Method 3510).

We appreciate the opportunity to provide consultanting services on this project. Please call if we can be of additional assistance.

Sincerely,

Woodward-Clyde Consultants

Richard W. Ely

Richard W. Ely, R.G. No. 4137
Project Geologist

O. Glenn Heyman

O. Glenn Heyman
Senior Staff Geologist

OGH:jvt
8820011A12 COT

Enclosure

REGISTERED GEOLOGIST
RICHARD W. ELY
No. 4137
Exp. 6/30/90
STATE OF CALIFORNIA

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Enclosure

ATTACHMENTS

Figure 1 Site Plan Showing Existing and Proposed Monitoring Wells, Shell Service Station, 5251 Hopyard Road, Pleasanton, California

Gettler-Ryan Inc., January 10, 1989, Groundwater Sampling Report, Shell Service Station, 5251 Hopyard Road, Pleasanton, California

I.T. Corporation, December 21, 1988, Analytical Report, Shell Service Station, 5251 Hopyard Road, Pleasanton, California

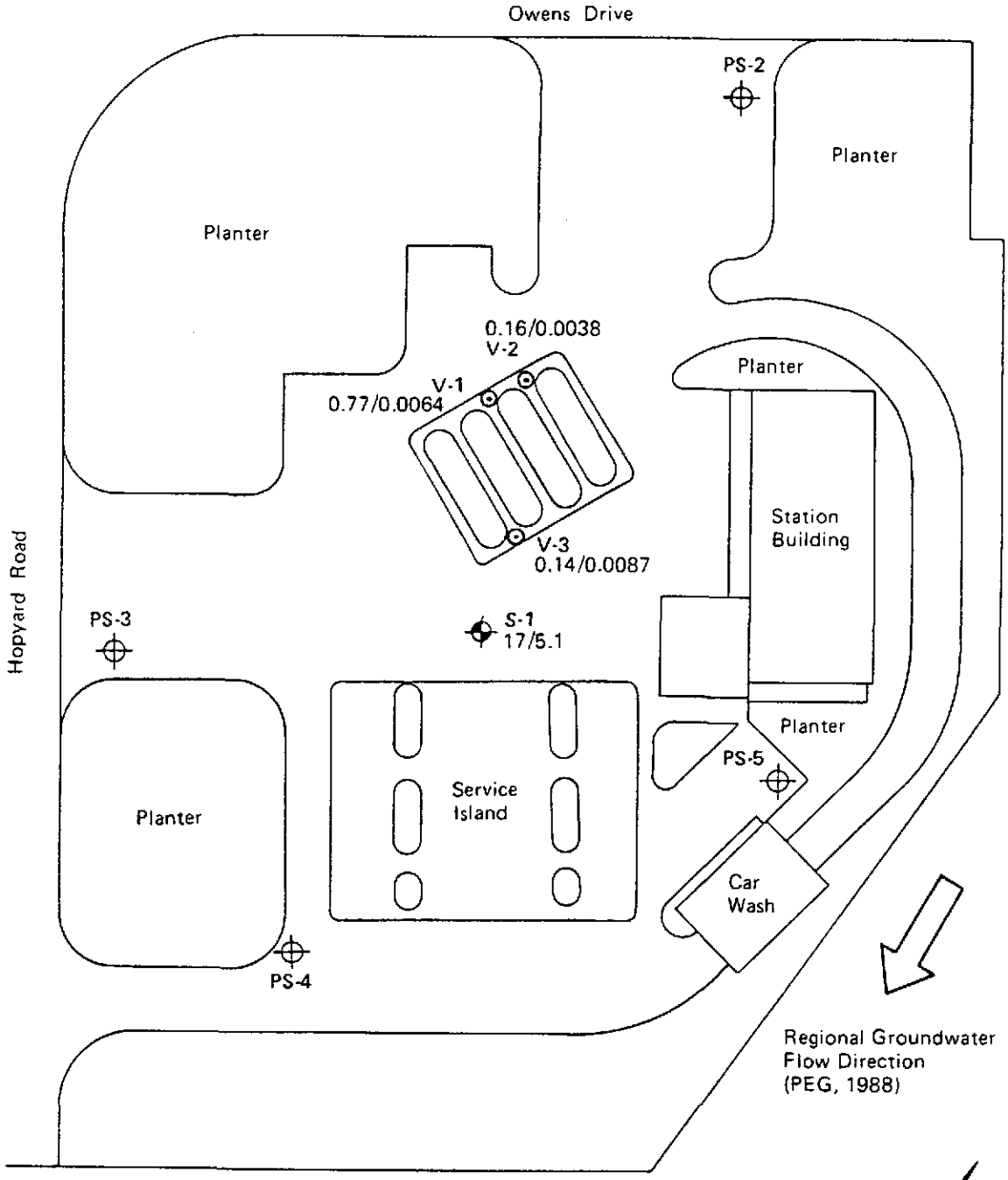

Figure Modified From Pacific Environmental Group (1988)

Project No. 8820011A	Gettler-Ryan	SITE PLAN SHOWING EXISTING AND PROPOSED MONITORING WELLS, SHELL SERVICE STATION 5251 HOPYARD ROAD, PLEASANTON, CALIFORNIA	Figure 1
Woodward-Clyde Consultants			

gettler — ryan inc.

