A.L.

Shell Oil Company

P.O. Box 4848
511 N. Brookhurst Street
Anaheim, California 92803

89 AUG 13 PM 12:47

November 9, 1989

Mr. Ariu Levi
Alameda County Department of Environmental Health
Hazardous Materials Program
80 Swan Way, Room 200
Oakland, CA 94621

Subject: Waste Oil Tank Closure
Shell Oil Service Station
1601 Webster Street
WIC # 204-0072-204

Dear Mr. Levi:

Enclosed is a copy of the Waste Oil Tank Closure Report for the above mentioned site as per your request by telephone on November 8, 1989.

If you have any further questions, please contact me at (714) 520-3713.

Sincerely,

Wendy Howell

Wendy Howell
Consultant, Environmental

1601WEB

Shell Oil Company

P.O. Box 4848
511 N. Brookhurst Street
Anaheim, California 92803

October 17, 1989

Mr. Lawrence Seto
Alameda County Department of Environmental Health
Hazardous Materials Program
80 Swan Way, Room 200
Oakland, California 94621

Re: Shell Oil Service Station
Waste Oil Tank Closures

Dear Mr. Seto:

Enclosed are our consultants' reports documenting waste oil tank closures at the following Shell Oil Company service stations:

1784 150th Street, San Leandro, CA

1285 Bancroft Avenue, San Leandro, CA

2160 Otis Drive, Alameda, CA

1601 Webster Street, Alameda, CA

The reports present previous and current data, the site background and history, site and regional hydrogeologic conditions, and other tank closure activities for waste oil tanks removed from the sites since 1986.

Based on the analytic results, conditions of the removed tanks and tank excavations, the site and regional hydrogeologic conditions and tank closure guidelines existing at the time of removal, Shell Oil requests approval for formal closure of the former excavations.

If you have any questions or would like to meet to discuss these sites, please call me at (714) 520-3713.

Sincerely Yours,

Wendy Howell

Wendy Howell
Consultant, Environmental

WH/wa
cc (w/ Attachments):

Mr. Lester Feldman, California Regional Water Quality Control Board - San Francisco Bay Region, 1111 Jackson Street, Oakland, California 94607

Reviewed 12/21/91 SDS

PROJECT COPY

WEISS ASSOCIATES
Consulting in Geology & Geohydrology
2938 McClure Street, Oakland, CA 94609 415-465-1100

October 13, 1989

Ms. Wendy Howell
Shell Oil Company
P.O. Box 4848
Anaheim, CA 92803

Re: Shell Service Station
WIC #204-007-204
1601 Webster Street
Alameda, California
WA Job #81-434-02

Dear Ms. Howell:

This letter is submitted to document the June 1987 removal of a former waste oil tank at the subject station and how it complies with the tank closure requirements of the California Regional Water Quality Control Board-San Francisco Bay Region (WQCB) and California Administrative Code Title 23 Waters, Chapter 3, Subchapter 16, Article 7.

Summarized below are previous and current data, including the site background, a site history, discussion of site and regional hydrogeologic conditions, descriptions of past and current tank closure requirements, and recommendations for achieving closure of the former waste oil tank excavation.

BACKGROUND

The subject station is located on the northwestern corner of the intersection of Webster Street and Lincoln Avenue in Alameda, California, about one-half mile north of San Francisco Bay. The operating station currently retails gasoline from three 10,000 gallon fiberglass storage tanks located in the northeastern portion of the site adjacent to Webster Avenue. The former waste oil tank was buried immediately northwest of the station building. A site map showing the location of the former waste oil tank is presented as Attachment A.

SITE HISTORY SUMMARY

Shell Oil Company records indicate that a steel 550-gallon waste oil tank was removed from the site in June 1987 by Petroleum Engineering, of Santa Rosa, California, and was replaced with a 550-gallon fiberglass tank. The steel tank was apparently installed in 1962.

Following the tank removal, Blaine Tech Services of San Jose, California, documented the tank condition, collected soil samples from directly beneath the former tank location, and sampled ground water from the tank pit. Ground water was encountered at 9.75 ft depth in the tank excavation. The tank condition was described by the sampling technician as "poor", and field notes describe the tank as having more than 77 holes of various sizes. The Blaine Tech field notes and sampling report are presented as Attachment B.

The native soil samples from beneath the waste oil tank and the ground water samples were submitted to Sequoia Analytical Laboratory of Redwood City, California (Sequoia), and Soil and Water Laboratory of Boulder Creek, California (S&W). The Sequoia and S&W analytic methods and results for soil and ground water are presented in Table 1. The S&W soil sample contained 14 ppm TPH, 133 ppm TOG and 0.029 ppm 1,1,1-trichloroethane (TCA), but no BETX was detected in the Sequoia sample.

Hydrocarbons detected in the water sample from the excavation included 132 ppm TPH, 244 ppm TOG and low concentrations of BTX.

Based on these analytic results, Pacific Environmental Group of Santa Clara, California (PEG), conducted a subsurface investigation at the site in September 1987 to determine whether the compounds detected in the former waste oil tank excavation were in ground water beneath the former tank location. The investigation consisted of drilling one soil boring, installing ground water monitoring well S-1 in the boring, and analyzing soil and ground water samples. The analytic methods and results for soil and ground water from the PEG investigation are included in Table 1. Results of the PEG investigation were submitted to Shell in a report dated October 23, 1987. A copy of this report, including the IT analytic reports, is submitted here as Attachment C.

The soil boring was drilled adjacent to the northeastern side of the waste oil tank pit. Ground water was encountered in the borehole at about 10 ft depth and stabilized in the

TABLE 1. Analytic Results for Soil and Ground Water, Shell Service Station WIC #204-007-204, 1601 Webster Street, Alameda, California

Sample ID	Date Sampled	Sampled By	Analytic Lab	Analytic Method	TPH	BETX	TOG	PCBs	VOCs	SVOCc	Metals
					<----------parts per million--------->						
Soil #1	6-26-87	BT	S&W	3550/5020/8010	14	NA	133	NA	*3	NA	NA
Soil #1	6-26-87	BT	SEQ	8020	NA	<0.05	NA	NA	NA	NA	NA
Water #2	6-26-87	BT	S&W	8015/601/503E	132	NA	244	NA	*4	NA	NA
Water #2	6-26-87	BT	SEQ	602	1.6	*5	NA	NA	NA	NA	NA
S-1 Water[2]	9-7-87	PEG	IT	624	NA	<0.005	NA	NA	*6	NA	NA
S-1 Water[2]	9-11-89	WA	IT	8015/8020/503E GC/624/625/6010	<0.05	ND[3]	<1	<0.5	ND[1]	ND[2]	*7
S-1, 4'	9-4-87	PEG	IT	8015/503E	50	NA	130	NA	NA	NA	NA
S-1, 9.5'	9-4-87	PEG	IT	8015/503E/8240	<10	<0.005	30	NA	ND[1]	NA	NA
S-1, 14.5'	9-4-87	PEG	IT	8015/503E	<10	NA	13	NA	NA	NA	NA

Abbreviations:

TPH = Total Petroleum Hydrocarbons
B = Benzene
E = Ethylbenzene
T = Toluene
X = Xylenes
VOCs = Volatile Organic Compounds
NA_1 = Not Assayed
ND_1 = Not detected at detection limits between 0.005 and 0.020 ppm
ND_2 = Not detected at detection limits between 0.010 and 0.050 ppm
ND_3 = Not detected at detection limits between 0.0005 and 0.0003 ppm
BT = Blaine Tech Services, San Jose, CA
PEG = Pacific Environmental Group, Santa Clara, CA
S&W = Soil and Water Laboratory, Boulder Creek, CA
SEQ = Sequoia Analytical Labs, Redwood City, CA
IT = International Technology Corp., Santa Clara, CA
WA = Weiss Associates

Analytic Method:

3550 = Sonification Extraction
5020 = Headspace Extraction
8010 = Gas Chromatography with "Hall" Detector
8020 = Gas Chromatography with Photoionization Detector
8015 = Gas Chromatography with Flame Ionization
503E = Gravimetric Quantitation of Non-volatile Hydrocarbons
602 = Gas Chromatography/Mass Spectroscopy
8240 = Gas Chromatography/Mass Spectroscopy
625 = Gas Chromatography/Mass Spectroscopy
624 = Gas Chromatography/Mass Spectroscopy
6010 = Inductively Coupled Plasma Spectroscopy (ICP)

Footnotes:

[1] = Water sample from tank excavation
[2] = Water sample from monitoring well S-1
*[3] = 29.4 ppb 1,1,1-trichloroethane
*4 = 10.55 ppb 1,1,1-trichloroethane and 58.73 ppb methylene chloride
*5 = 0.ØØ37 ppm benzene, 0.045 ppm toluene, 0.2 ppm xylenes
*6 = 0.12 ppm acetone
*7 = 0.02 ppm chromium and 0.03 ppm zinc

monitoring well at about 8.5 ft depth. Soil samples collected from the boring at depths of about 4, 9.5, and 14.5 ft were submitted by PEG to International Technology Corporation of Santa Clara, California (IT) for analysis. TPH was detected at 50 ppm in soil from 4 ft depth, and TOG was detected in all samples, to a maximum of 130 ppm in the 4 ft depth sample.

A ground water sample collected by PEG from monitoring well S-1 was analyzed by IT for VOCs. The sample contained 0.12 ppm acetone.

On September 11, 1989, WA environmental technician Todd Pearson collected ground water samples from well S-1, and submitted them to IT for analysis. IT analyzed the water samples for all the compounds specified in the most recent tank closure guidelines.[1] Prior to the sampling, the depth to water in the monitoring well was about 9.8 ft. Chromium and zinc were detected in the ground water sample just above the detection limits, at 0.02 ppm and 0.03 ppm, respectively. Hydrocarbons, PCB's, VOCs and SVOCs were not detected in the ground water. The IT analytic methods and results are included in Table 1, and the IT laboratory analytic reports and chain-of-custody document are presented as Attachment D.

SITE HYDROGEOLOGIC CONDITIONS

To estimate the stratigraphy, ground water flow direction and the approximate ground water depth in the site vicinity WA:

- Observed neighboring sites and reviewed local and state agency files to determine whether any water wells were nearby,
- Researched local and regional hydrogeologic data, and
- Measured depth to water in the existing site monitoring well.

[1] Alameda County Flood Control and Water Conservation District, 1988, Geohydrology and Groundwater - Quality Overview, East Bay Plain Area, Alameda County, California, 205(J) Report, 83 pp. and 6 appendices.

Results of this work indicate:

- One ground water monitoring well is on the Shell property, adjacent to the location of the former waste oil tank.

- Alameda County Flood Control and Water Conservation District (Zone 7) driller's report files indicate 22 wells within one-half mile of the site.

- Based on water level data obtained from Zone 7, the California Department of Water Resources (DWR), the WQCB, the PEG subsurface investigation, and recent measurements by WA, unconfined ground water in the upper water-bearing zone occurs at a depth of about 8 to 10 ft directly beneath the site. Since only one ground water monitoring well is on the subject site, and our review of local regulatory agency files indicates that no ground water investigations have been conducted for neighboring sites, the specific ground water gradient for this site cannot be determined.

