BP OIL

BP Oil Company
16400 Southcenter Parkway, Suite 301
Tukwila, Washington 98188
(206) 575-4077

February 2, 1993

Alameda County Health Care Services Agency
Attention Mr. Rafat Shahid
80 Swan Way, Room 200
Oakland, CA 94621

California Regional Water Quality Control Board
Attention Mr. Eddy So
San Francisco Bay Region
2101 Webster Street
Oakland, CA 94612

RE: **BP Oil Site No. 11127**
5425 Martin Luther King, Jr. Way
Oakland, CA

Gentlemen:

Attached please find a report describing monitoring efforts undertaken at the referenced location. You will note that BTEX constituents have not been detected at concentrations exceeding Safe Drinking Water Act Maximum Contaminant Levels in any of the groundwater samples submitted recently for laboratory analysis. Although we have detected TPHg in groundwater samples obtained from MW-2, the analytical results show that concentrations are diminishing with time. In order to ensure that this trend continues, we will monitor MW-2 on a semi-annual basis. We trust that you will find this acceptable.

While we recognize that TPH is one of the parameters prescribed by the State of California, we would like to express our concern that this test does not provide sufficient information to determine when contamination presents a threat to human health and the environment.

As you are no doubt aware, gasoline, diesel, and other petroleum hydrocarbons are a complex mixture of aromatic and aliphatic compounds. The aromatic fraction consists mainly of benzene, ethylbenzene, toluene and xylene. The aromatics are of greatest concern due to their toxicity and persistence in the environment. Benzene is a human carcinogen, while ethylbenzene, toluene and xylene are not classifiable as to human carcinogenicity. The aromatics also pose a potential for adverse, non-cancer health effects. The aromatics should be distinguished from the aliphatics, which consist predominantly of single and branched-chained paraffins. These compounds are relatively non-toxic and

are biodegradable by a variety of naturally-occurring microorganisms.

As there are no toxicological data recognized by EPA for TPH that can be used to select a health-based target clean-up level, we would like clarification of your position regarding the following questions:

1. What concentration of TPH in soil and groundwater do you deem acceptable ?

2. If groundwater does contain aromatics at concentrations below a MCL as well as TPH, is a clean-up necessary ?

3. What technical basis is used to determine acceptable TPH concentrations ?

While we recognize that these determinations may be made on a case by case basis, it seems reasonable for the public and the regulated community to expect some consistency in the selection of clean-up levels. We feel it is important for the regulated community to understand these criteria in order to foster a more cooperative working relationship.

I look forward to your response.

Sincerely,

Scott T. Hooton
Environmental Resources Management

attachment

cc: site file
B. Nagle - ALISTO

SUPPLEMENTAL SITE ASSESSMENT REPORT

BP Oil Company Service Station No. 11127
5425 Martin Luther King, Jr. Way
Oakland, California

Project No. 10-022

January 1993

SUPPLEMENTAL SITE ASSESSMENT REPORT

BP Oil Company Service Station No. 11127
5425 Martin Luther King, Jr. Way
Oakland, California

Project No. 10-022

Prepared for:

BP Oil Company
Environmental Resource Management
16400 Southcenter Parkway, Suite 301
Tukwila, Washington

Prepared by:

Alisto Engineering Group
1000 Burnett Avenue, Suite 420
Concord, California

January 1993

Brady Nagle
Project Manager

Al Sevilla, P.E.
Principal

TABLE OF CONTENTS

1.0 INTRODUCTION

BP Oil Company retained Alisto Engineering Group in September 1992 to conduct a supplemental site assessment at BP Oil Company Service Station No. 11127, 5425 Martin Luther King, Jr. Way, Oakland, California. A site vicinity map is shown in Figure 1.

1.1 Purpose and Scope of Work

This work was performed to assess the nature and extent of petroleum hydrocarbons in the subsurface soil and/or groundwater at the site, if any, and to determine the appropriate courses of action to comply with applicable laws and regulations.

The tasks performed during the assessment included the following:

- Conducted a sensitive receptors survey.
- Drilled and logged exploratory Soil Borings B-1 and B-2 and collected soil samples.
- Installed groundwater Monitoring Wells MW-3 and MW-4.
- Developed Monitoring Wells MW-3 and MW-4 and collected groundwater samples from MW-1 through MW-4.
- Analyzed the soil and groundwater samples for specific hydrocarbon constituents.
- Analyzed the data and analytical results and prepared this report presenting the findings.

The above tasks and related field and sampling activities were performed in accordance with the requirements of the Alameda County Health Care Services Agency (ACHCSA) and the California Regional Water Quality Control Board, San Francisco Bay Region (RWQCB).

1.2 Site Location and Description

BP Oil Company Service Station No. 11127 is located on the southwest corner of the intersection of Martin Luther King, Jr. Way and 55th Street, Oakland, California. The site is presently an operating service station with three underground fuel storage tanks and one underground used oil tank. Refer to Figure 2 for the layout of the site and the locations of underground fuel storage tanks and dispenser islands.

The properties in the immediate vicinity of the site are a mixture of residential and commercial developments. A Chevron service station located approximately 80 feet to the north of the site across 55th Street had an unauthorized hydrocarbon release with groundwater monitoring wells installed on- and offsite.

1.3 Sensitive Receptors Survey

A sensitive receptors survey was performed to identify nearby environmental elements and land uses that may affect or be affected by the BP Oil Company site. Results of the sensitive receptors survey are presented in Appendix A.

2.0 FIELD METHODS

The following are the procedures and methods used during field activities:

2.1 Soil Boring and Sampling

Before drilling, a permit was acquired from the Alameda County Flood Control and Water Conservation District (Zone 7), a copy of which is presented in Appendix B. On October 28, 1992, two exploratory borings were drilled at the site to 25 feet below grade. Drilling activities were performed by Great Sierra Exploration Drilling Company of Union City, California, using a truck-mounted Mobile B-57 drilling rig equipped with 8-inch-diameter, hollow-stem augers. Boring B-1 was drilled in the vicinity of the existing dispenser islands, and B-2 was drilled in the vicinity of the existing underground fuel tanks. Drilling and soil sampling procedures are presented in Appendix C.

Boring logs were prepared using the Unified Soil Classification System. They include a description of soil characteristics such as color, moisture, consistency, and field readings using an organic vapor meter. The boring logs are presented in Appendix D.

2.2 Monitoring Well Installation and Construction

Soil Borings B-1 and B-2 were converted into Monitoring Wells MW-3 and MW-4 in accordance with the field procedures for groundwater monitoring well installation presented in Appendix C. The wells were constructed with clean, 2-inch-diameter, flush-threaded, Schedule 40, polyvinyl chloride blank casing and 0.020-inch slotted casing to 25 feet below grade. Well construction details are included on the boring logs presented in Appendix D.

2.3 Monitoring Well Development and Sampling

Well development and sampling procedures were conducted in accordance with the guidelines of the ACHCSA and RWQCB. Field procedures for groundwater monitoring well development and sampling are presented in Appendix E.

The monitoring wells were developed on November 6, 1992. Before development, each well was inspected for the presence or absence of free-floating product. The wells were developed by removing at least 10 casing volumes, or until groundwater was relatively free of sediment, by alternately using a surge block and pump.

To ensure that the groundwater sample was representative of the aquifer, the wells were purged of 3 well casing volumes before sample collection while monitoring pH, specific conductivity, and temperature. The samples were then transported in an iced cooler to a state-certified laboratory following proper chain of custody procedures. Field observations during well development and sampling are presented in the sampling forms in Appendix F.

2.4 Groundwater Level Monitoring and Well Surveying

The monitoring wells were surveyed to the top of each well casing in reference to City of Oakland Benchmark No. 1967 with an elevation of 84.437 feet above mean sea level. On November 12, 1992, the depth to groundwater in the wells was measured from the top of the well casing to the nearest 0.01 foot, using an electronic sounder. The survey data and relative groundwater elevation measurements are presented in Table 1. The well elevation survey map is included in Appendix E, and a graphical interpretation of the groundwater gradient beneath the site is shown in Figure 2.

3.0 ANALYTICAL METHODS

Pace, Inc., a state-certified analytical laboratory, analyzed the soil and groundwater samples using standard test methods of the U.S. Environmental Protection Agency (EPA) and the California Department of Health Services.

Soil and groundwater samples were analyzed for the following:

- Total petroleum hydrocarbons as gasoline (TPH-G) using EPA Methods 5030/8015
- Benzene, toluene, ethylbenzene, and total xylenes (BTEX) constituents using EPA Methods 5030/8020

Groundwater samples collected from Monitoring Well MW-2 were additionally analyzed for the following:

- Total petroleum hydrocarbons as diesel (TPH-D) using EPA Methods 5030/8015
- Total oil and grease (TOG) using EPA Method 5520DF
- Halogenated volatile organic compounds (HVOCs) using EPA Method 8010

Laboratory results for groundwater and soil samples are summarized in Tables 1 and 2, and the official laboratory reports and chain of custody records are included in Appendix G. The concentrations of petroleum hydrocarbons in the groundwater are shown in Figure 3.