January 10, 1989

GROUNDWATER SAMPLING REPORT

Shell Oil Company
Post Office Box 4023
Concord, California 94520

Referenced Site: Shell Service Station
5251 Hopyard Road
Pleasanton, California

Sampling Date: December 14, 1988

This report presents the results of the groundwater sampling and analytical program conducted by Gettler-Ryan Inc. on December 14, 1988, at the referenced location. The site is occupied by an operating service station located on the southeast corner of Hopyard Road and Owens Drive. The service station has underground storage tanks containing Regular Leaded, Unleaded and Super Unleaded gasoline products and Diesel.

There are currently three vadose zone monitoring wells and one groundwater monitoring well on site at the locations shown on the attached site map. Prior to sampling, all wells were inspected for total well depth, water levels, and presence of separate phase product using an electronic interface probe. A clean acrylic bailer was used to visually confirm the presence and thickness of separate phase product. Groundwater depths ranged from 7.11 to 9.19 feet below grade.

Wells that did not contain separate phase product were purged and sampled. Standard sampling procedure calls for a minimum of four case volumes to be purged from each well. Each well was purged while pH, temperature, and conductivity measurements were monitored for stability. The purge water was contained in drums for proper disposal. Details of the final well purging results are presented on the attached Table of Monitoring Data.

Samples were collected, using a teflon bailer, in properly cleaned and laboratory prepared containers. All sampling equipment was thoroughly cleaned after each well was sampled and steam cleaned upon completion of work at the site. The samples were labeled, stored on blue ice, and transported to the laboratory for analysis. A trip blank, supplied by the laboratory, was included and analyzed to insure quality control. Chain of custody records were established noting sample identification numbers, time, date, and custody signatures.

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The samples were analyzed at International Technology Corporation - Santa Clara Valley Laboratory located at 2055 Junction Avenue, San Jose, California. The laboratory is assigned a California DHS-HMTL Certification number of 137. The results are presented as a Certified Analytical Report, a copy of which is attached to this report.

Tom Paulson
Sampling Manager

attachments

TABLE OF MONITORING DATA
GROUNDWATER WELL SAMPLING REPORT

WELL I.D.	S-1	V-1	V-2	V-3
Casing Diameter (inches)	3	3	3	3
Total Well Depth (feet)	29	14	14	14
Depth to Water (feet)	9.19	7.11	7.25	7.28
Free Product (feet)	none	none	none	none
Reason Not Sampled	----	----	----	----
Ideal 5 Case Vol.(gallons)	38	13	13	13
Did Well Dewater?	no	no	no	no
Volume Evacuated (gallons)	40	17	17	16
Purging Device	Suction	Suction	Suction	Suction
Sampling Device	Bailer	Bailer	Bailer	Bailer
Time	16:14	17:25	17:45	16:49
Temperature (F)*	67.9	67.5	67.5	67.4
pH*	7.00	7.00	7.00	7.10
Conductivity (umhos/cm)*	2510	1066	1081	1089

* Indicates Stabilized Value

INTERNATIONAL TECHNOLOGY CORPORATION

Gettler-Ryan
1992 National Avenue
Hayward, CA 94545

December 21, 1988

ATTN: John Werfal

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

Project:	G-R #83197, Shell, 5251 Hopyard Road and Owen, Pleasanton
Lab Numbers:	S8-12-166-01 thru S8-12-166-05
Number of Samples:	5
Sample Type:	Water
Date Received:	12/15/88
Analyses Requested:	Low Boiling Hydrocarbons, High 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 method of analysis for high boiling hydrocarbons in water is taken from EPA Method 3510. The sample is partitioned with hexane and the resulting extract is examined by gas chromatography using a flame ionization detector.

Fred Rouse

FR/gg

5 Pages Following - Tables of Results

IT/Santa Clara Valley Lab to Gettler-Ryan
ATTN: John Werfal

December 21, 1988

Project: G-R #83197, Shell, 5251 Hopyard Road and Owen, Pleasanton
Lab Number: S8-12-166-Ø1
Sample Identification: S-1

Results - Milligrams per Liter

Total Petroleum Hydrocarbons	Detected	Detection Limit	Calculated as
Low Boiling Hydrocarbons	17.	1.	Gasoline
Benzene	5.1	Ø.Ø8	—
Toluene	Ø.Ø4	Ø.Ø2	—
Ethyl benzene	Ø.57	Ø.Ø2	—
Xylenes	Ø.2Ø	Ø.Ø6	—
High Boiling Hydrocarbons	8.*	1.	Diesel

*Compounds detected and calculated as diesel appear to be the less volatile constituents of gasoline.