- The Zone 7 resource document cited above indicates that the ground water flow direction in the deeper regional water-bearing zone is to the west-southwest.

- Based on the PEG boring log, in the vicinity of the former waste oil tank the site is underlain by sand, with occasional interbeds of clay, to a depth of at least 20.5 ft. According to the Zone 7 report cited above, these sediments are associated with the Merritt Sand, an unconsolidated unit made up of beach and near-shore deposits. The Merritt Sand contains some groundwater, but is not considered a primary source of supply because of its limited areal extent and thickness. The main water-bearing unit for the region is a thick Pleistocene alluvial deposit that extends beneath the entire East Bay Plain Area.

CLOSURE REQUIREMENTS

A 1985 San Francisco Bay Region WQCB tank removal and fuel leak guidance document[2] requires documentation of the integrity of the tank and tank piping, the condition of the tank excavation, collection of soil samples beneath the tank, and analysis of the samples for hydrocarbons. This document requires monitoring well installation only if greater than 100 ppm hydrocarbons are detected in the soil samples, but does not specifically address waste oil tank removals.

According to a June 2, 1988 (revised May 1989), Northern California WQCB guidance document,[3] if greater than 100 ppm hydrocarbons are detected in soil samples from beneath the tank, or hydrocarbons are detected in ground water or in soil below the seasonal high ground water level, a soil and/or groundwater investigation is required. At least one well located in the downgradient direction from the tank is required for the ground water investigation.

The 1988 WQCB guidance document also requires specific EPA-approved chemical analyses of soil and/or ground water samples collected during tank removal. For waste oil tanks, required analyses include gasoline and diesel-range hydrocarbons as well as chlorinated hydrocarbons, benzene, ethylbenzene, toluene and xylenes (BETX), oil and grease, selected metals and, in some cases, semi-volatile organics including polychlorinated biphenols (PCBs).

SITE STATUS WITH RESPECT TO CLOSURE REQUIREMENTS

The results of the previous work at the site and WA's hydrogeologic research indicate:

---

[2] Eisenberg, D.M., A.W. Olivieri, et al., September 1985, Guidelines for Addressing Fuel Leaks, California Regional Water Quality Control Board - San Francisco Bay Region; 24 pp and 3 appendices.

[3] North Coast, San Francisco Bay and Central Valley Regional Water Quality Control Boards, June 2, 1988, (Revised May 1989), Regional Board Staff Recommendations for Initial EValuation and Investigation of Underground Tanks, 18 pp.

- Fuel hydrocarbons and oil and grease above 100 ppm were in soil directly beneath the removed waste oil tank, and in a soil boring drilled adjacent to the tank excavation.

- The waste oil tank was in poor condition at the time of its removal.

- Ground water from the tank pit collected immediately after the tank excavation contained 132 ppm TPH, 244 ppm TOG and low concentrations of aromatics..

- The ground water depth beneath the site is approximately 8 to 10 ft.

- Since greater than 100 ppm hydrocarbons were detected in the soil samples collected beneath the removed tank, and hydrocarbons were detected in the water sample from the tank excavation, additional subsurface investigation was required at this site following the tank removal. Ground water monitoring well S-1 was installed adjacent to the former excavation apparently to satisfy the WQCB requirements for the additional subsurface investigation.

- A ground water sample collected from well S-1 on September 11, 1989, was analyzed for the compounds specified in the June 2, 1988 WQCB guidance document. This ground water sample contained no hydrocarbons, PCB's or other volatile or semi-volatile organic compounds, but did contain trace concentrations of chromium and zinc. Since acetone was not detected in the September 1989 sample analysis and it is a common laboratory extraction chemical, the acetone detected in the September 1987 sample was probably a result of laboratory cross-contamination.

- The shallow ground water gradient in the site vicinity is uncertain, but deeper regional ground water flows to the west-southwest.

- The PEG boring logs indicate that the site is underlain by sand interbedded with thin layers of clay.

RECOMMENDATIONS

Based on these site characteristics, and recent analytic results for ground water, WA recommends that Shell Oil petition for closure of the former excavation by submitting this report to the following agencies:

Alameda County Department of Environmental Health
Hazardous Materials Program
80 Swan Way, Room 200
Oakland, California 94621
Attn: Mr. Edgar Howell

California Regional Water Quality Control Board - San Francisco Bay Region
1111 Jackson Street
Oakland, California 94607
Attn: Mr. Lester Feldman

We are pleased to provide hydrogeologic consulting services to Shell Oil and trust this submittal meets your needs. Please call if you have any questions or comments.

Sincerely,
Weiss Associates,

Joseph P. Theisen by KCS

Joseph P. Theisen
Project Geologist

Richard B. Weiss
Principal Hydrogeologist

REGISTERED GEOLOGIST
RICHARD B. WEISS
No. EG 1112
CERTIFIED ENGINEERING GEOLOGIST
STATE OF CALIFORNIA

JPT/RBW:ag

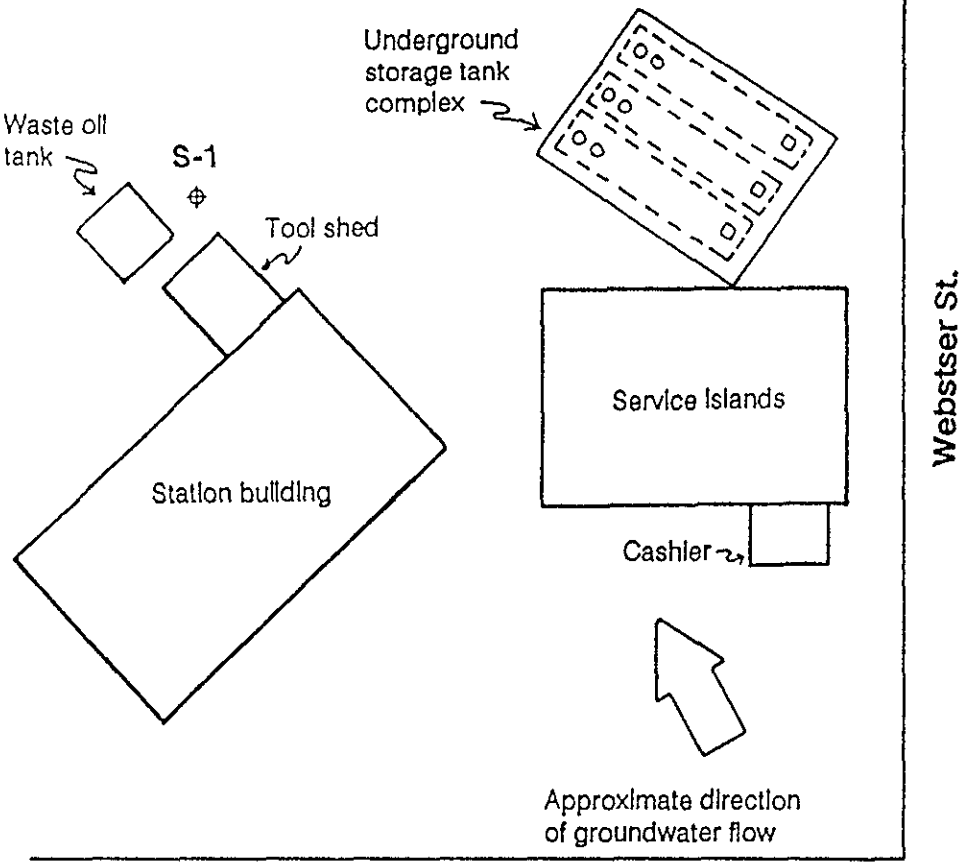
F:\ALL\SHELL\434L1OC9.WP

Encl.: Attachment A - Site Map
Attachment B - Blaine Tech Services Field Notes and Sampling Report
Attachment C - PEG Subsurface Investigation Report
Attachment D - IT Analytic Reports and Chain-of-Custody

ATTACHMENT A

SITE MAP

(*from* Pacific Environmental Group,
Subsurface Investigation Report,
Shell Service Station, 1601 Webster St., Alameda, CA,
October 23, 1987,
6pp. and 2 attachments)



LEGEND

S-1 ⊕ GROUNDWATER MONITORING WELL LOCATION

Not to scale

PACIFIC ENVIRONMENTAL GROUP, INC.

SHELL SERVICE STATION
1601 Webster and Lincoln
Alameda, California

SITE PLAN

FIGURE
1
Project No.
100-84.01

ATTACHMENT B

BLAINE TECH SERVICES FIELD NOTES AND SAMPLING REPORT

BLAINE
TECH SERVICES INC.

1370 TULLY RD., SUITE 505
SAN JOSE, CA 95122
(408) 995-5535

June 26, 1989

Shell Oil Company
P.O. Box 4848
511 North Brookhurst Street
Anaheim, CA 92803

Attn: Peter J. Pugnale
Area Engineer--Environmental
Western Distribution Area

SITE:
Shell Service Station
1601 Webster Street
Alameda, California

PROJECT:
Archival search for previously unpublished notes made during waste oil tank removal related sampling on

June 26, 1987 Sampling Report 87177-B-1

DOCUMENT PACKAGE 87177-B-1.ADD

Blaine Tech Services Inc. is an independent third party that performs tank removal sampling, groundwater monitoring well sampling and grab sampling services throughout central and northern California. The scope of services is intentionally limited to those that provide objective information. Unlike consulting/remediation vendors who have a complete battery of related investigation, evaluation, and remediation services which they hope to use, Blaine Tech Services, Inc. is only in the business of supplying high quality sampling and documentation. In order to preserve the objectivity necessary for the proper and impartial performance of this work and avoid implicit conflicts of interest, Blaine Tech Services, Inc. does not participate in the interpretation of analytical results or engage in the marketing of remediation systems of any kind.

LIMITATIONS

This information was compiled in response to your request for any additional and potentially useful unpublished notes made by our personnel during the waste oil tank removal project. In order to give an unfragmented presentation, we have assembled a package of *all* the applicable information. The previously unpublished notations are presented along with any existing photographs of the work in progress, followed by a complete reproduction of the original Sampling Report, the chain of custody, and the certified analytical laboratory reports.

Please bear in mind that the present search of our files is a separate scope of work from the original tank removal sampling which was completed with the issuance of our Sampling Report 87177-B-1. It is prudent to remember that this new work carries with it the usual dangers that are inherent in all archival research. In particular, there are two distinct problems that will impede any attempt to make substantive use of the informal notes which have been drawn from our files.

> First, the unpublished information was considered, at the time of its collection, to be ancillary to the core information issued in the formal Sampling Report. After so much time has elapsed it would be difficult to justify elevating those casual contemporaneous notations to a more authoritive status.
>
> Second, the information contained in those casual notes was not collected in a formal and systematic fashion that would allow all parties to have a high degree of confidence that the notes accurately represent *all* the conditions at the site which may now (after several years) be deemed important. In this regard, the primary skepticism that must be applied to the information is not that it is, necessarily, inaccurate but that it *is*, necessarily, incomplete.

These limitations suggest that the previously unpublished notations will mainly be of use in corroborating information available from other sources (such as the already issued reports), but will probably not alter the ranking of the site established by laboratory results and accepted regulatory criteria. These constraints should be taken into account when requesting archival searches and, especially, when evaluating the utility of the unpublished information in relationship to the cost of obtaining it.