4.0. DISCUSSION OF RESULTS

The following are the results of field activities and laboratory analysis of soil and groundwater samples collected during this supplemental site assessment:

- During drilling, groundwater was encountered in the soil borings at approximately 14 feet below grade, and stabilized at approximately 12 feet below grade.
- Soil types encountered at the site generally consisted of silty and gravelly sand interbedded with sandy and clayey silt to the total depth of Soil Borings B-1 and B-2.
- Analysis of soil samples collected from Soil Borings B-1 and B-2 at depths of 11 and 13 feet below grade did not detect TPH-G or BTEX constituents above reported detection limits.
- Free product as sheen was observed in Monitoring Well MW-1. However, groundwater samples collected from MW-1 did not contain TPH-G or BTEX constituents above reported detection limits.
- Groundwater elevation data indicate a gradient of 0.007 foot per foot in a general west-southwest direction across the site.
- TPH-G and BTEX constituents were detected in groundwater samples collected from MW-2 at concentrations of 250 parts per billion (ppb) TPH-G, 5.0 ppb ethylbenzene, and 10 ppb total xylenes.
- The groundwater sample collected from Monitoring Well MW-2 contained 88 ppb TPH-D and 0.5 ppb 1,2-dichloroethane. TOG was not detected above the reported detection limit.

TABLE 1 - SUMMARY OF RESULTS OF GROUNDWATER SAMPLING
BP OIL COMPANY SERVICE STATION NO. 11127
5425 MARTIN LUTHER KING, JR. WAY, OAKLAND, CALIFORNIA

ALISTO PROJECT NO. 10-022

WELL ID	DATE OF SAMPLING/ MONITORING	CASING ELEVATION (a)	DEPTH TO WATER (Feet)	PRODUCT THICKNESS (Feet)	GROUNDWATER ELEVATION (b) (Feet)	TPH-G (ppb)	TPH-D (ppb)	TOG (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	1,1-DCA	1,2-DCA	1,1,1-TCA	LAB
MW-1	08/29/91	82.35	10.54	0.00	71.81	ND<50	---	---	ND<0.3	ND<0.3	ND<0.3	ND<0.3	---	---	---	
MW-1	11/20/91	82.35	10.24	0.00	72.11	55	---	---	ND<0.3	ND<0.3	ND<0.3	ND<0.3	---	---	---	
MW-1	02/28/92	82.35	8.17	0.00	74.18	400	---	---	6.7	0.7	11	170	---	---	---	SUP
MW-1	06/08/92	82.35	10.25	0.00	72.10	250	---	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ANA
MW-1	09/03/92	82.35	10.68	0.00	71.67	160	---	---	1.2	3.8	1.7	5.4	---	---	---	ANA
QC-1 (c)	09/03/92	82.35	10.68	0.00	71.67	190	---	---	0.7	2.6	1.3	5.2	---	---	---	ANA
MW-1	11/12/92	82.35	10.22	Sheen	72.13	ND<50	---	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	---	PACE
QC-1	11/12/92	82.35	10.22	Sheen	72.13	ND<50	---	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	---	PACE
MW-2	08/29/91	83.49	11.56	0.00	71.93	950	66	---	ND<0.3	ND<0.3	17	50	ND	ND	ND	
MW-2	11/20/91	83.49	11.25	0.00	72.24	1400	ND<50	---	0.3	ND<0.3	32	90	ND	0.8	0.7	
MW-2	02/28/92	83.49	9.02	0.00	74.47	2300	70	---	4.2	1.8	47	360	ND	ND	4.1	SUP
MW-2	06/08/92	83.49	11.37	0.00	72.12	470	---	---	ND<0.5	ND<0.5	7.7	12	6.6	ND<0.5	4.2	ANA
MW-2	09/03/92	83.49	11.81	0.00	71.68	530	---	---	1.6	3.5	23	46	ND<0.5	ND<0.5	ND<0.5	ANA
MW-2	11/12/92	83.48	11.27	0.00	72.21	250	88	ND<5,000	ND<0.5	ND<0.5	5.0	10	ND<0.5	0.5	ND<0.5	PACE
MW-3	11/12/92	84.96	12.24	0.00	72.72	ND<50	---	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	---	PACE
MW-4	11/12/92	82.70	10.44	0.00	72.26	ND<50	---	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	---	PACE
QC-2 (d)	09/03/92	---	---	---	---	ND<50	---	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	---	ANA
QC-2 (d)	11/12/92	---	---	---	---	ND<50	---	---	ND<0.5	ND<0.5	ND<0.5	ND<0.5	---	---	---	PACE

ABBREVIATIONS:

TPH-G	Total petroleum hydrocarbons as gasoline
TPH-D	Total petroleum hydrocarbons as diesel
TOG	Total oil and grease
B	Benzene
T	Toluene
E	Ethylbenzene
X	Total xylenes
1,1-DCA	1,1-Dichloroethane
1,2-DCA	1,2-Dichloroethane
1,1,1-TCA	1,1,1-Trichloroethane
ppb	Parts per billion
ND	Not detected above reported detection limits
ANA	Anametrix, Inc.
SUP	Superior Analytical Laboratory
PACE	Pace, Incorporated

NOTES:

(a) Top of casing elevation for all wells surveyed in reference to the City of Oakland Benchmark No. 1967, located on the curb at the southwest corner of Martin Luther King, Jr. Way and 55th Street.

(b) Groundwater elevation in feet above mean sea level.

(c) Blind duplicate of MW-1.

(d) Travel blank.

TABLE 2 - SUMMARY OF RESULTS OF SOIL SAMPLING AND ANALYSIS
BP OIL COMPANY SERVICE STATION NO. 11127
5425 MARTIN LUTHER KING, JR. WAY, OAKLAND, CALIFORNIA

ALISTO PROJECT NO. 10-022

WELL ID	SAMPLE DEPTH (Feet)	DATE OF SAMPLING	TPH-G (ppm)	B (ppm)	T (ppm)	E (ppm)	X (ppm)	LAB
B-1 (MW-3)	11.0	10/28/92	ND<1.0	ND<0.005	ND<0.005	ND<0.005	ND<0.005	PACE
B-1 (MW-3)	13.0	10/28/92	ND<1.0	ND<0.005	ND<0.005	ND<0.005	ND<0.005	PACE
B-2 (MW-4)	11.0	10/28/92	ND<1.0	ND<0.005	ND<0.005	ND<0.005	ND<0.005	PACE
B-2 (MW-4)	13.0	10/28/92	ND<1.0	ND<0.005	ND<0.005	ND<0.005	ND<0.005	PACE

ABBREVIATIONS:

TPH-G	Total petroleum hydrocarbons as gasoline	ppm	Parts per million
B	Benzene	ND	Not detected above reported detection limit
T	Toluene	PACE	Pace, Incorporated
E	Ethylbenzene		
X	Total xylenes		

SOURCE:
USGS MAP, OAKLAND WEST QUADRANGLE, CALIFORNIA.
7.5 MINUTE SERIES. 1959. PHOTOREVERSED 1980.