IT/Santa Clara Valley Lab to Gettler-Ryan
ATTN: John Werfal

Project: G-R #83197, Shell, 5251 Hopyard Road and Owen, Pleasanton
Lab Number: S8-12-166-02
Sample Identification: V-1

Results - Milligrams per Liter

Total Petroleum Hydrocarbons	Detected	Detection Limit	Calculated as
Low Boiling Hydrocarbons	0.77	0.08	Gasoline
Benzene	0.0064	0.0008	—
Toluene	0.021	0.002	—
Ethyl benzene	0.009	0.002	—
Xylenes	0.087	0.005	—
High Boiling Hydrocarbons	4.5*	0.2	Diesel

*Includes compounds apparently due to gasoline as well as compounds apparently due to diesel.

IT/Santa Clara Valley Lab to Gettler-Ryan
ATTN: John Werfal

Project: G-R #83197, Shell, 5251 Hopyard Road and Owen, Pleasanton
Lab Number: S8-12-166-03
Sample Identification: V-2

Results - Milligrams per Liter

Total Petroleum Hydrocarbons	Detected	Detection Limit	Calculated as
Low Boiling Hydrocarbons	0.16	0.05	Gasoline
Benzene	0.0038	0.0005	—
Toluene	ND	0.001	—
Ethyl benzene	ND	0.001	—
Xylenes	0.004	0.003	—
High Boiling Hydrocarbons	1.0*	0.1	Diesel

*Chromatographic pattern of compounds detected and calculated as diesel does not match that of the diesel standard used for calibration.

IT/Santa Clara Valley Lab to Gettler-Ryan
ATTN: John Werfal

December 21, 1988

Project: G-R #83197, Shell, 5251 Hopyard Road and Owen, Pleasanton
Lab Number: S8-12-166-04
Sample Identification: V-3

Results - Milligrams per Liter

Total Petroleum Hydrocarbons	Detected	Detection Limit	Calculated as
Low Boiling Hydrocarbons	Ø.14	Ø.Ø5	Gasoline
Benzene	Ø.ØØ87	Ø.ØØØ5	—
Toluene	ND	Ø.ØØ1	—
Ethyl benzene	ND	Ø.ØØ1	—
Xylenes	Ø.ØØ3	Ø.ØØ3	—
High Boiling Hydrocarbons	Ø.8*	Ø.1	Diesel

*Chromatographic pattern of compounds detected and calculated as diesel does not match that of the diesel standard used for calibration.

IT/Santa Clara Valley Lab to Gettler-Ryan
ATTN: John Werfal

December 21, 1988

Project: G-R #83197, Shell, 5251 Hopyard Road and Owen, Pleasanton
Lab Number: S8-12-166-05
Sample Identification: Trip Blank 12/9/88

Results - Milligrams per Liter

Total Petroleum Hydrocarbons	Detected	Detection Limit	Calculated as
Low Boiling Hydrocarbons	ND	0.05	Gasoline
Benzene	ND	0.0005	—
Toluene	ND	0.001	—
Ethyl benzene	ND	0.001	—
Xylenes	ND	0.003	—
High Boiling Hydrocarbons	ND	0.1	Diesel

INTERNATIONAL TECHNOLOGY CORPORATION

CHAIN-OF-CUSTODY RECORD

R/A Control No

C/C Control No A 81037

PROJECT NAME/NUMBER Coal City 83197

LAB DESTINATION IT/SCV

SAMPLE TEAM MEMBERS

CARRIER/WAYBILL NO.

Sample Number	Sample Location and Description	Date and Time Collected	Sample Type	Container Type	Condition on Receipt (Name and Date)	Disposal Record No
S-1	well Liquid	12-14-88 1614	Liquid	3-40 ml 2 quart	Good /	
V-1	" "	1725		3-40 1 quart		
V-2	" "	1742		3-40 1 quart		
V-3	" "	1649		3-40 1 quart		
Trip	" "	12-9-88		3-40 1 quart		

Special Instructions: 24 hr Rush

Possible Sample Hazards: ~~Sam~~ None

SIGNATURES: (Name, Company, Date and Time)

1. Relinquished By: 12/15/88 06:08

   Received By: 12/15/88 08.08

2. Relinquished By:

   Received By:

3. Relinquished By:

   Received by:

4. Relinquished By:

   Received By:

WHITE - To accompany samples
YELLOW - Field copy