BACKGROUND

Blaine Tech Services, Inc. was contacted to perform the collection of samples at this site, and to transport the samples to a state licensed laboratory. The brief report that was subsequently issued followed the standard short form format being used by our firm at that time. Though sparse by contemporary standards, this abbreviated report format had been developed at the request of the RWQCB and was used as a model by several San Francisco Bay area regulatory agencies.

Hired primarily to perform sampling (rather than documenting the entire sequence of events involved in the tank removal process), our personnel directed their documentation efforts mainly to establishing and recording the location from which the sample material was collected. Other data was collected as it was available and as our personnel had time to record it. QC work was directed to verifying the correctness of information in the written reports and did not address the casual notes and comments entered into the file by our field personnel.

ADDITIONAL NOTES ON SAMPLING EVENT 87177-B-1

Waste oil tank removal sampling June 26, 1987

Mr. Ray Newsome was the Shell engineer receiving reports on the work at the site. However, work at the site was organized and coordinated by Crosby & Overton. Crosby & Overton made the phoned request for Blaine Tech Services, Inc. to send sampling personnel to the site.

Though the Alameda County Health Department shares regulatory authority over the site with the RWQCB and the City of Alameda Fire Department, only the Fire Department had a representative at the site during the actual tank removal work. Lieutenant Steven McKinley, Alameda Fire Department, Bureau of Fire Prevention, Fire Investigation Unit observed the removal and directed sampling. His phone number was given on his business card as (415) 522-4100 ext. 245.

Notations not summarized in our report include the following:

During the removal of the tank from the pit, a black oily liquid was observed pouring out of holes in tank and running back into the pit. Subsequent inspection of the tank revealed more than 77 holes of various sizes.

Free oil was found standing in the bottom of the pit at 6.75' below grade.

Further excavation revealed what appeared to be a black and green horizon at about 8.0' below grade. This was taken to be a capillary zone. Standing water was measured at 9.75' below grade.

There was a petroleum sheen noted on the surface of the water standing in the excavation (9.75').

At the request of Lt. McKinley, a (capillary zone) soil sample was obtained from a depth of 9.5' below grade which was just above the surface of the water. A subsurface water sample was collected from a depth of between 12.0' and 13.0' below grade using a proprietary device which opens and closes the sample container below the surface in the same manner as an EPA weighted bottle sampler.

An RWQCB Checklist For Soil And Groundwater Sampling During Tank Removal was completed.

1) The question regarding the review of inventory records was marked not applicable.

2) The question regarding a visual inspection of the tank for holes or leakage upon removal was marked yes.

3) A visual inspection of the associated piping was marked as not applicable.

4) Visual inspection of the excavation was checked off as having been done.

5) The question regarding collection of two soil samples from beneath each fuel tank was checked as not applicable.

6) The question about whether appropriate sample handling techniques were used was answered yes.

7) The question regarding the collection of one soil sample from the most obviously contaminated area to be analyzed for TPH, oil/grease, and volatile organic compounds (EPA 8240) was checked off (yes) with the notation that the Fire Department inspector had specified (or allowed) different analyses which were EPA 8020 for the capillary zone soil and EPA 602 for the water sample.

8) Collection of a representative sample of the representative fuel for use as a laboratory standard was checked no.

9) The question regarding a high water table and the collection of soil samples from the sidewalls and a water sample was checked yes.

10) Preparation of a site plan was answered with a yes.

11) Submission to a certified laboratory under a chain of custody was answered with a yes.

12) Our personnel checked not applicable in regard to the completion of an Unauthorized Release Form.

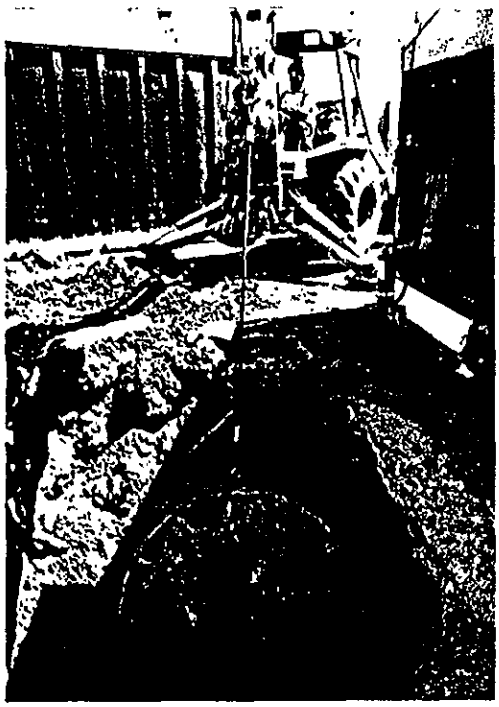
13) The question regarding which documents and notifications had been forwarded to the RWQCB was lined through, indicating that our representative felt the question was not applicable.

A series of fifteen (15) color photographs record the uncovering and removal of the tank, the small puddle of free oil in the bottom of the pit, and the additional excavation which extended the bottom of the pit down to and below the surface of the groundwater. Lieutenant McKinley is shown observing the additional excavation work.

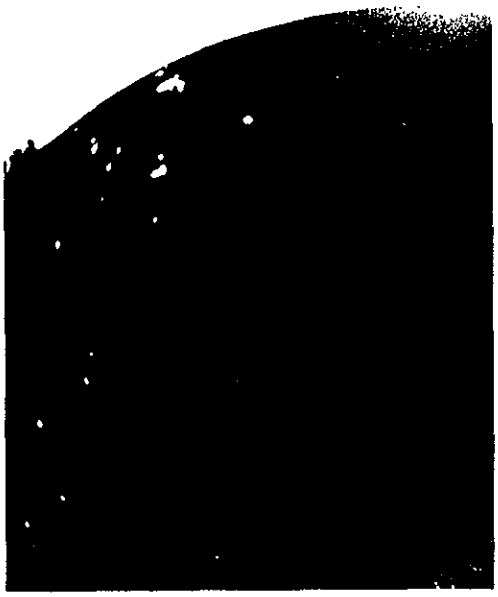
The other pages in the job folder contain the notes and original diagrams that support the information presented in the Sampling Report.

Subsequent pages of this letter contain photocopied versions of the photographs from the site and the full text of our original Sampling Report 87177-B-1.

PHOTOGRAPHS (15 COLOR PRINTS)



PHOTOGRAPHS (15 COLOR PRINTS)



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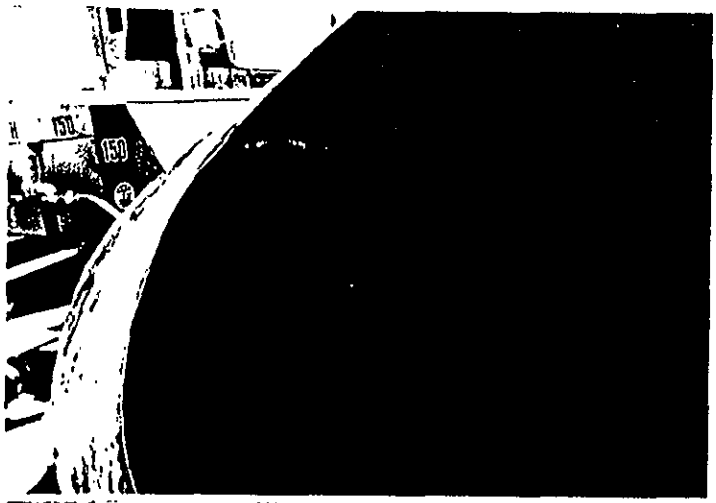

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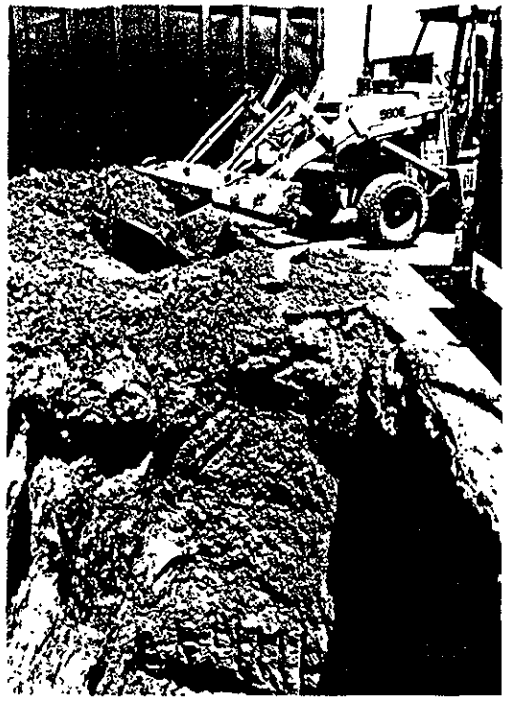
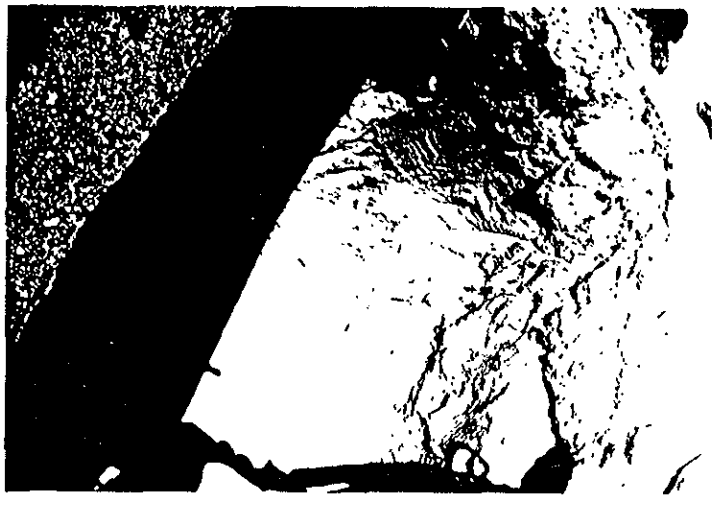
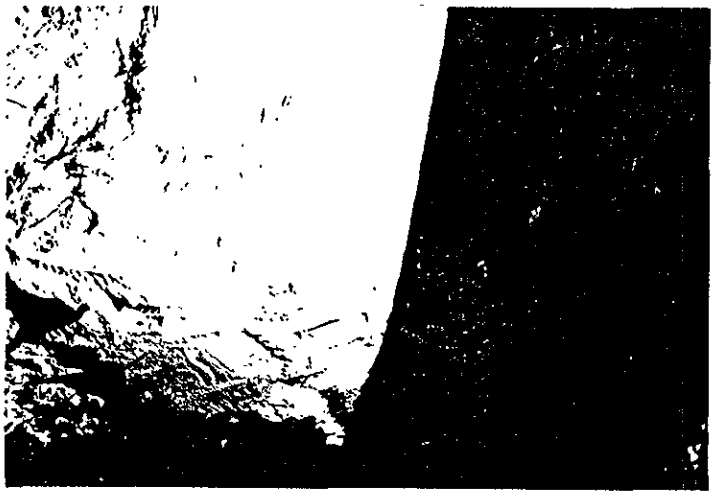
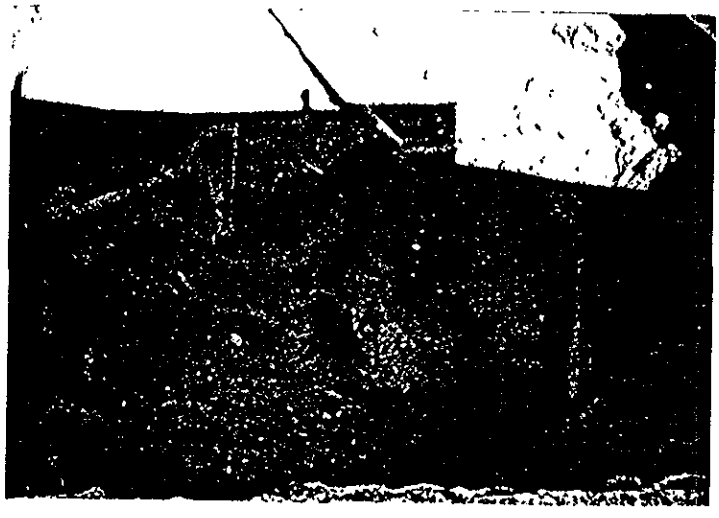
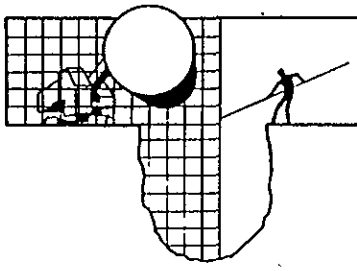




PHOTOGRAPHS (15 COLOR PRINTS)







BLAINE
TECH SERVICES INC.