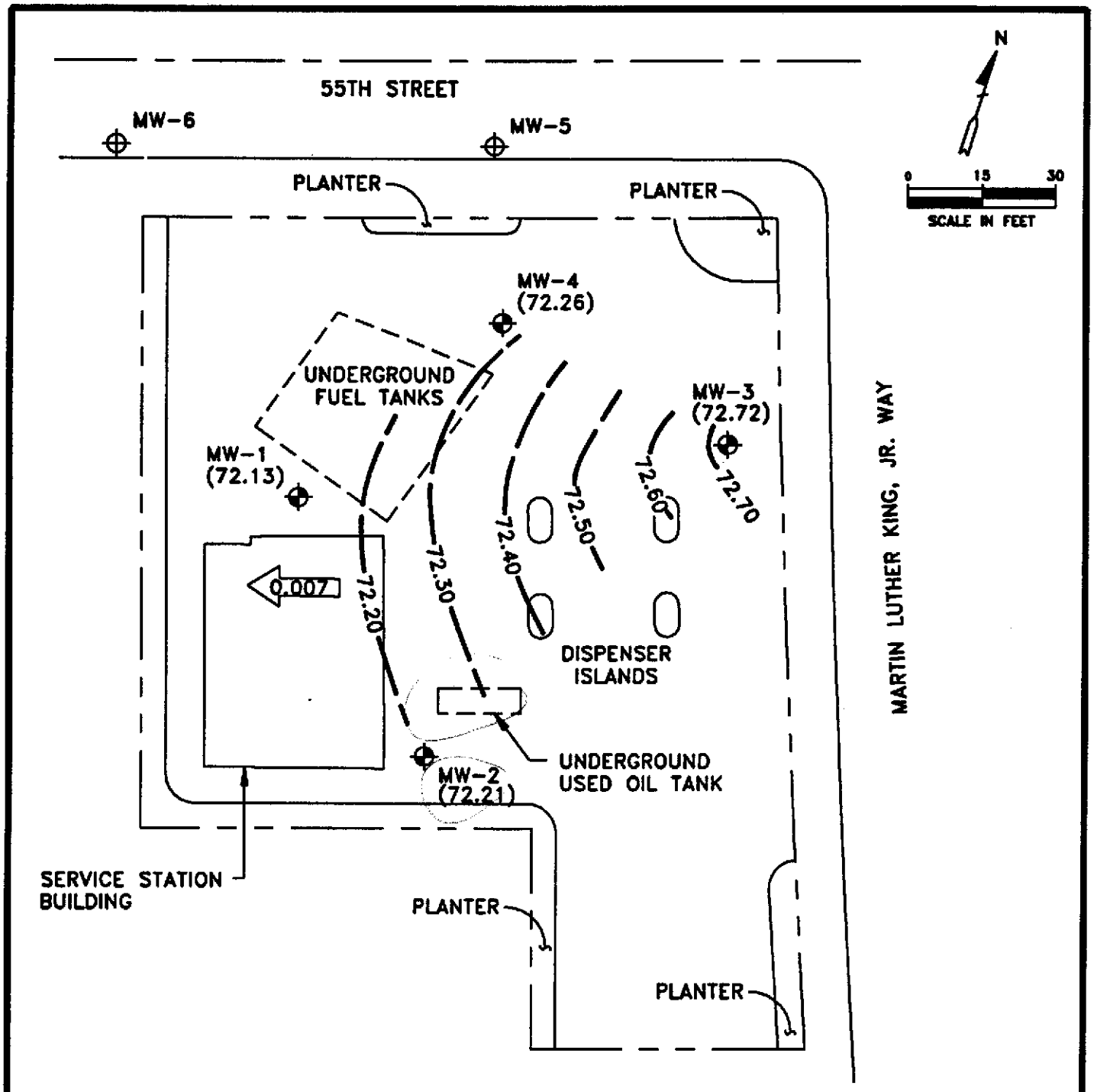
FIGURE 1

SITE VICINITY MAP

BP OIL SERVICE STATION NO. 11127
5425 MARTIN LUTHER KING, JR. WAY
OAKLAND, CALIFORNIA

ALISTO PROJECT NO. 10-022

ALISTO ENGINEERING GROUP
CONCORD, CALIFORNIA



LEGEND:

- GROUNDWATER MONITORING WELL
- GROUNDWATER MONITORING WELL INSTALLED FOR CHEVRON
- (72.13) GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL
- 72.60 GROUNDWATER ELEVATION CONTOUR IN FEET ABOVE MEAN SEA LEVEL (CONTOUR INTERVAL - 0.10 FOOT)
- 0.007 CALCULATED GROUNDWATER GRADIENT DIRECTION IN FOOT PER FOOT

FIGURE 2

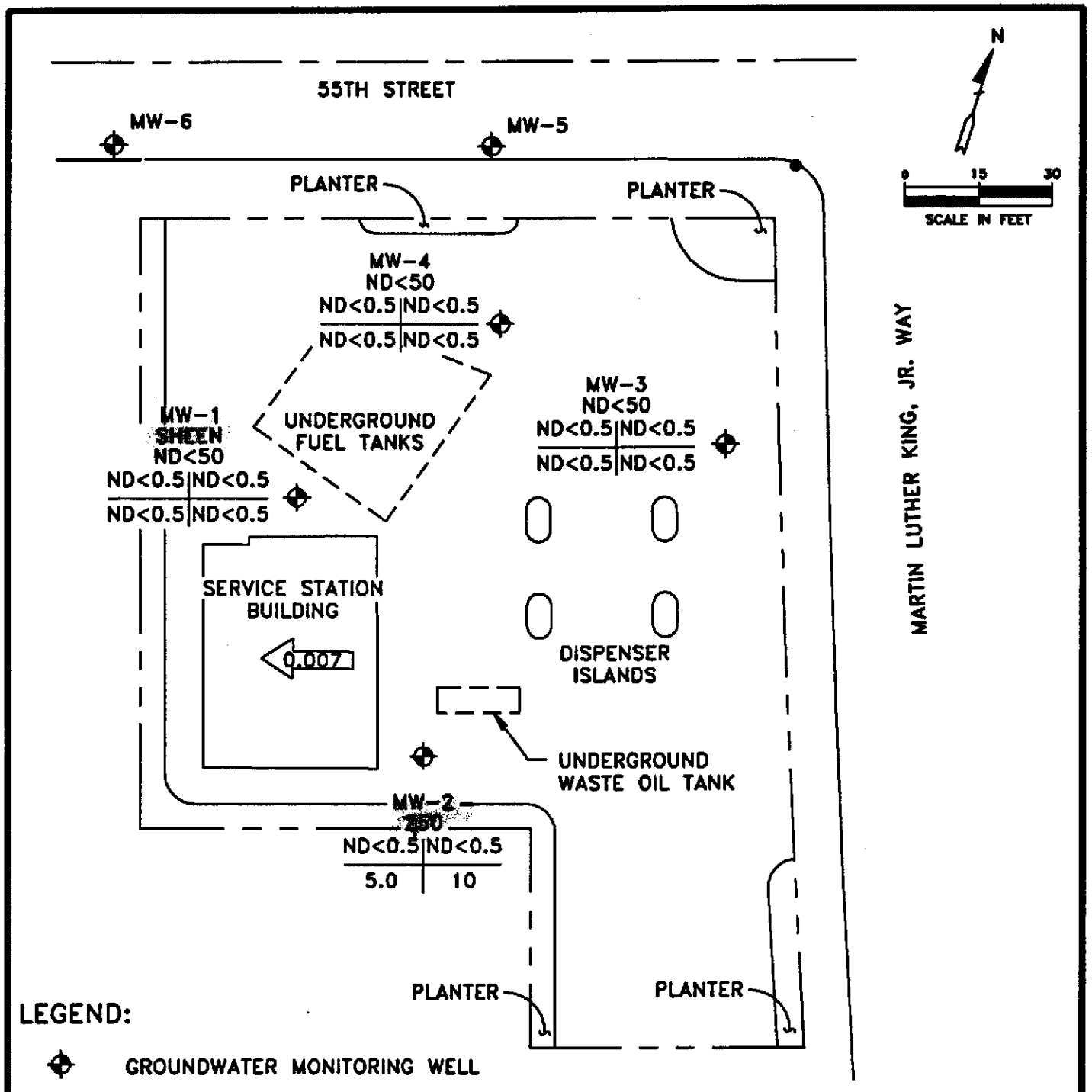
POTENTIOMETRIC GROUNDWATER ELEVATION CONTOUR MAP (NOVEMBER 12, 1992)

BP OIL SERVICE STATION NO. 11127
5425 MARTIN LUTHER KING, JR. WAY
OAKLAND, CALIFORNIA

PROJECT NO. 10-022

ALISTO ENGINEERING GROUP
CONCORD, CALIFORNIA

10022D18.DWG 12-15-92 JMS 1=360



LEGEND:

- GROUNDWATER MONITORING WELL
- TPH-G / B | T / E | X — CONCENTRATION OF CONSTITUENTS IN PARTS PER BILLION (PPB)
- TPH-G — TOTAL PETROLEUM HYDROCARBONS AS GASOLINE
- B — BENZENE
- T — TOLUENE
- E — ETHYLBENZENE
- X — TOTAL XYLENES
- ND — NOT DETECTED ABOVE REPORTED DETECTION LIMIT
- 0.007 — CALCULATED GROUNDWATER GRADIENT DIRECTION AND MAGNITUDE IN FOOT PER FOOT

FIGURE 3

CONCENTRATIONS OF PETROLEUM HYDROCARBONS IN GROUNDWATER (NOVEMBER 12, 1992)

BP OIL SERVICE STATION NO. 11127
5425 MARTIN LUTHER KING, JR. WAY
OAKLAND, CALIFORNIA

PROJECT NO. 10-022

ALISTO ENGINEERING GROUP
CONCORD, CALIFORNIA

10022017.DWG 12-16-92 JW 1=30

APPENDIX A

SENSITIVE RECEPTORS SURVEY

SENSITIVE RECEPTORS SURVEY
Site Survey and Literature Research

Store No: BP Oil Company Service Station No. 11127
Location: 5425 Martin Luther King, Jr. Way
City/State Oakland, California

I. Provide answers to the following questions:

a. Is a public water supply well within 2500 ft? (y/(n))
If yes, Distance (ft)_____

b. Is a private water supply well within 1000 ft? (y/(n))
If yes, Distance (ft)_____

c. Is a subway within 1000 ft? (y/(n))
If yes, Distance (ft)_____

d. Is a basement within 1000 ft? (y/(n))
If yes, Distance (ft)_____

e. Is a School within 1000 ft? ((y)/n)
If yes, Distance (ft) 600

f. Is a surface body of water within 1000 ft? (y/(n))
If yes, Distance (ft)_____

II. Describe type of local water supply:

Public
*Supplier's Name East Bay Municipal Utility District
*Supplier's Source Imported
*Distance to Site N/A
Private N/A

III. Aquifer Classification, if available:

_____ Class I: Special Ground Waters
Irreplaceable Drinking Water Sources
Ecologically Vital

_____ Class II: Current and Potential Drinking Water

__X__ Class III: Not Potential Source of Drinking Water

IV. Describe observation wells, if any:

Number 0
Free Product _____(y/(n))

V. Signature of Preparer Ted Moise Date 1/21/93

ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

5997 PARKSIDE DRIVE • PLEASANTON, CALIFORNIA 94566 • (415) 484-2600

GROUNDWATER PROTECTION ORDINANCE PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

LOCATION OF PROJECT BP Oil SS# 11127
5425 Martin Luther King, Jr. Way
Oakland CA

CLIENT
Name BP Oil Co.
Address 16400 Southcenter Phone (206) 394-5246
City Tukwila Zip 98188

APPLICANT
Name Alisto Engineering Group
Address 1000 Burnett Phone 798-4070
City Concord Zip 94520

TYPE OF PROJECT

Well Construction		Geotechnical Investigation	
Cathodic Protection	___	General	___
Water Supply	___	Contamination	___
Monitoring	X	Well Destruction	___

PROPOSED WATER SUPPLY WELL USE
Domestic ___ Industrial ___ Other ___
Municipal ___ Irrigation ___

DRILLING METHOD:
Mud Rotary ___ Air Rotary ___ Auger X
Cable ___ Other ___

DRILLER'S LICENSE NO. C57 610487
Great Sierra Explavation

WELL PROJECTS
Drill Hole Diameter 8 in. Maximum
Casing Diameter 2 in. Depth 35 ft.
Surface Seal Depth 20 ft. Number 2

GEOTECHNICAL PROJECTS
Number of Borings ___ Maximum
Hole Diameter ___ in. Depth ___ ft.