1370 TULLY RD., SUITE 505
SAN JOSE, CA 95122
(408) 995-5535

July 16, 1987

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

Attention: Ray Newsome

Re: Field sampling at

SHELL STATION
1601 WEBSTER STREET
ALAMEDA, CA

JUNE 26, 1987

SAMPLING REPORT

Field sampling was undertaken in accordance with State and local enforcement agency standards and requirements for objective analytical information on the levels of residual contaminants found outside the primary containment structure. This project concerned the following:

Underground storage tank removal

Reason for removal -- replacement with double containment tank

Type -- one 550 gallon waste oil

Condition -- poor

Sampling was performed in accordance with approved methodology at the locations shown on the accompanying site diagram. Additional information is presented on the diagram including our field sampling designations and the lab identification numbers which reference the analytical results which will be found in the separate laboratory report. Sample material was collected in special containers appropriate to the type of analysis intended. Sample containers were sealed, chilled, and transported to the laboratory with standard chain of custody records maintained at each transmittal. This sampling report, the chain of custody, and the analytical report comprise the formal documentation of the sampling conducted during this phase of work at the site.

ORIGINAL SAMPLING REPORT 87177-B-1 page 2 diagram

BLAINE
TECH SERVICES INC SAMPLING REPORT 8717781 6-26-87 SHELL STATION, 1601 WEBSTER STREET, ALAMEDA, CA.

MAP REF: THOMAS BROS.
ALAMEDA COUNTY
P. 11 A-3

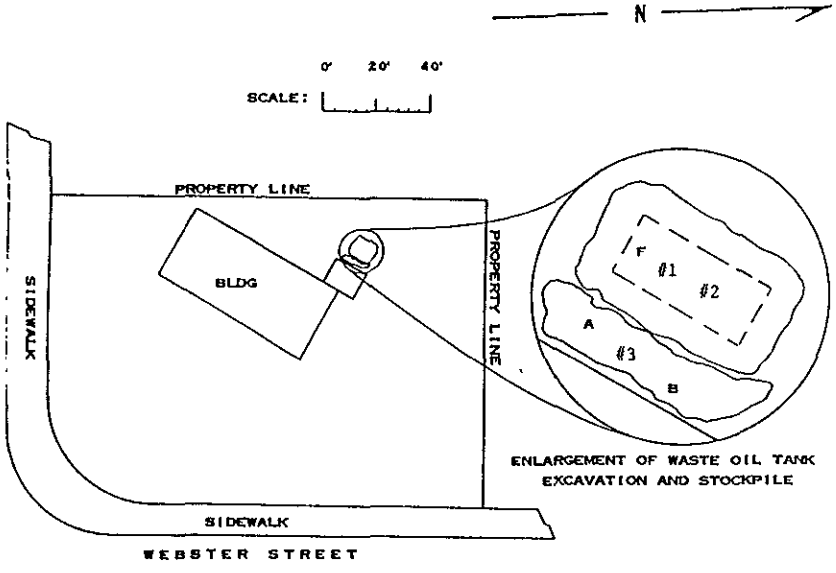
LEGEND: F = FILL END

#1 SOIL FROM 9.5'
ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS (TPH) - HIGH BOILING FRACTION, TOTAL OIL AND GREASE (TOG), AND EPA 8010 AT SOIL AND WATER LABORATORY
S & W LAB NO. 17887-3
ANALYSIS FOR EPA 8020 AT SEQUOIA ANALYTICAL LABORATORY
SEQUOIA LAB NO. 7061989

#2 SUBSURFACE WATER SAMPLE
ANALYSIS FOR TPH, TOG, AND EPA 601
S & W LAB NO. 17887-4
ANALYSIS FOR EPA 602
SEQUOIA LAB NO. 7061990

#3 STOCKPILE SOIL COMPOSITE AT SAMPLE POINTS A-B
ANALYSIS FOR TOTAL LEAD (TTLC), SOLUBLE LEAD (STLC), ORGANIC LEAD, AND FLASHPOINT
SEQUOIA LAB NO.7061991

SAMPLING PERFORMED BY RICHARD C. BLAINE
DIAGRAM PREPARED BY BRENT E. ADAMS



PAGE 2

REPORTAGE

Submission to the Regional Water Quality Control Board and the local regulatory/enforcement agency should include copies of the sampling report, the chain of custody, and the laboratory report. The property owner should attach a cover letter and submit all documents together in a package.

The following addresses have been listed here for your convenience:

Water Quality Control Board
San Francisco Bay Region
1111 Jackson Street
Room 6040
Oakland, CA 94607
ATTN: Tom Callaghan

Alameda County Health
Hazardous Materials Management
420 27th Street
Oakland, Ca 94612
ATTN: Ted Gerow

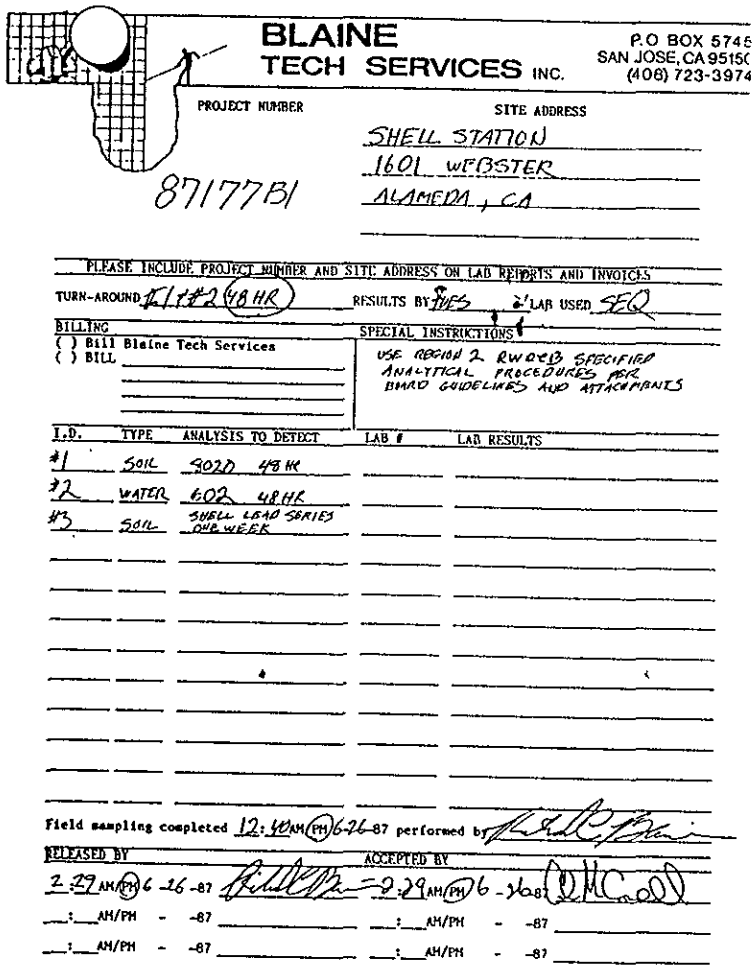
Alameda Fire Dept.
1300 Park Street
Alameda, CA 94501
ATTN: Albert L. Smith

Please call if we can be of any further assistance.

Richard C. Blaine

RCB/djt

ORIGINAL SAMPLING REPORT 87177-B-1 chain of custody 1 of 2



BLAINE TECH SERVICES INC.

P.O BOX 5745
SAN JOSE, CA 95150
(408) 723-3974

PROJECT NUMBER: 87177B1

SITE ADDRESS: SHELL STATION
1601 WEBSTER
ALAMEDA, CA

PLEASE INCLUDE PROJECT NUMBER AND SITE ADDRESS ON LAB REPORTS AND INVOICES

TURN-AROUND: 1 1 #2 (48 HR) RESULTS BY: FAX LAB USED: SEQ

BILLING
( ) Bill Blaine Tech Services
( ) BILL

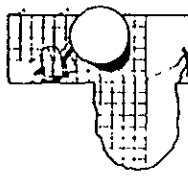
SPECIAL INSTRUCTIONS: USE REGION 2 RWQCB SPECIFIED ANALYTICAL PROCEDURES PER BWRD GUIDELINES AND ATTACHMENTS

I.D.	TYPE	ANALYSIS TO DETECT	LAB #	LAB RESULTS
#1	SOIL	8020 48 HR		
#2	WATER	602 48 HR		
#3	SOIL	SHELL LEAD SERIES ONE WEEK		

Field sampling completed 12:40 AM (PM) 6-26-87 performed by

RELEASED BY	ACCEPTED BY
2:29 AM (PM) 6-26-87	2:29 AM (PM) 6-26-87
:__ AM/PM - -87	:__ AM/PM - -87
:__ AM/PM - -87	:__ AM/PM - -87

ORIGINAL SAMPLING REPORT 87177-B-1 chain of custody 2 of 2



BLAINE TECH SERVICES INC.