ESTIMATED STARTING DATE 10/28/92
ESTIMATED COMPLETION DATE 10/28/92

I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 73-68.

APPLICANT'S SIGNATURE Brady Nagle Date 10/23/92
BRADY NAGLE

FOR OFFICE USE

PERMIT NUMBER 92540
LOCATION NUMBER ___

PERMIT CONDITIONS

Circled Permit Requirements Apply

(A.) GENERAL
1. A permit application should be submitted so as arrive at the Zone 7 office five days prior proposed starting date.
2. Submit to Zone 7 within 60 days after completi of permitted work the original Department Water Resources Water Well Drillers Report equivalent for well projects, or drilling lc and location sketch for geotechnical projects.
3. Permit is void if project not begun within days of approval date.

(B.) WATER WELLS, INCLUDING PIEZOMETERS
1. Minimum surface seal thickness is two inches cement grout placed by tremie.
2. Minimum seal depth is 50 feet for municipal a industrial wells or 20 feet for domestic an irrigation wells unless a lesser depth specially approved. Minimum seal depth f monitoring wells is the maximum depth practicab or 20 feet.

C. GEOTECHNICAL. Backfill bore hole with compacted cu tings or heavy bentonite and upper two feet with co pacted material. In areas of known or suspect contamination, tremied cement grout shall be used place of compacted cuttings.

D. CATHODIC. Fill hole above anode zone with concre placed by tremie.

E. WELL DESTRUCTION. See attached.

Approved Wyman Hong Date 28 Oct 9
Wyman Hong

12198

APPENDIX C

FIELD PROCEDURES FOR SOIL BORING DRILLING AND SAMPLING AND GROUNDWATER MONITORING WELL INSTALLATION

FIELD PROCEDURES
FOR
SOIL BORING DRILLING AND SAMPLING
AND GROUNDWATER MONITORING WELL INSTALLATION

Soil Boring Drilling Procedures

The soil borings were drilled using 8-inch-diameter, continuous-flight, hollow-stem augers. To avoid cross-contamination, drilling equipment in contact with potentially contaminated material was decontaminated before and after each use by steam cleaning. Decontamination fluids were placed into properly labeled Department of Transportation approved drums for disposal.

Soil Sampling Procedures

During drilling, samples were collected beginning at 5 feet below grade and terminating at the total depth of each boring. Before and after each use, the sampler was washed using a phosphate-free detergent followed by tap water and deionized water rinses. Soil sampling was accomplished using a California-modified split-spoon sampler lined with appropriately sized brass tubes. A 140-pound slide hammer falling 30 inches was used to advance the sampler 18 inches ahead of the hollow-stem augers into undisturbed soil, and blow counts were recorded for every 6 inches of penetration to evaluate the consistency of the soil.

After retrieval from the augers, the sampler was split, the sample tubes removed, and a soil sample was selected for possible chemical analysis. The selected sample was retained within the brass tube, and both ends were immediately covered with Teflon sheeting and polyurethane caps. The caps were sealed with tape and labeled with the following information: Alisto Engineering project number, boring number, sample depth interval, sampler's initials, and date of collection. The soil sample was immediately placed in a waterproof plastic bag and stored in an ice chest containing blue or dry ice. Possession of the soil samples was documented from the field location to the state-certified analytical laboratory by using a chain of custody form.

Soil samples and, when representative, drill cuttings were described by Alisto Engineering personnel using the Unified Soil Classification System, and field estimates of soil type, color, moisture, density, and consistency were noted on the boring logs. The logs were reviewed by a civil engineer registered in the State of California.

Groundwater Monitoring Well Installation

The construction of the groundwater monitoring wells was based on the stratigraphy encountered in the soil borings. The well construction materials were introduced into the boring through the hollow-stem augers to centralize the well casing and minimize the possibility of native material entering the annular space of the well.

The 2-inch-diameter polyvinyl chloride well casing consisted of 0.020-inch slotted casing from the bottom of the boring to a depth interval above the highest anticipated water level, and solid casing was installed from the top of the slotted casing to approximately 6 inches below grade level. The casings, fittings, screens, and other components of the well construction were steam cleaned before installation.

The annular space surrounding the screened portion was backfilled with No. 3 Lonestar sand (filter pack) to approximately 1 foot above the top of the screened section after partial development to settle the filter pack. An approximately 1-foot-thick interval of bentonite pellets was added to the annulus above the filter pack and hydrated with approximately 5 gallons of deionized water to minimize intrusion of well seal into the filter pack. The remaining annulus was sealed with a neat cement grout to the surface. A traffic-rated utility box was installed around the top of the well casing, and set in concrete. An expanding, watertight well cap and lock were installed on the top of the well casing to secure the well from surface fluid and tampering.

APPENDIX D

BORING LOGS AND WELL CONSTRUCTION DETAILS

ALISTO ENGINEERING GROUP
CONCORD, CALIFORNIA

LOG OF BORING B-1/MW-3

SEE SITE PLAN

ALISTO PROJECT NO: 10-022-02 DATE DRILLED: 10/28/92

CLIENT: BP Oil Company

LOCATION: 5425 Martin Luther King, Jr. Way, Oakland, CA

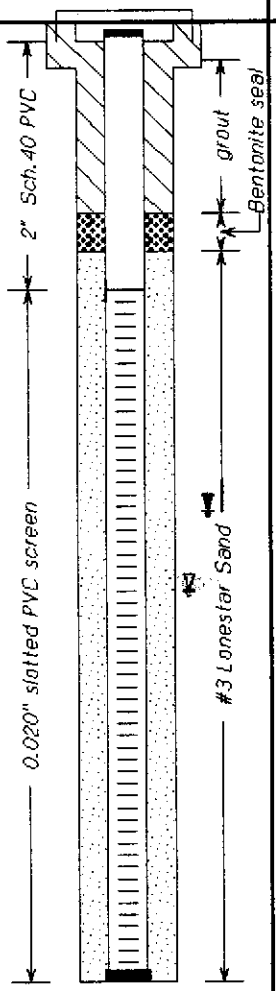
DRILLING METHOD: Hollow-stem Auger (8")

DRILLING COMPANY: Great Sierra Exploration CASING ELEVATION: 84.96 'MSL

LOGGED BY: Ted Moise APPROVED BY: Al Sevilla

BLOWS/6 IN.	PID VALUES	DEPTH feet	SOIL CLASS	GEOLOGIC DESCRIPTION
			SW	3" Asphalt. gravelly SAND: brown, damp, very loose, fine- to very coarse-grained sand, angular gravel to 1".
			ML	sandy SILT: dark brown, damp, soft, very fine- to fine-grained sand, minor clay, black at 3.5'.
8,4,4	1.3	5	SW	gravelly SAND: brown, damp, loose, fine- to coarse-grained sand, angular gravel to 1", minor fines.
4,4,5	1.4	10	ML	clayey SILT: gray/brown, damp, medium firm, minor very fine-grained sand.
4,5,7	1.3			Same: gray/green, stiff.
5,3,4	1.2	15		sandy SILT: gray/brown, wet, medium firm, very fine-grained sand, minor clay.
4,7,9	1.4		SW	gravelly SAND: brown/red, wet, medium dense, very fine- to very coarse-grained sand, gravel to 3/4", minor fines.
6,17,24		20		Same: dense.
3,8,8				(Insufficient Recovery 22-23.5 ').
5,8,8		25	ML	clayey SILT: gray/brown, wet, stiff, very fine-grained sand.
		30		

WELL DIAGRAM



ALISTO ENGINEERING GROUP
CONCORD, CALIFORNIA

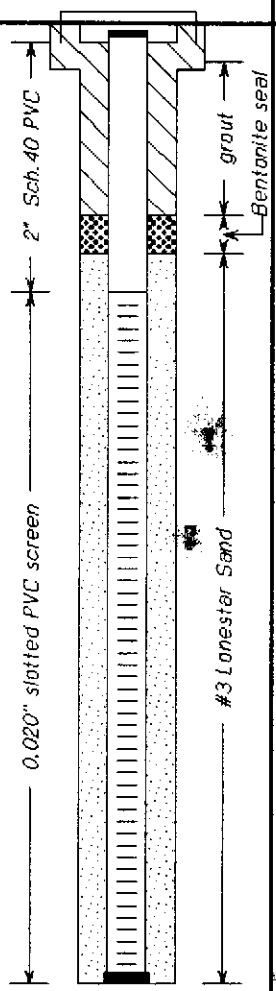
LOG OF BORING B-2/MW-4

SEE SITE PLAN

ALISTO PROJECT NO: 10-022-02 DATE DRILLED: 10/28/92
CLIENT: BP Oil Company
LOCATION: 5425 Martin Luther King, Jr. Way, Oakland, CA
DRILLING METHOD: Hollow-stem Auger (8")
DRILLING COMPANY: Great Sierra Exploration CASING ELEVATION: 82.70 'MSL
LOGGED BY: Ted Moise APPROVED BY: Al Sevilla

BLOWS/6 IN.	PID VALUES	DEPTH feet	SAMPLES	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION
					SW	3" Asphalt. gravelly SAND: brown, damp, loose, fine- to coarse-grained sand, gravel to 1", minor fines.
					ML	sandy SILT: dark brown, damp, medium firm, fine- to coarse-grained sand, minor angular gravel to 3/4".
5,5,7	1.4	5			SM	silty SAND: dark brown, damp, loose, fine- to coarse-grained sand, abundant silt, minor angular gravel to 3/4".
1,2,2	1.2	10			ML	clayey SILT: gray/green, very moist, soft, minor very fine-grained sand, rootlets.
4,6,8	1.8					sandy SILT: tan, wet, stiff, very fine-grained sand, minor clay.
5,5,9		15				Same: gray/tan, minor rounded gravel to 3/4".
4,5,9					SM	silty SAND: brown/gray, wet, medium dense, very fine to fine-grained sand, abundant silt, minor clay.
3,5,8		20			ML	clayey SILT: brown/gray, wet, medium firm, abundant clay, minor very fine-grained sand, minor angular gravel to 1/2".
3,6,8		25			SM	silty SAND: brown, wet, stiff, fine- to coarse-grained sand, abundant silt, minor angular gravel to 1/2".
		30				

WELL DIAGRAM



APPENDIX E

FIELD PROCEDURES FOR GROUNDWATER MONITORING WELL DEVELOPMENT AND SAMPLING, AND ELEVATION SURVEY MAP

FIELD PROCEDURES
FOR
GROUNDWATER MONITORING WELL DEVELOPMENT AND SAMPLING

Groundwater Monitoring Well Development

The groundwater monitoring wells were developed to consolidate and stabilize the filter pack to optimize well production and reduce the turbidity of subsequent groundwater samples. The well was developed during drilling before installation of the bentonite spacer and neat cement seal. Additionally, monitoring well development was accomplished by alternately using a surge block and pump to evacuate the water and sediments a minimum of 72 hours after installation of the cement seal. Development activities continued until the groundwater was relatively free of sediments and/or stabilization of pH, electrical conductivity, and temperature parameters was achieved. Well development fluids were placed into properly labeled Department of Transportation approved drums for disposal.

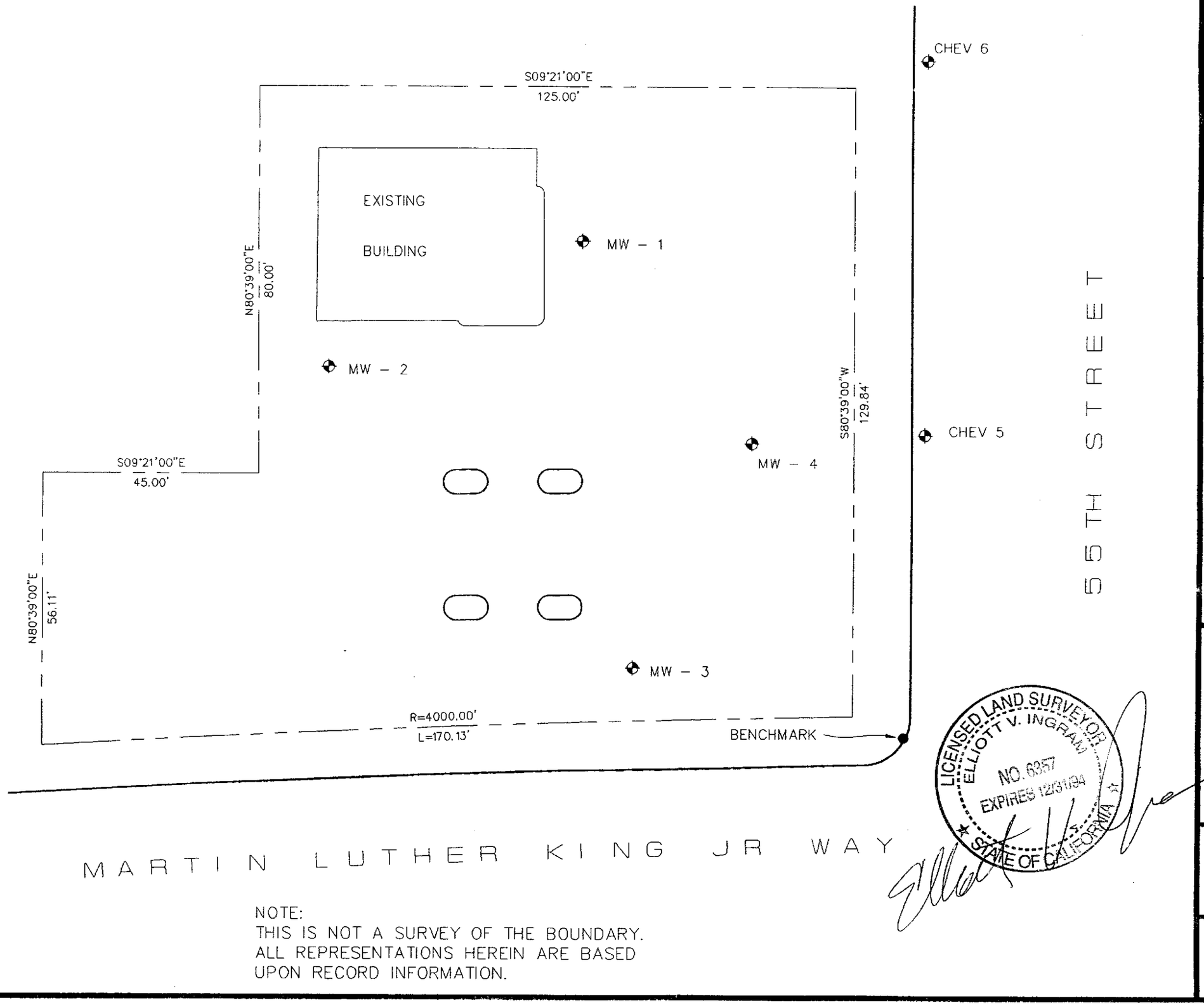
Groundwater Level Measurement

Before groundwater sampling activities, groundwater levels in each well at the site were measured from the permanent survey reference point at the top of the well casing. Groundwater in each well was monitored for the presence or absence of free-floating product or sheen. The depth to groundwater was measured to an accuracy of 0.01 foot from the top of the polyvinyl chloride well casing using an electronic sounder.

Groundwater Monitoring Well Sampling

To ensure that the groundwater sample was representative of the aquifer, the wells were purged of 3 casing volumes and the above parameters stabilized before sample collection. Purging was accomplished using a pump.

The groundwater samples were collected using a disposable bailer, and carefully transferred into the appropriate clean, glass, laboratory supplied containers. The sampling technician wore nitrile gloves at all times during purging and well sampling. The samples were clearly labeled with well number, site identification, date and time of collection, and sampler's initials, and transported in an iced cooler to a state-certified laboratory following proper preservation and chain of custody protocol.



NOTE:
THIS IS NOT A SURVEY OF THE BOUNDARY.
ALL REPRESENTATIONS HEREIN ARE BASED
UPON RECORD INFORMATION.

NORTH

SCALE: 1" = 20'

MONITORING WELL ELEVATIONS

MW – 1	82.35
MW – 2	83.48
MW – 3	84.96
MW – 4	82.70
CHEV 5	81.95
CHEV 6	80.60

LEGEND

MONITORING WELL

BENCHMARK

OAKLAND BM NO. 1967
ELEV. = 84.437

BP STATION NO. 11127
OAKLAND CALIF.

MONITORING WELL LOCATIONS

NOVEMBER 13, 1992

LICENSED LAND SURVEYOR
ELLIOTT V. INGRAM
NO. 6357
EXPIRES 12/31/94
STATE OF CALIFORNIA

ELLIOTT V. INGRAM
LAND SURVEYOR
1310 LA VISTA CONCORD, CA. 94521
(510) 689 - 4578

ALISTO ENGINEERING GROUP
CONCORD, CALIFORNIA

APPENDIX F

WATER SAMPLING FIELD SURVEY FORMS

Field Report / Data Sheet

Birch Technical Services

116 Liberty st
Santa Cruz, Ca 95060
(408) 459-0718

OGroundwater Sampling OGroundwater Monitoring X Well Development ODrill Support OStockpile Sampling

Firm: ALISTO	Date: 11/6/92	Station #: BP11127	Day: M Tu W Th (F)
Project Number: 10-022-02	Field Technician: Dan Birch	Address: 5425 Martin Luther King Jr. Way, Oakland	Weather: Clear, cool
			Milage: 131 mi

Equipment List:

- X Water Guage (1)day
- O Parameter Kit( )day
- X Disposable Bailers (2)
- O Plug(s)( )(in)
- X Honda Pump (1)day
- X Poly Tubing (5ft ft)
- O Dolphin Lock(s) ( )
- O Nitrile Gloves (pair)
- O ( )
- O ( )

Travel Time: 2 hrs
Time at Site: 1.5 hrs
Total Time: 3.5 hrs

DTWorder	Well ID	Diam	Lock	Exp Cap	Total Depth (feet)	1st Depth to Water (feet)	2nd Depth to Water (feet)	Depth to Product (feet)	Product Thickness	Comments
						12.16 ↓	12.16 ↓			
	MW-3	2	ok	ok	24.76	~~10.31~~	~~10.31~~			
	MW-4	2	ok	ok	24.75	10.31	10.31			

Notes: Travel 12-1. Arrive open wells then measure DTW and BOH. Develop MW-3 and MW-4 as shown on "Monitoring well Development Form". Secure wells and drums then leave site at 2:30. Travel on Lil 3:50.