P.O. BOX 574
SAN JOSE, CA 9515
(408) 723-397

PROJECT NUMBER: 87177B-1

SITE ADDRESS: SHELL, 1601 WEBSTER, ALAMEDA, CA

PLEASE INCLUDE PROJECT NUMBER AND SITE ADDRESS ON LAB REPORTS AND INVOICES

TURN-AROUND 48 HRS RESULTS BY _____ LAB USED _____

BILLING
( ) Bill Blaine Tech Services
( ) BILL _____

SPECIAL INSTRUCTIONS
USE REGION 2 RWQCB SPECIFIED ANALYTICAL PROCEDURES PER BOARD GUIDELINES AND ATTACHMENTS

I.D.	TYPE	ANALYSIS TO DETECT	LAB #	LAB RESULTS
#1	SOIL	TOG TPH 8240		
#2	WATER	TOG, TPH, 601		

Field sampling completed 12:40 AM/PM 6-26-87 performed by [signature]

RELEASED BY	ACCEPTED BY
9:00 AM/PM 6-26-87 [signature]	8:00 AM/PM 6-27-87 [signature]
9:00 AM/PM 6-27-87 [signature]	__:__ AM/PM - -87 _____
__:__ AM/PM - -87 _____	9:05 AM/PM 6-27-87 [signature]

SEQUOIA Analytical Laboratory
2549 Middlefield Road
Redwood City, CA 94063 • (415) 364-9222

Blaine Tech Services
P.O. Box 5745
San Jose, CA 95150
Attn: Richard Blaine

Date Sampled: 06-26-87
Date Received: 06-26-87
Date Extracted: 06-27-87
Date Reported: 07-06-87
BTS #87177-B1

Sample Number

7061989

Sample Description

Soil #1
Shell Station at 1601
Webster in Alameda, CA

PRIORITY POLLUTANTS
VOLATILE ORGANIC COMPOUNDS
results in ppb

Benzene	< 50
Chlorobenzene	< 50
Ethylbenzene	< 50
Toluene	< 50
1,2-Dichlorobenzene	< 50
1,3-Dichlorobenzene	< 50
1,4-Dichlorobenzene	< 50

NOTE: Method 8020 of the EPA was used for this analysis.

SEQUOIA ANALYTICAL LABORATORY

Arthur G. Burton
Laboratory Director

sls

SEQUOIA Analytical Laboratory
2549 Middlefield Road
Redwood City, CA 94063 • (415) 364-9222

Blaine Tech Services
P.O. Box 5745
San Jose, CA 95150
Attn: Richard Blaine

Date Sampled: 06-26-87
Date Received: 06-26-87
Date Reported: 07-06-87

BTS #87177-B1

Sample Number: 7061990

Sample Description: Water #2 - Shell Station at 1601 Webster in Alameda, CA

ANALYSIS

	Detection Limit ppb	Sample Results ppb
Total Hydrocarbons as Gasoline	50	1600
Benzene	0.5	3.7
Toluene	0.5	45
Xylenes	0.5	200

NOTE: Analysis was performed using EPA method 602.

SEQUOIA ANALYTICAL LABORATORY

Arthur G. Burton
Laboratory Director

jao

SEQUOIA Analytical Laboratory
2549 Middlefield Road
Redwood City, CA 94063 • (415) 364-9222

Blaine Tech Services
P.O. Box 5745
San Jose, CA 95150
Attn: Richard Blaine

Date Sampled: 06-26-87
Date Received: 06-26-87
Date Reported: 07-06-87

BTS #87177-B1

Sample Number	Sample Description
7061991	Soil #3 A,B Shell Station at 1601 Webster in Alameda, CA

ANALYSIS

Flashpoint, °C		< 110
	STLC mg/L	TTLC mg/kg-wet wt.
Lead	0.82	16
Organic Lead	--	4.5

SEQUOIA ANALYTICAL LABORATORY

Arthur G. Burton
Laboratory Director

sls

S&W
SOIL AND WATER LABORATORY
Soil Fertility—Plant Tissue
Pollution and Residue Control
Drinking Water

14072 W. Park Avenue
Boulder Creek, CA 95006

(408) 338-3053

Laboratory Report

Client	Report Date
Blaine Tech Services P. O. Box 5745 San Jose, CA. 95150	7/8/87
Sample Site	**Date Received**
Shell Oil 1601 Webster Alameda, CA. 87177B-1	6/27/87

Analysis Requested	Procedure	Date Analyzed
Soil/Total Oil & Grease	EPA 3550	6/27, 6/28/87
Total Petroleum Hydrocarbon	EPA 5020	6/27, 6/28/87
601 8010	EPA 601 EPA 8010	7/3/87 6/27/87

S&W Ref. #	Client Ref. #	Matrix/Analysis	Concentration	Detection Limit
178B7- 3	#1	TOG/Soil	133	20 ppm
-3	#1	TPH	14	1 ppm
-3	#1	8010 TCA	29.4	.5 ppm
178B7-4	#2	TOG/HOH	244	20 ppm
-4	#2	TPH	132	1 ppm
-4	#2	601 TCA	10.55	.5 ppm
-4	#2	Methylene Chloride	58.73	

Analyst Signature R. N. Lemon

1/87

We hope that the foregoing documents will be of use in your work at this site.

Please call if we can be of any further assistance.

Richard C. Blaine

RCB/dmp

ATTACHMENT C

PEG SUBSURFACE INVESTIGATION REPORT

PACIFIC ENVIRONMENTAL GROUP, INC.
Engineering • Hydrogeology • Chemistry

October 23, 1987
Project 100-84.02

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

Attn: Mr. Jeff Ryan

Re: Shell Service Station
1601 Webster Street (at Lincoln Avenue)
Alameda, California

Gentlemen:

This letter presents the results of a soil and groundwater investigation conducted by Pacific Environmental Group, Inc. (PACIFIC) at the Shell service station located at 1601 Webster Street in Alameda, California. The scope of work included installation of one groundwater monitoring well, laboratory soil analysis, and groundwater sampling and analysis as requested by Shell Oil Company.

PROCEDURES

One soil boring was drilled and converted to a monitoring Well (S-1) on September 4, 1987. The well is located adjacent to the subsurface waste oil tank at the site, as shown on Figure 1.

The boring for the monitoring well was drilled using eight-inch diameter hollow-stem auger drilling equipment and was logged by a PACIFIC geologist using the Unified Soil Classification System. The boring log (including well construction details) is attached to this report. Soil samples for logging and analysis were collected at five-foot depth 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.

The boring was advanced approximately 12 feet (below first encountered groundwater) into the water-bearing zone, to a depth of 20.5 feet. After completion, the boring was converted to a groundwater monitoring well with the installation of 3-inch diameter, schedule 40 PVC casing, and 0.020-inch factory slotted screen. The screen was placed from a depth of 5 to 20 feet, extending approximately 3 feet above the static water level. Graded sand pack was placed in the annular space across the screened interval, extending approximately one foot 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 on the top of the well.

Well S-1 was sampled by PACIFIC on September 7, 1987. The sampling procedure consisted of first checking the well for water level and presence of floating petroleum product using a clear teflon bailer. No floating product was detected. The well was then purged of approximately four casing volumes of water using a centrifugal pump, and then sampled with a teflon bailer. The groundwater samples were placed into appropriate EPA-approved containers, labeled, logged onto a chain-of-custody document, and transported on ice to the laboratory.

Soil samples from the approximate depths of 5, 10, and 15 feet were analyzed for the presence of high boiling hydrocarbons (calculated as diesel, jet fuel, and oil) and oil and grease. One soil sample from the 9 to 10.5 foot depth interval (just below the base of the tank) was also analyzed for the presence of volatile halocarbons using EPA method 8240. The groundwater sample was analyzed for volatile halocarbons by EPA method 624. The analytical methods are presented on the attached Certified Analytical Reports, in addition all results are summarized on the attached Tables 1 and 2.

RESULTS

Hydrogeologic Conditions

The boring encountered primarily sand with thin interlayers of clay to the total depth explored of 20.5 feet. No product odor was noted in any of the soil samples encountered during drilling. Groundwater was first noted at an approximate depth of 10 feet, and stabilized at approximately 8.5 feet in depth.

Laboratory Analyses

High boiling hydrocarbons were detected in the soil sample collected from the depth interval of 3.5 to 5 feet at a concentration of 50 parts per million (ppm), which was calculated as oil. No high boiling hydrocarbons were detected in any of the other soil samples analyzed. Oil and grease was detected at concentrations ranging from 13 ppm at a depth of 15 feet to 130 ppm at a depth of 5 feet.

The soil sample from 9 to 10.5 feet in depth which was analyzed for volatile halocarbons had no detectable concentrations of any compounds. Soil analytical results are summarized on the attached Table 1.

Groundwater analyses indicated the presence of acetone at a concentration of 120 parts per billion (ppb). No other compounds were detected. Groundwater analytical results are summarized on attached Table 2.

If you have any questions regarding the contents of this letter, please do not hesitate to call.

Very truly yours,

PACIFIC ENVIRONMENTAL GROUP, INC.

Susan Willhite

Susan Willhite
Project Manager
CEG 1272

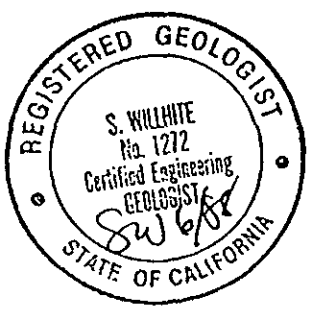


TABLE 1

Summary of Soil Analytical Results
for Well S-1

High Boiling Hydrocarbons and
Oil and Grease

	Depth Interval (feet)	High Boiling (calc. as Oil) (ppm)	Oil and Grease (ppm)
Soil #4	3-1/2 - 5	50	130
5	9 - 10-1/2	ND	30
6	14 - 15-1/2	ND	13

Volatile Organic Compounds

9 - 10-1/2 feet - None detected

Notes: ppm - parts per million
ND - not detected, detection limits noted on attached Certified Analytical Reports