Page ___ of ___ Inv#: ___

Birch Technical Services

116 Liberty Street
Santa Cruz, Ca 95060
(408) 459-0718

Monitoring Well Development Form

Well Number: MW-3

Project Number: 10-022-02
Station Number: BP11127
Date: 11/6/97

Sampled by: Dan Birch

WELL PURGING

PURGE VOLUME

Casing Diameter (inches) / Volume Factors:

⊗2"	O3"	O4"	O4.5"	O6"	O____
0.1632	0.3672	0.6528	0.826	1.469	____

Total Depth of Well Prior to Development: 24.76
Initial Water Level: 12.16

Total Depth of Well After Development: 24.76
Final Water Level: 22.19

Total Volume Purged: 25
Time Elapsed: 18

Subjective Evaluation of Well Production
⊗Good OModerate OPoor

DEVELOPMENT METHOD:
⊗ Honda Pump
⊗Disposable PolyTubing(27 ft)
ODisposable PVC Bailer(s)(____)
OOther____

Subjective Analysis Prior to Development
SHEEN OYes ⊗No
Product Thickness: None (ft)
Depth to Product: None (ft)

Calculated Purge Volume:

Total Depth	Water Level		Well Vol. Fac.		#of vol. to Purge		Calculated Purge Volume
24.76 -	12.16	= 12.6 x	.16	= ____ x	10	=	20.1 (gallons)

COMMENTS: Slow pumping allowed constant discharge.

SUBJECTIVE ANALYSIS DURING DEVELOPMENT

Gallons Removed	Time	Black	Grey	Dark Brown	Light Brown	Clear		SUSPENDED SAND & SILT YES	SUSPENDED SAND & SILT NO
5	1400			X				X	
10	1405			X				X	
15	1408			X				X	
20	1413				X				X
25	1418					X			X

Birch Technical Services

116 Liberty Street
Santa Cruz, Ca 95060
(408) 459-0718

Monitoring Well Development Form

Well Number: MW-4

Project Number: 10-022-02
Station Number: BP1112 7
Date: 11/6/92

Sampled by: Dan Birch

WELL PURGING

PURGE VOLUME

Casing Diameter (inches) / Volume Factors:

~~O~~2"	O3"	O4"	O4.5"	O6"	O____
0.1632	0.3672	0.6528	0.826	1.469	_____

Total Depth of Well Prior to Development 24.74 Initial Water Level: 10.31

Total Depth of Well After Development 24.75 Final Water Level 23.42

Total Volume Purged: 25 Time Elapsed: 15

Subjective Evaluation of Well Production
~~O~~Good OModerate OPoor

DEVELOPMENT METHOD:
~~O~~Honda Pump
~~O~~Disposable PolyTubing(27 ft)
ODisposable PVC Bailer(s)(____)
OOther_____

Subjective Analysis Prior to Development
SHEEN OYes ~~O~~No

Product Thickness None (ft)

Depth to Product None (ft)

Calculated Purge Volume:

24.74 (Total Depth) - 10.31 (Water Level) = 14.43 x .16 (Well Vol. Fac.) = 2.3 x 10 (#of vol. to Purge) = 23.1 (gallons) Calculated Purge Volume

COMMENTS:

SUBJECTIVE ANALYSIS DURING DEVELOPMENT

Gallons Removed	Time	Black	Grey	Dark Brown	Light Brown	Clear	
2	1340			X			
10	1344			X			
15	1347			X			
18	1350				X		
20	1352					X	
25	1355					X	

SUSPENDED SAND & SILT

YES	NO
X	
	X
X	
	X
	X
	X

ALISTO ENGINEERING GROUP
FIELD FORM

Client: BP
Alisto Project No: 10-022-02/001
Service Station No: 1127

Date: 11/12/92
Field Personnel: LCB
Site Address: Oakland, CA

Field Activity: __Groundwater Monitoring X Groundwater Sampling __Well Development

Well ID	Order Measured	Total Depth	Depth to Water	Depth to Product	Product Thickness	Comments
MW-1	1	27.55	10.22			Sheen
MW-2	2	26.81	11.27	Ø	Ø	
MW-3	3	24.50	12.24	Ø	Ø	
MW-4	4	24.46	10.44	Ø	Ø	

QUALITY CONTROL SAMPLES:

MW-1 QC-1 Sample Duplicate (Well ID)
X QC-2 Trip Blank
__ QC-3 Rinsate Blank

Notes:

ALISTO ENGINEERING GROUP

Groundwater Monitoring Well Development/Sampling Field Survey Form

Client: BP
Alisto Project No: 10-022-02
Service Station No: 11127

Date: 11/12/92
Field Personnel: LCB
Address: Oakland, Ca

Well ID: MW-1 Field Activity: ___Well Development X Well Sampling ___Product Bailing

Casing Diameter:
___2 Inch (0.16 Gal/foot)
___3 Inch (0.37 Gal/foot)
X 4 Inch (0.65 Gal/Foot)
___4.5 Inch (0.83 Gal/foot)
___6 Inch (1.47 Gal/foot)

Purge Method:
___Pump (dispos. Poly Tubing)
X Disposable Bailers
___Other
___1.66 PVC Standard Bailer
___3.50 PVC Standard Bailer

Well Data:
Ø Depth to Product
Ø Product Thickness
10.22 Depth to Water

Sampling Method:
X Dispos. Bailer
___Pump

Decontamination Method: X Triple Rinse (Liquinox) ___ Steam Cleaned

Calculated Purge Volume

Total Depth of Well	Depth to Water		Water Column	Conversion Factor	Casing Vol	Vols to Purge	Calculated Purge Volume
27.55	- 10.22	=	17.33 ft	X .65 Gal/Ft	= 11.26 Gal	X 3	= 33.78

Well Development/Sampling Parameters

Time	Surged (Min)	Temp °F	pH	Cond. (umhos /cm)	Purge Vol (Gal)	Comments	Analysis Required		Container Type	Preserv.
				X100						
1321		69.2	8.68	6.99	6.75	Clear, Sheen	X	TPH-G/BTEX	VOA	HCL
1326		67.6	8.14	6.42	13.50	" "		TPH-Diesel	Amber Liter	
1337		66.0	7.89	6.50	20.25	" "		EPA 601	VOA	
1345		65.7	7.81	6.37	27.00	Lt Brown sheen Suspended Sediment Silt		TOG 5520BF	Amber Liter	H_2NO_3
1357		64.7	8.13	5.87	34.00	" "				

Comments:
Begin Purge: 1314 Stop: 1357 Sampled: 1407
Moderately Slow Produced! Well went dry after Purging ~27 gal. Stop @ 1348 to allow Recharge. Returned @ 1355 Purged remaining Volume.
QC-1 Duplicate taken from this well.
Sheen observed during Purging

ALISTO ENGINEERING GROUP

Groundwater Monitoring Well Development/Sampling Field Survey Form

Client: BP
Alisto Project No: 10-022-02
Service Station No: 11127

Date: 11/12/92
Field Personnel: LCB
Address: Oakland, Ca

Well ID: MW-2 Field Activity: ___Well Development X Well Sampling ___Product Bailing

Casing Diameter:
___2 Inch (0.16 Gal/foot)
___3 Inch (0.37 Gal/foot)
X 4 Inch (0.65 Gal/Foot)
___4.5 Inch (0.83 Gal/foot)
___6 Inch (1.47 Gal/foot)

Purge Method:
___Pump (dispos. Poly Tubing)
X Disposable Bailers
___Other
___1.66 PVC Standard Bailer
___3.50 PVC Standard Bailer

Well Data:
Ø Depth to Product
Ø Product Thickness
11.27 Depth to Water

Sampling Method:
X Dispos. Bailer
___Pump

Decontamination Method: X Triple Rinse (Liquinox) ___ Steam Cleaned

Calculated Purge Volume

26.81 (Total Depth of Well) - 11.27 (Depth to Water) = 15.54 (Water Column) ft X .65 (Conversion Factor) Gal/Ft = 10.10 (Casing Vol) Gal X 3 (Vols to Purge) = 30.30 (Calculated Purge Volume)