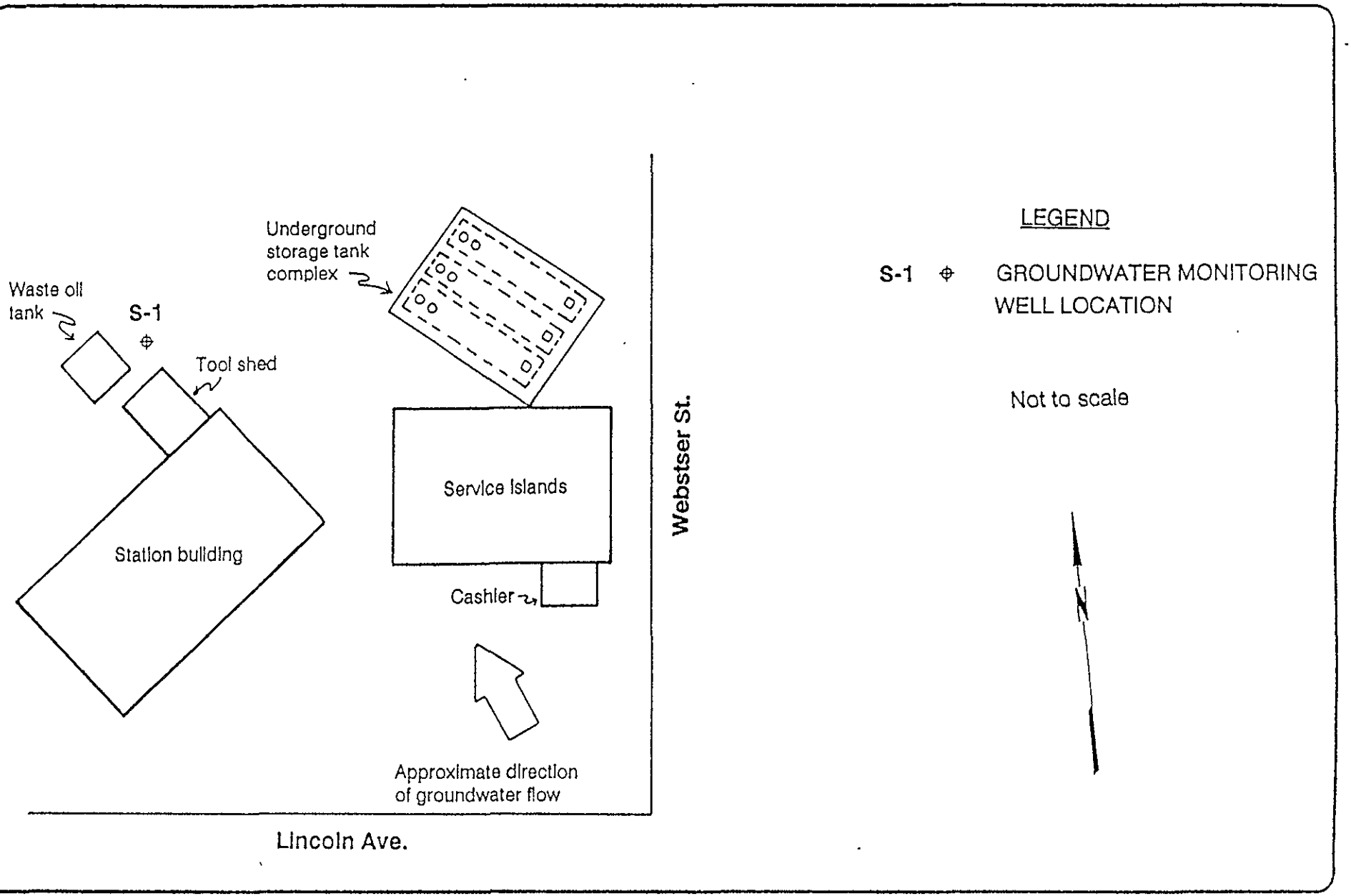
TABLE 2

Summary of Groundwater Analytical Results
for Well S-1

water #3

EPA Hazardous List Substances	
Compound	ppb
Acetone	120

Note: ppb - part per billion



PACIFIC ENVIRONMENTAL GROUP, INC.

SHELL SERVICE STATION
1601 Webster and Lincoln
Alameda, California

SITE PLAN

FIGURE
1
Project No.
100-84.01

UNIFIED SOIL CLASSIFICATION SYSTEM

PRIMARY DIVISIONS			GROUP SYMBOL	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)	GW	Well graded gravels, gravel-sand mixtures; little or no fines
			GP	Poorly graded gravels or gravel-sand mixtures; little or no fines
		GRAVEL WITH FINES	GM	Silty gravels, gravel-sand-silt mixtures
			GC	Clayey gravels, gravel-sand-clay mixtures
	SANDS half of coarse fraction smaller than # 4 sieve	CLEAN SANDS (less than 5% fines)	SW	Well graded sands, gravelly sands, little or no fines
			SP	Poorly graded sands or gravelly sands, little or no fines
		SANDS WITH FINES	SM	Silty sands, sand-silt mixtures
			SC	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%		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts, with slight plasticity
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays silty clays, lean clays
			OL	Organic silts and organic silty clays of low plasticity
	SILTS AND CLAYS liquid limit more than 50%		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
			CH	Inorganic clays of high plasticity, fat clays
			OH	Organic clays of medium to high plasticity, organic silts
HIGHLY ORGANIC SOILS			Pt	Peat and other highly organic soils

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

Density

Sands and gravels	Silts and clays
VL - Very loose	VS - Very soft
L - Loose	Sft - Soft
MD - Medium dense	MSt - Medium Stiff
D - Dense	Stf - Stiff
VD - Very dense	VSt - Very stiff
	Hd - Hard

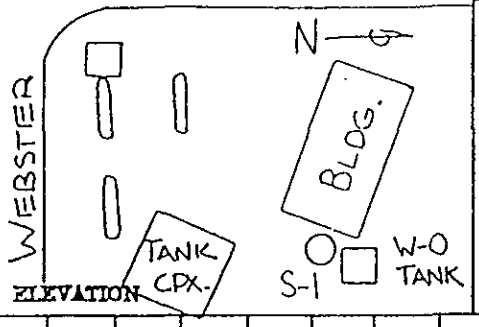
Symbols
- ▽ - First encountered ground water
- ▼ - Static ground water level

GRAIN-SIZE SCALE

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

PACIFIC ENVIRONMENTAL GROUP, INC.

LOCATION MAP LINCOLN



PACIFIC ENVIRONMENTAL GROUP, INC. | PAGE 1 OF 1

WELL/BORING NO. S-1 | PROJECT NO. 100-84.01
LOGGED BY: E.L. | CLIENT: G.R. SHELL
DRILLED BY: BAYLAND | DATE DRILLED: 9-4-87
DRILLING METHOD: HSA | LOCATION: WEBSTER & LINCOLN
SAMPLING METHOD: CAL MOD | HOLE DIAMETER: 8"
CASING TYPE: SCH 40 PVC | HOLE DEPTH: 20½'
WELL DEPTH: 20'
BLANK INTERVAL: 0-5' | GRAVEL PACK: 12x20 | SEAL: BENT-CONC.
SCREEN INTERVAL: 5-20' | SCREEN DIAMETER: 3" | SLOT SIZE: 0.020"

MOISTURE CONTENT	DENSITY	PENETRATION RESISTANCE BLOWS/FT	DEPTH	SAMPLE RECOVERY	GRAPHIC	SOIL TYPE	LITHOLOGY / REMARKS
			0				ASPHALT & GRAVEL-FILL
			2			CL	CLAY-FILL; MODERATE PLASTICITY; 20-30% FINE SAND TO FINE GRAVEL; NPO.
						SM	
Mst		P 350	4				SILTY SAND; DARK BROWN; 15-20% SILTY FINES; FINE GRAINED; NPO.
			6				@ 3½': AS ABOVE; NPO.
			8				
						CL	@ 8½': DRILLER FELT CONTACT WITH CLAY.
Mst	VD	13/25/45	10			SC-SP	CLAY; YELLOWISH BROWN; LOW PLASTICITY; 20-30% FINE TO MEDIUM SAND; NPO.
			12				CLAYEY SAND TO SAND; REDDISH BROWN; 10-15% L.P. FINES; FINE TO MEDIUM GRAINED; FeO STAINING; NPO.
		8/13/19	14				@ 14': AS ABOVE; MOTTLED GREY; NPO.
Wt	D		16				
			18			SP	SAND; REDDISH BROWN; 5-10% L.P. FINES; FINE TO MEDIUM GRAINED; NPO.
Sat	VD	12/22/33	20				
			22				BOTTOM OF BORING AT 20½ FEET.
			24				
			26				
			28				
			30				
			32				
			34				
			36				
			38				
			40				

WELL COMPLETION

INTERNATIONAL
TECHNOLOGY
CORPORATION

RECEIVED
SEP 25 1987
PACIFIC ENVIRONMENTAL GROUP, INC.

Pacific Environmental Group, Inc.
1601 Civic Center Drive
Suite 202
Santa Clara, CA 95050

September 24, 1987

ATTN: Erin Garner

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

Project Number:	100-84.01
Lab Numbers:	S7-09-080-01 thru S7-09-080-03
Number of Samples:	3
Sample Type:	soil
Date Received:	9/10/87
Analyses Requested:	High Boiling Hydrocarbons, Oil and Grease, Volatile Organics

The method of analysis for high boiling hydrocarbons in soil involves extracting the sample with acetone. The mixture is partitioned with hexane and the resulting extract is examined by gas chromatography using a flame ionization detector.

The method of analysis for total oil and grease in soil is taken from E.P.A. Method 3550 and Standard Methods Section 503E. The sample is extracted with repeated portions of 50:50 methylene chloride:acetone using a horn-type sonicator. The extract is dried with sodium sulfate and treated with silica gel to remove polar compounds. Following evaporation, oil and grease is determined gravimetrically.

IT/Santa Clara to
Pacific Environmental Group, Inc.
ATTN: Erin Garner

September 24, 1987

Lab Number: S7-Ø9-Ø8Ø-Ø1
Sample Identification: 1ØØ-84.Ø1, S-1, 3.5-5'

nd = none detected

Total Petroleum Hydrocarbons	Results (Parts per Million - dry soil basis) Detected	Detection Limit	Identity	Calculated as
High Boiling Hydrocarbons	nd	1Ø.	Diesel	—
High Boiling Hydrocarbons	nd	1Ø.	Jet Fuel	—
High Boiling Hydrocarbons	5Ø.	—	Oil	Oil
Oil and Grease	13Ø.	—	.....Not Applicable....	

IT/Santa Clara to
Pacific Environmental Group, Inc.
ATTN: Erin Garner

September 24, 1987

Lab Number: S7-09-080-02
Sample Identification: 100-84.01, S-1, 9-10.5'

nd = none detected

Results

Total Petroleum Hydrocarbons	Parts per Million - dry soil basis			
	Detected	Detection Limit	Identity	Calculated as
High Boiling Hydrocarbons	nd	10.	Diesel	—
High Boiling Hydrocarbons	nd	10.	Jet Fuel	—
High Boiling Hydrocarbons	nd	10.	Oil	—
Oil and Grease	30.	—	.....Not Applicable....	

IT/Santa Clara to
Pacific Environmental Group, Inc.
ATTN: Erin Garner

September 24, 1987

Lab Number: S7-Ø9-Ø8Ø-Ø3
Sample Identification: 1ØØ-84.Ø1, S-1, 14-15.5'

nd = none detected

Results

Total Petroleum Hydrocarbons	Parts per Million - dry soil basis			
	Detected	Detection Limit	Identity	Calculated as
High Boiling Hydrocarbons	nd	1Ø.	Diesel	—
High Boiling Hydrocarbons	nd	1Ø.	Jet Fuel	—
High Boiling Hydrocarbons	nd	1Ø.	Oil	—
Oil and Grease	13.	—	.....Not Applicable....	

INTERNATIONAL TECHNOLOGY CORPORATION

RECEIVED
SEP 28 1987
PACIFIC ENVIRONMENTAL GROUP, INC.

Pacific Environmental Group, Inc.
1601 Civic Center Drive
Suite 202
Santa Clara, CA 95050

September 28, 1987

ATTN: Erin Garner

Enclosed is the ITAS analytical report for the presence of volatile organic contaminants in one soil sample received on September 10, 1987. Results for compounds on the E.P.A. Hazardous Substances List (HSL) are given on the enclosed summary sheet. The dichlorobenzene isomers were also not detected with a detection limit of 5 micrograms per kilogram (ppb).

The sample identification is as follows:

IT/Santa Clara Lab Number	Sample Identification
S7-09-080-02A	100-84.01, S-1, 9-10.5'

Adeline I. Dreesmann

AID/ksr

GC/MS ORGANICS ANALYSIS DATA SHEET
VOLATILE COMPOUNDS

SAMPLE IDENTIFICATION: S7-09-080-02A
DATE ANALYZED: 09/18/87
UNITS: UG/KG

CAS #	COMPOUND	CONC
67-64-1	ACETONE	10. ND
107-02-8	ACROLEIN	20. ND
107-13-1	ACRYLONITRILE	5. ND
71-43-2	BENZENE	5. ND
75-27-4	BROMODICHLOROMETHANE	5. ND
75-25-2	BROMOFORM	5. ND
74-83-9	BROMOMETHANE	10. ND
78-93-3	2-BUTANONE	10. ND
75-15-0	CARBON DISULFIDE	5. ND
56-23-5	CARBON TETRACHLORIDE	5. ND
108-90-7	CHLOROBENZENE	5. ND
124-48-1	CHLORODIBROMOMETHANE	5. ND
75-00-3	CHLOROETHANE	10. ND
110-75-8	2-CHLOROETHYLVINYL ETHER	10. ND
67-66-3	CHLOROFORM	5. ND
74-87-3	CHLOROMETHANE	10. ND
75-34-3	1,1-DICHLOROETHANE	5. ND
107-06-2	1,2-DICHLOROETHANE	5. ND
75-35-4	1,1-DICHLOROETHENE	5. ND
156-60-5	TRANS-1,2-DICHLOROETHENE	5. ND
78-87-5	1,2-DICHLOROPROPANE	5. ND
10061-01-5	CIS-1,3-DICHLOROPROPENE	5. ND
10061-02-6	TRANS-1,3-DICHLOROPROPENE	5. ND
100-41-4	ETHYLBENZENE	5. ND
591-78-6	2-HEXANONE	10. ND
75-09-2	METHYLENE CHLORIDE	5. ND
108-10-1	4-METHYL-2-PENTANONE	10. ND
100-42-5	STYRENE	5. ND
79-34-5	1,1,2,2-TETRACHLOROETHANE	5. ND
127-18-4	TETRACHLOROETHENE	5. ND
108-88-3	TOLUENE	5. ND
71-55-6	1,1,1-TRICHLOROETHANE	5. ND
79-00-5	1,1,2-TRICHLOROETHANE	5. ND
79-01-6	TRICHLOROETHENE	5. ND
108-05-4	VINYL ACETATE	10. ND
75-01-4	VINYL CHLORIDE	10. ND
95-47-6	XYLENES (TOTAL)	5. ND

ND - THIS COMPOUND WAS NOT DETECTED; THE LIMIT OF DETECTION FOR THIS COMPOUND IS STATED TO THE LEFT OF THE ND SPECIFIER.

TR - TRACE, THIS COMPOUND WAS PRESENT, BUT WAS BELOW THE LEVEL AT WHICH THE CONCENTRATION COULD ACCURATELY BE DETERMINED. THE APPROXIMATE CONCENTRATION IS REPORTED FOR YOUR REFERENCE.

INTERNATIONAL TECHNOLOGY CORPORATION

RECEIVED
OCT 5 1987
PACIFIC ENVIRONMENTAL GROUP, INC.

Pacific Environmental Group, Inc.
1601 Civic Center Drive
Suite 202
Santa Clara, CA 95050

September 29, 1987

ATTN: Erin Garner

Enclosed is the ITAS analytical report for the presence of volatile organic contaminants in one water sample received on September 8, 1987.

The sample identification is as follows:

IT/Santa Clara Lab Number	Sample Identification
S7-09-052-01	100-84.01, S-1

Virginia L. Corbin

VLC/ksr

IT CORPORATION
RECEIVED
SEP 25 1987

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

17605 Fabrica Way • Cerritos, California 90701 • 213-921-9831 / 714-523-9200

CERTIFICATE OF ANALYSIS

Prepared for: IT Corporation
397 Mathew Drive
Santa Clara, CA 95050

Attn: Larry DeDionisio

Date: September 20, 1987

Date Received: September 9, 1987 P.O. Number 189993/4631-27
PEG Various Project

Job Number 42746/dan

One (1) sample labeled: S7-09-052-01

The sample was analyzed for volatile organic contaminants using combined gas chromatography-mass spectrometry according to a modified EPA Method 624, purge and trap. Results for compounds on the EPA Hazardous Substances List (HSL) are given on the enclosed summary sheets. No additional non-HSL volatile organic compounds were found.

I certify that this report truly represents the finding of work performed by me or under my direct supervision.

Sharareh N. Moaddeli

Sharareh Nasser-Moaddeli
Group Leader

Reviewed and Approved

R. W. Merrell for

Richard L. Merrell
Laboratory Director

Volatile Organic Compounds
Micrograms Per Liter

Compound	S-7-09-052-01
Chloromethane	ND<10
Bromomethane	ND<10
Vinyl chloride	ND<10
Chloroethane	ND<10
Dichloromethane (methylene chloride)	ND<5
Acetone	120 = .12 ppm
Carbon disulfide	ND<5
1,1-Dichloroethylene	ND<5
1,1-Dichloroethane	ND<5
trans-1,2-Dichloroethene	ND<5
Chloroform	ND<5
1,2-Dichloroethane	ND<5
Methyl ethyl ketone (2-Butanone)	ND<10
1,1,1-Trichloroethane	ND<5
Carbon tetrachloride	ND<5
Vinyl acetate	ND<10
Bromodichloromethane	ND<5
1,2-Dichloropropane	ND<5
trans-1,3-Dichloropropene	ND<5
Trichloroethene	ND<5
Chlorodibromomethane	ND<5
1,1,2-Trichloroethane	ND<5
Benzene	ND<5
cis-1,3-Dichloropropene	ND<5
2-Chloroethyl vinyl ether	ND<10
Tribromomethane, (Bromoform)	ND<5
2-Hexanone	ND<10
4-Methyl-2-pentanone	ND<10

Volatile Organic Compounds
Micrograms Per Liter

Compound	S-7-09-052-01
Tetrachloroethene	ND<5
1,1,2,2-Tetrachloroethane	ND<5
Toluene	ND<5
Chlorobenzene	ND<5
Ethyl benzene	ND<5
Styrene	ND<5
Xylene (Total)	ND<5
Acrolein	ND<20
Acrylonitrile	ND<5
Dichlorobenzenes	ND<5

ND - This compound was not detected; the limit of detection for this analysis is the amount stated in the table above.

ATTACHMENT D

IT ANALYTIC REPORTS AND CHAIN-OF-CUSTODY

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

CERTIFICATE OF ANALYSIS

Weiss Associates
2938 McClure Street
Oakland, CA 94609
ATTN: Joseph Theisen

Date: September 22, 1989

Work Order Number: S9-09-108

P.O. Number: MOH 890501A

This is the Certificate of Analysis for the following samples:

Client Project ID:	81-434-02, Shell, 1601 Webster St., Alameda, CA
Date Received by Lab:	9/12/89
Number of Samples:	2
Sample Type:	Water

The methods of analysis for metals and general chemistry are taken from E.P.A. protocol, using methods from SW-846, 3rd Edition or Methods for Chemical Analysis of Water and Wastes, 600/4-79-020. The method used is listed adjacent to the parameter in the table.

The method of analysis for volatile halocarbons is taken from E.P.A. Methods 601 and 8010. Samples are examined using the purge and trap technique. Final detection is by gas chromatography using an electrolytic conductivity detector.

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 involves extracting the samples with solvent and examining the extracts by gas chromatography using a flame ionization detector.

The method of analysis for oil and grease is taken from Standard Methods for the Examination of Water and Wastewater, Section 503E. Samples are extracted with repeated portions of solvent and the extract is treated with silica gel to remove polar compounds. The extract is evaporated and oil and grease is determined gravimetrically.

continued

IT ANALYTICAL SERVICES
SAN JOSE, CA

Work Order Number: S9-09-108

The method of analysis for oil and grease is taken from Standard Methods for the Examination of Water and Wastewater, Section 503E. Samples are extracted with repeated portions of solvent and the extract is treated with silica gel to remove polar compounds. The extract is evaporated and oil and grease is determined gravimetrically.

The method of analysis for polychlorinated biphenyl mixtures involves diluting or extracting the sample with solvent. The resulting extract is cleaned-up to remove interferences and examined by gas chromatgraphy using an electron capture detector.

Any of the following polychlorinated biphenyl mixtures would have been detected had it been present at or above the limit of detection: Aroclors 1016, 1221, 1232, 1242, 1248, 1254, 1260, 1262 and 1268.

The method of analysis for volatile organics is taken from E.P.A. Methods 624 and 8240. Water samples and low-level soil samples are analyzed directly using the purge and trap technique. Medium-level soil samples are extracted with methanol and a portion of the extract is analyzed using the purge and trap technique. Final detection is by gas chromatography/mass spectrometry.

The method of analysis for semi-volatile organics is taken from E.P.A. Methods 625 and 8270. The samples are extracted with solvent and concentrated. Final detection is by gas chromatography/mass spectrometry.

Reviewed and Approved

Christine Horn
Operations Manager

CH/an
7 Pages Following - Tables of Results

Date: September 22, 1989
Client Project ID: 81-434-02, Shell,
1601 Webster Street, Alameda, CA

IT ANALYTICAL SERVICES
SAN JOSE, CA

Work Order Number: S9-09-108

Client Sample ID: 099434-1

Sample Date: 9/11/89
Lab Sample ID: S9-09-108-01
Receipt Condition: Cool

Results - Milligrams per Liter

Parameter	E.P.A. Method	Detection Limit	Detected
Cadmium	6010	0.01	None
Chromium	6010	0.02	0.02
Lead	6010	0.06	None
Zinc	6010	0.02	0.03

IT ANALYTICAL SERVICES
SAN JOSE, CA

Work Order Number: S9-09-108

Client Sample ID: 099434-1
Sample Date: 9/11/89
Lab Sample ID: S9-09-108-01
Receipt Condition: Cool, pH ≤2

Low Boiling Hydrocarbons Analysis Date: 9/13/89

High Boiling Hydrocarbons Extraction Date: 9/15/89
High Boiling Hydrocarbons Analysis Date: 9/16/89

Oil & Grease Extraction Date: 9/13/89
Oil & Grease Analysis Date: 9/14/89

Total Petroleum Hydrocarbons - Modified E.P.A. Methods 8015, 8020
Standard Methods, 503E

Results - Milligrams per Liter

Parameter	Detection Limit	Detected
Low Boiling Hydrocarbons, calculated as Gasoline	0.05	None
Benzene	0.0005	None
Toluene	0.001	None
Ethyl Benzene	0.001	None
Xylenes (total)	0.003	None
High Boiling Hydrocarbons, calculated as Diesel	0.1	None
Oil and Grease	1.0	None

Date: September 22, 1989
Client Project ID: 81-434-02, Shell,
1601 Webster Street, Alameda, CA

IT ANALYTICAL SERVICES
SAN JOSE, CA

Work Order Number: S9-09-108

Client Sample ID: 099434-1

Sample Date: 9/11/89
Lab Sample ID: S9-09-108-01
Receipt Condition: Cool
Extraction Date: 9/15/89
Analysis Date: 9/15/89

Polychlorinated Biphenyl Mixtures

Results - Micrograms per Liter

Lab Sample ID	Client Sample ID	Aroclor Detected	Amount Detected
S9-09-108-01	099434-1	None	None
Detection Limit			0.5

Date: September 22, 1989
Client Project ID: 81-434-02, Shell,
1601 Webster Street, Alameda, CA