Well Development/Sampling Parameters

Time	Surged (Min)	Temp °F	pH	Cond. (umhos /cm)	Purge Vol (Gal)	Comments		Analysis Required	Container Type	Preserv.
1423		64.9	8.39	X100 .24	6	Clear	X	TPH-G/BTEX	VOA	HCL
1429		64.9	7.95	4.06	12	" "	X	TPH-Diesel	Amber Liter	
1436		65.0	7.83	3.96	18	" "	X	EPA 601	VOA	
1441		64.6	7.69	3.89	24	" "	X	TOG 5520BF	Amber Liter	H_2NO_3
1446		64.5	7.61	3.86	30.50	" "				

Comments:
Begin Purge: 1419 Stop: 1446 Sampled: 1503
Well produces good

-ALISTO ENGINEERING GROUP

Groundwater Monitoring Well Development/Sampling Field Survey Form

Client: BP
Alisto Project No: 10-022-02
Service Station No: 11127

Date: 11/12/92
Field Personnel: LCB
Address: Oakland, CA

Well ID: MW-3 Field Activity: ___Well Development X Well Sampling ___Product Bailing

Casing Diameter:
X 2 Inch (0.16 Gal/foot)
___3 Inch (0.37 Gal/foot)
___4 Inch (0.65 Gal/Foot)
___4.5 Inch (0.83 Gal/foot)
___6 Inch (1.47 Gal/foot)

Purge Method:
___Pump (dispos. Poly Tubing)
X Disposable Bailers
___Other
___1.66 PVC Standard Bailer
___3.50 PVC Standard Bailer

Well Data:
0 Depth to Product
0 Product Thickness
12.24 Depth to Water

Sampling Method:
X Dispos. Bailer
___Pump

Decontamination Method: X Triple Rinse (Liquinox) ___ Steam Cleaned

Calculated Purge Volume

24.50 (Total Depth of Well) - 12.24 (Depth to Water) = 12.26 ft (Water Column) X .16 Gal/Ft (Conversion Factor) = 1.96 Gal (Casing Vol) X 3 (Vols to Purge) = 5.88 (Calculated Purge Volume)

Well Development/Sampling Parameters

Time	Surged (Min)	Temp °F	pH	Cond. (umhos /cm)	Purge Vol (Gal)	Comments		Analysis Required	Container Type	Preserv.
1513		65.6	7.99	X100 5.95	1.25	Lt Brown Suspended Silt, Sediment	X	TPH-G/BTEX	VOA	HCL
1516		66.5	7.70	6.20	2.50	" "		TPH-Diesel	Amber Liter	
1520		66.5	7.76	6.66	3.75	" "		EPA 601	VOA	
1524		66.0	7.95	6.60	5.00	" "		TOG 5520BF	Amber Liter	H_2NO_3
1527		66.2	7.80	6.43	6.00	" "				

Comments:
Begin Purge: 1508 Stop 1527 Sampled: 1534
Well produces Good.

ALISTO ENGINEERING GROUP

Groundwater Monitoring Well Development/Sampling Field Survey Form

Client: BP
Alisto Project No: 10-022-02
Service Station No: 11127

Date: 11/12/92
Field Personnel: LCB
Address: Oakland, CA

Well ID: MW-4 Field Activity: ___Well Development X Well Sampling ___Product Bailing

Casing Diameter:
X 2 Inch (0.16 Gal/foot)
___3 Inch (0.37 Gal/foot)
___4 Inch (0.65 Gal/Foot)
___4.5 Inch (0.83 Gal/foot)
___6 Inch (1.47 Gal/foot)

Purge Method:
___Pump (dispos. Poly Tubing)
X Disposable Bailers
___Other
___1.66 PVC Standard Bailer
___3.50 PVC Standard Bailer

Well Data:
Ø Depth to Product
Ø Product Thickness
10.44 Depth to Water

Sampling Method:
X Dispos. Bailer
___Pump

Decontamination Method: X Triple Rinse (Liquinox) ___ Steam Cleaned

Calculated Purge Volume

24.46 (Total Depth of Well) - 10.44 (Depth to Water) = 14.02 ft (Water Column) X .16 Gal/Ft (Conversion Factor) = 2.24 Gal (Casing Vol) X 3 (Vols to Purge) = 6.72 (Calculated Purge Volume)

Well Development/Sampling Parameters

Time	Surged (Min)	Temp °F	pH	Cond. (umhos /cm)	Purge Vol (Gal)	Comments		Analysis Required	Container Type	Preserv.
1601		69.8	8.23	X100 6.61	1.25	Lt Brown Suspended silt/ Sediment	X	TPH-G/BTEX	VOA	HCL
1604		69.5	7.85	6.73	2.50	" "		TPH-Diesel	Amber Liter	
1607		68.3	7.55	6.60	3.75	" "		EPA 601	VOA	
1611		66.8	7.59	6.05	5.25	" "		TOG 5520BF	Amber Liter	H_2NO_3
1614		66.9	7.63	5.43	6.75	" "				

Comments:
Begin Purge: 1536 Stop: 1614 Sampled: 1618
Well produces good.

APPENDIX G

FIELD PROCEDURES FOR CHAIN OF CUSTODY DOCUMENTATION, OFFICIAL LABORATORY REPORTS, AND CHAIN OF CUSTODY RECORDS

FIELD PROCEDURES
FOR
CHAIN OF CUSTODY DOCUMENTATION

Samples collected were properly handled in accordance with the California Department of Health Services guidelines. Each sample was properly labeled in the field, and immediately stored in coolers and preserved with blue or dry ice for transport to a state-certified laboratory for analysis.

The official chain of custody record accompanied the samples, and included the site and sample identification, date and time of sample collection, analysis requested, and the name and signature of the sampling technician. When transferring possession of the samples, the transferee signed and dated the chain of custody record.

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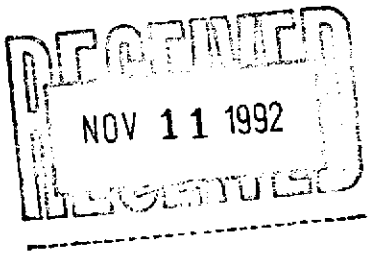
THE ASSURANCE OF QUALITY

REPORT OF LABORATORY ANALYSIS



November 10, 1992

Mr. Brady Nagle
Alisto Engineering Group
1000 Burnett Ave., Ste. 420
Concord, CA 94520

RE: PACE Project No. 421029.507
Client Reference: BP Station # 11127

Dear Mr. Nagle:

Enclosed is the report of laboratory analyses for samples received October 29, 1992.

Footnotes are given at the end of the report.

If you have any questions concerning this report, please feel free to contact us.

Sincerely,

Stephanie Matzo

Stephanie Matzo
Project Manager

Enclosures

11 Digital Drive
Novato, CA 94949
TEL: 415-883-6100
FAX: 415-883-2673

pace INCORPORATED
THE ASSURANCE OF QUALITY

REPORT OF LABORATORY ANALYSIS

Alisto Engineering Group
1000 Burnett Ave., Ste. 420
Concord, CA 94520

November 10, 1992
PACE Project Number: 421029507

Attn: Mr. Brady Nagle

Client Reference: BP Station # 11127

PACE Sample Number:			70 0241154	
Date Collected:			10/28/92	
Date Received:			10/29/92	
Client Sample ID:			B-1-11	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
PURGEABLE FUELS AND AROMATICS				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	11/07/92
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/kg wet	1000	ND	11/07/92
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	11/07/92
Benzene	ug/kg wet	5.0	ND	11/07/92
Toluene	ug/kg wet	5.0	ND	11/07/92
Ethylbenzene	ug/kg wet	5.0	ND	11/07/92
Xylenes, Total	ug/kg wet	5.0	ND	11/07/92

11 Digital Drive
Novato, CA 94949
TEL: 415-883-6100
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THE ASSURANCE OF QUALITY

REPORT OF LABORATORY ANALYSIS

Mr. Brady Nagle
Page 2

November 10, 1992
PACE Project Number: 421029507

Client Reference: BP Station # 11127

PACE Sample Number:			70 0241162	
Date Collected:			10/28/92	
Date Received:			10/29/92	
Client Sample ID:			B-1-13	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
PURGEABLE FUELS AND AROMATICS				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	11/08/92
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/kg wet	1000	ND	11/08/92
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	11/08/92
Benzene	ug/kg wet	5.0	ND	11/08/92
Toluene	ug/kg wet	5.0	ND	11/08/92
Ethylbenzene	ug/kg wet	5.0	ND	11/08/92
Xylenes, Total	ug/kg wet	5.0	ND	11/08/92

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Novato, CA 94949
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REPORT OF LABORATORY ANALYSIS

Mr. Brady Nagle
Page 3

November 10, 1992
PACE Project Number: 421029507

Client Reference: BP Station # 11127

PACE Sample Number:			70 0241170	
Date Collected:			10/28/92	
Date Received:			10/29/92	
Client Sample ID:			B-2-11	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
PURGEABLE FUELS AND AROMATICS				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	11/08/92
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/kg wet	1000	ND	11/08/92
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	11/08/92
Benzene	ug/kg wet	5.0	ND	11/08/92
Toluene	ug/kg wet	5.0	ND	11/08/92
Ethylbenzene	ug/kg wet	5.0	ND	11/08/92
Xylenes, Total	ug/kg wet	5.0	ND	11/08/92

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FAX: 415-883-2673

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THE ASSURANCE OF QUALITY

REPORT OF LABORATORY ANALYSIS

Mr. Brady Nagle
Page 4

November 10, 1992
PACE Project Number: 421029507

Client Reference: BP Station # 11127

PACE Sample Number:			70 0241189	
Date Collected:			10/28/92	
Date Received:			10/29/92	
Client Sample ID:			B-2-13	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
PURGEABLE FUELS AND AROMATICS				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	11/08/92
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/kg wet	1000	ND	11/08/92
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	11/08/92
Benzene	ug/kg wet	5.0	ND	11/08/92
Toluene	ug/kg wet	5.0	ND	11/08/92
Ethylbenzene	ug/kg wet	5.0	ND	11/08/92
Xylenes, Total	ug/kg wet	5.0	ND	11/08/92

These data have been reviewed and are approved for release.