IT ANALYTICAL SERVICES
SAN JOSE, CA

Work Order Number: S9-09-108

Client Sample ID: 099434-1

Sample Date: 9/11/89
Lab Sample ID: S9-09-108-01
Receipt Condition: Cool pH ≤2
Analysis Date: 9/19/89

Volatile Organics - E.P.A. Methods 624, 8240

Results - Milligrams per Liter

Parameter	Detection Limit	Detected	Parameter	Detection Limit	Detected
Chloromethane	0.010	None	cis-1,3-Dichloropropene	0.005	None
Bromomethane	0.010	None	Trichloroethene	0.005	None
Vinyl Chloride	0.010	None	Chlorodibromomethane	0.005	None
Chloroethane	0.010	None	1,1,2-Trichloroethane	0.005	None
Methylene Chloride	0.005	None	Benzene	0.005	None
Acetone	0.010	None	trans-1,3-Dichloropropene	0.005	None
Carbon Disulfide	0.005	None	Bromoform	0.005	None
1,1-Dichloroethene	0.005	None	4-Methyl-2-pentanone	0.010	None
1,1-Dichloroethane	0.005	None	2-Hexanone	0.010	None
1,2-Dichloroethene (Total)	0.005	None	Tetrachloroethene	0.005	None
Chloroform	0.005	None	1,1,2,2-Tetrachloroethane	0.005	None
1,2-Dichlorethane	0.005	None	Toluene	0.005	None
2-Butanone	0.010	None	Chlorobenzene	0.005	None
1,1,1-Trichloroethane	0.005	None	Ethylbenzene	0.005	None
Carbon Tetrachloride	0.005	None	Styrene	0.005	None
Vinyl Acetate	0.010	None	Xylenes (Total)	0.005	None
Bromodichloromethane	0.005	None	Acrolein	0.010	None
1,2-Dichloropropane	0.005	None	Acrylonitrile	0.010	None

Surrogates	Limits	% Rec
1,2-Dichloroethane-d4	76-114	104.
Toluene-d8	88-110	100.
4-Bromofluorobenzene	86-115	95.

Date: September 22, 1989
Client Project ID: 81-434-02, Shell,
1601 Webster Street, Alameda, CA

IT ANALYTICAL SERVICES
SAN JOSE, CA

Work Order Number: S9-09-108

Client Sample ID: 099434-1

Sample Date: 9/11/89
Lab Sample ID: S9-09-108-01
Receipt Condition: Cool pH 7
Extraction Date: 9/14/89
Analysis Date: 9/19/89

Semi-Volatile Organics -E.P.A. Methods 625, 8270; Results - Micrograms per Liter

Parameter	Detection Limit	Detected	Parameter	Detection Limit	Detected
Phenol	0.010	None	2,4-Dinitrophenol	0.050	None
bis(2-Chloroethyl)ether	0.010	None	4-Nitrophenol	0.050	None
2-Chlorophenol	0.010	None	Dibenzofuran	0.010	None
1,3-Dichlorobenzene	0.010	None	2,4-Dinitrotoluene	0.010	None
1,4-Dichlorobenzene	0.010	None	2,6-Dinitrotoluene	0.010	None
Benzyl alcohol	0.010	None	Diethylphthalate	0.010	None
1,2-Dichlorobenzene	0.010	None	4-Chlorophenylphenyl ether	0.010	None
2-Methylphenol	0.010	None	Fluorene	0.010	None
bis(2-Chloroisopropyl)ether	0.010	None	4-Nitroaniline	0.050	None
4-Methylphenol	0.010	None	4,6-Dinitro-o-cresol	0.050	None
N-Nitroso-di-n-propylamine	0.010	None	N-Nitrosodiphenylamine	0.010	None
Hexachloroethane	0.010	None	4-Bromophenylphenyl ether	0.010	None
Nitrobenzene	0.010	None	Hexachlorobenzene	0.010	None
Isophorone	0.010	None	Pentachlorophenol	0.050	None
2-Nitrophenol	0.010	None	Phenanthrene	0.010	None
2,4-Dimethylphenol	0.010	None	Anthracene	0.010	None
Benzoic Acid	0.050	None	Di-n-butylphthalate	0.010	None
bis(2-Chloroethoxy)methane	0.010	None	Fluoranthene	0.010	None
2,4-Dichlorophenol	0.010	None	Pyrene	0.010	None
1,2,4-Trichlorobenzene	0.010	None	Butylbenzylphthalate	0.010	None
Naphthalene	0.010	None	3,3'-Dichlorobenzidine	0.020	None
4-Chloroaniline	0.010	None	Benzo(a)anthracene	0.010	None
Hexachlorobutadiene	0.010	None	bis(2-Ethylhexyl)phthalate	0.010	None
4-Chloro-3-methylphenol	0.010	None	Chrysene	0.010	None
2-Methylnaphthalene	0.010	None	Di-n-octylphthalate	0.010	None
Hexachlorocyclopentadiene	0.010	None	Benzo(b)fluoranthene	0.010	None
2,4,6-Trichlorophenol	0.010	None	Benzo(k)fluoranthene	0.010	None
2,4,5-Trichlorophenol	0.050	None	Benzo(a)pyrene	0.010	None
2-Chloronaphthalene	0.010	None	Indeno(1,2,3-cd)pyrene	0.010	None
2-Nitroaniline	0.050	None	Dibenz(a,h)anthracene	0.010	None
Dimethylphthalate	0.010	None	Benzo(g,h,i)perylene	0.010	None
Acenaphthylene	0.010	None	N-Nitrosodimethylamine	0.010	None
3-Nitroaniline	0.050	None	1,2-Diphenylhydrazine	0.010	None
Acenaphthene	0.010	None	Benzidine	0.050	None

Surrogates	Limits	% Rec	Surrogates	Limits	% Rec
Nitrobenzene-d5	35-114	96.	Phenol-d5	10-94	85.
2-Fluorobiphenyl	43-116	89.	2-Fluorophenol	21-100	81.
Terphenyl-d14	33-141	91.	2,4,6-Tribromophenol	10-123	89.

IT ANALYTICAL SERVICES
SAN JOSE, CA

Work Order Number: S9-09-108

Client Sample ID: 099434-21 Trip Blank
Sample Date: 9/11/89
Lab Sample ID: S9-09-108-02
Receipt Condition: Cool, pH ≤2

Low Boiling Hydrocarbons Analysis Date: 9/14/89

Total Petroleum Hydrocarbons - Modified E.P.A. Methods 8015, 8020

Results - Milligrams per Liter

Parameter	Detection Limit	Detected
Low Boiling Hydrocarbons, calculated as Gasoline	0.05	None
Benzene	0.0005	None
Toluene	0.001	None
Ethyl Benzene	0.001	None
Xylenes (total)	0.003	None

Date: September 22, 1989
Client Project ID: 81-434-02, Shell,
1601 Webster Street, Alameda, CA

IT ANALYTICAL SERVICES
SAN JOSE, CA

Work Order Number: S9-09-108

Client Sample ID: 099434-21 Trip Blank

Sample Date: 9/11/89
Lab Sample ID: S9-09-108-02
Receipt Condition: Cool pH ≤2
Analysis Date: 9/19/89

Volatile Organics - E.P.A. Methods 624, 8240

Results - Milligrams per Liter

Parameter	Detection Limit	Detected	Parameter	Detection Limit	Detected
Chloromethane	0.010	None	cis-1,3-Dichloropropene	0.005	None
Bromomethane	0.010	None	Trichloroethene	0.005	None
Vinyl Chloride	0.010	None	Chlorodibromomethane	0.005	None
Chloroethane	0.010	None	1,1,2-Trichloroethane	0.005	None
Methylene Chloride	0.005	None	Benzene	0.005	None
Acetone	0.010	None	trans-1,3-Dichloropropene	0.005	None
Carbon Disulfide	0.005	None	Bromoform	0.005	None
1,1-Dichloroethene	0.005	None	4-Methyl-2-pentanone	0.010	None
1,1-Dichloroethane	0.005	None	2-Hexanone	0.010	None
1,2-Dichloroethene (Total)	0.005	None	Tetrachloroethene	0.005	None
Chloroform	0.005	None	1,1,2,2-Tetrachloroethane	0.005	None
1,2-Dichlorethane	0.005	None	Toluene	0.005	None
2-Butanone	0.010	None	Chlorobenzene	0.005	None
1,1,1-Trichloroethane	0.005	None	Ethylbenzene	0.005	None
Carbon Tetrachloride	0.005	None	Styrene	0.005	None
Vinyl Acetate	0.010	None	Xylenes (Total)	0.005	None
Bromodichloromethane	0.005	None	Acrolein	0.010	None
1,2-Dichloropropane	0.005	None	Acrylonitrile	0.010	None

Surrogates	Limits	% Rec
1,2-Dichloroethane-d4	76-114	104.
Toluene-d8	88-110	99.
4-Bromofluorobenzene	86-115	94.

~~9-07-104~~ WIC # 204-00T-204 AFE # 98664X 89-09-108

WEISS ASSOCIATES

2938 McClure St., Oakland, CA 94609 415-465-1100

CHAIN-OF-CUSTODY RECORD AND ANALYTIC INSTRUCTIONS

Shuttle Inventory Number: /

Shipping Seal No. _____

WA Personnel: Be sure to include copy of this form in the field sampling files

Project ID: 81-434-02

Sampled by: TBP

Laboratory Name: International Technical

NOTES TO LAB:
1) Specify analytic method and detection limit in report.
2) Notify us if there are any anomalous peaks on GC or other scans.
3) Duplicates listed in parentheses.
4) ANY QUESTIONS/CLARIFICATIONS: CALL US.

	Sample ID	Sampling Date	Sample/ Container Type[1]	Analyze/ Hold[2]	Turn-around[3]	Analyze For:	Analytic Method/ Detection Limit	Comments
ABC	099434-1	9-11-89	W/V	A	N	low boiling gas-BTEX (40 ml H/HCl)	mod 8015	cool/ok
DE			W/G			TPH diesel 2x1LA w/HCl	mod 8015	
FG			W/G			TOG 2x1LA w/HCl	503E	
HI			W/G			PCB's 2x1LA	GC	
JK			W/G			PCP's, PAH's, Creosote 2x1LA	8270	
L			W/P			Cd, Cr, Pb, Zn 500ml HNO3	ICP	
MNO			W/V			VOC's	624	
ZA	099434-21 (TRIP)	↓	W/V	↓	↓	gas-BTEX	←	↓

X _____ 9/12/89 Received by (Signature), Date	X _____ 9/12/89 16:30 Released by (Signature), Date	X _____ Released by (Signature), Date
X _____ 9/12/89 sea/UPS Released by (Signature), Date	X _____ 9/12/89 15:30 Shipping Carrier, Method, Date	X _____ 9/12/89 16:30 Received by Lab Personnel, Date, Telephone

X Intact Seal intact?, Number

1 - Sample Type Codes: W = Water, S = Soil, O = Other (specify).
Container Type Codes: V = VOA Bottle, P = Plastic Bottle, G = Glass Bottle, T = Brass Tube, O = Other (specify).

2 - Analyze/Hold: A = Analyze; HOLD (spell out) = DO NOT ANALYZE UNLESS NECESSARY OR REQUESTED.

3 - N = Normal Turnaround, F = 1-Week Turnaround, R = 24-Hour Turnaround