Mark A. Valentini, Ph.D.
Regional Director

11 Digital Drive
Novato, CA 94949
TEL: 415-883-6100
FAX: 415-883-2673

Mr. Brady Nagle
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FOOTNOTES
for pages 1 through 4

November 10, 1992
PACE Project Number: 421029507

Client Reference: BP Station # 11127

MDL Method Detection Limit
ND Not detected at or above the MDL.

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REPORT OF LABORATORY ANALYSIS

Mr. Brady Nagle
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QUALITY CONTROL DATA

November 10, 1992
PACE Project Number: 421029507

Client Reference: BP Station # 11127

PURGEABLE FUELS AND AROMATICS
Batch: 70 16771
Samples: 70 0241154

METHOD BLANK:

Parameter	Units	MDL	Method Blank
TOTAL FUEL HYDROCARBONS, (LIGHT):			-
Purgeable Fuels, as Gasoline (EPA 8015M	ug/kg wet	200	ND
PURGEABLE AROMATICS (BTXE BY EPA 8020M)			-
Benzene	ug/kg wet	1.0	ND
Toluene	ug/kg wet	1.0	ND
Ethylbenzene	ug/kg wet	1.0	ND
Xylenes, Total	ug/kg wet	1.0	ND

LABORATORY CONTROL SAMPLE AND CONTROL SAMPLE DUPLICATE:

Parameter	Units	MDL	Reference Value	Recv	Dupl Recv	RPD
Purgeable Fuels, as Gasoline (EPA 8015M	ug/kg wet	200	369	103%	101%	1%
Benzene	ug/kg wet	1.0	40.0	96%	96%	0%
Toluene	ug/kg wet	1.0	40.0	99%	98%	1%
Ethylbenzene	ug/kg wet	1.0	40.0	94%	93%	1%
Xylenes, Total	ug/kg wet	1.0	80.0	94%	93%	1%

REPORT OF LABORATORY ANALYSIS

QUALITY CONTROL DATA

November 10, 1992
PACE Project Number: 421029507

Client Reference: BP Station # 11127

PURGEABLE FUELS AND AROMATICS
Batch: 70 16784
Samples: 70 0241162, 70 0241170, 70 0241189

METHOD BLANK:

Parameter	Units	MDL	Method Blank
TOTAL FUEL HYDROCARBONS, (LIGHT):			-
Purgeable Fuels, as Gasoline (EPA 8015M	ug/kg wet	200	ND
PURGEABLE AROMATICS (BTXE BY EPA 8020M)			-
Benzene	ug/kg wet	1.0	ND
Toluene	ug/kg wet	1.0	ND
Ethylbenzene	ug/kg wet	1.0	ND
Xylenes, Total	ug/kg wet	1.0	ND

LABORATORY CONTROL SAMPLE AND CONTROL SAMPLE DUPLICATE:

Parameter	Units	MDL	Reference Value	Recv	Dupl Recv	RPD
Purgeable Fuels, as Gasoline (EPA 8015M	ug/kg wet	200	369	99%	104%	4%
Benzene	ug/kg wet	1.0	40.0	98%	99%	1%
Toluene	ug/kg wet	1.0	40.0	96%	96%	0%
Ethylbenzene	ug/kg wet	1.0	40.0	96%	97%	1%
Xylenes, Total	ug/kg wet	1.0	80.0	93%	94%	1%

Mr. Brady Nagle
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FOOTNOTES
for pages 6 through 7

November 10, 1992
PACE Project Number: 421029507

Client Reference: BP Station # 11127

MDL	Method Detection Limit
ND	Not detected at or above the MDL.
RPD	Relative Percent Difference

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57423.

CHAIN-OF-CUSTODY RECORD
Analytical Request

Client: Alisto Engineering Group
Address: 1000 Burnett Ave, Syte 420
Concord CA 94520
Phone: (510) 798-4070

Report To: Brady Nagle
Bill To: BP Oil Co.
P.O. # / Billing Reference: BP# 11127 per B Nagle 10/29/92
Project Name / No.: 10-022-02 / MLK #55

Pace Client No.:
Pace Project Manager:
Pace Project No.: 421029.507
*Requested Due Date: 11/2/92 5PM

Sampled By (PRINT): Ted Moise 10/28/92
Sampler Signature: Ted Moise
Date Sampled:

ITEM NO.	SAMPLE DESCRIPTION	TIME	MATRIX	PACE NO.	NO. OF CONTAINERS	PRESERVATIVES: UNPRESERVED	H_2SO_4	HNO_3	VOA	ANALYSES REQUEST: TPH-G/BTEX	REMARKS
1	B-1-11		Soil	24111.4	1					✓	
2	B-1-13		↓	116.2	1					✓	
3	B-2-11			117.0	1					✓	
4	B-2-13			118.9	1					✓	
5											
6											
7											
8											

COOLER NOS.	BAILERS	SHIPMENT METHOD OUT · DATE	SHIPMENT METHOD RETURNED · DATE
11			

Additional Comments:

ITEM NUMBER	RELINQUISHED BY · AFFILIATION	ACCEPTED BY · AFFILIATION	DATE	TIME
	Ted Moise	Donald Sharshi Pace	10/29/92	1536
	Donald Sharshi Pace	Jim Cp / Pace	10/29/92	1715

ORIGINAL

SEE REVERSE SIDE FOR INSTRUCTIONS

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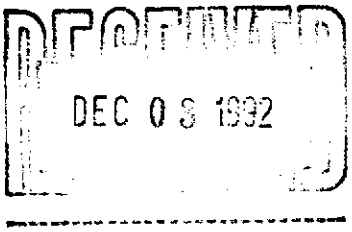
REPORT OF LABORATORY ANALYSIS



December 01, 1992

Mr. Brady Nagle
Alisto Engineering Group
1000 Burnett Ave., Ste. 420
Concord, CA 94520

RE: PACE Project No. 421113.504
Client Reference: BP Station # 11127

Dear Mr. Nagle:

Enclosed is the report of laboratory analyses for samples received November 13, 1992.

Footnotes are given at the end of the report.

If you have any questions concerning this report, please feel free to contact us.

Sincerely,

Stephanie Matzo

Stephanie Matzo
Project Manager

Enclosures

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REPORT OF LABORATORY ANALYSIS

Alisto Engineering Group
1000 Burnett Ave., Ste. 420
Concord, CA 94520

December 01, 1992
PACE Project Number: 421113504

Attn: Mr. Brady Nagle

Client Reference: BP Station # 11127

PACE Sample Number:			70 0248698	
Date Collected:			11/12/92	
Date Received:			11/13/92	
			QC-2	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
PURGEABLE FUELS AND AROMATICS				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	11/18/92
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	ND	11/18/92
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	11/18/92
Benzene	ug/L	0.5	ND	11/18/92
Toluene	ug/L	0.5	ND	11/18/92
Ethylbenzene	ug/L	0.5	ND	11/18/92
Xylenes, Total	ug/L	0.5	ND	11/18/92

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REPORT OF LABORATORY ANALYSIS

Mr. Brady Nagle
Page 2

December 01, 1992
PACE Project Number: 421113504

Client Reference: BP Station # 11127

PACE Sample Number:			70 0248701	
Date Collected:			11/12/92	
Date Received:			11/13/92	
Client Sample ID:			MW-2	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
PURGEABLE FUELS AND AROMATICS				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	11/24/92
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	250	11/24/92
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	11/24/92
Benzene	ug/L	0.5	ND	11/24/92
Toluene	ug/L	0.5	ND	11/24/92
Ethylbenzene	ug/L	0.5	5.0	11/24/92
Xylenes, Total	ug/L	0.5	10	11/24/92
HALOGENATED VOLATILE COMPOUNDS EPA 8010				
Dichlorodifluoromethane	ug/L	2.0	ND	11/23/92
Chloromethane	ug/L	2.0	ND	11/23/92
Vinyl Chloride	ug/L	2.0	ND	11/23/92
Bromomethane	ug/L	2.0	ND	11/23/92
Chloroethane	ug/L	2.0	ND	11/23/92
Trichlorofluoromethane (Freon 11)	ug/L	2.0	ND	11/23/92
1,1-Dichloroethene	ug/L	0.5	ND	11/23/92
Methylene Chloride	ug/L	2.0	ND	11/23/92
trans-1,2-Dichloroethene	ug/L	0.5	ND	11/23/92
cis-1,2-Dichloroethene	ug/L	0.5	ND	11/23/92
1,1-Dichloroethane	ug/L	0.5	ND	11/23/92
Chloroform	ug/L	0.5	ND	11/23/92
1,1,1-Trichloroethane (TCA)	ug/L	0.5	ND	11/23/92
Carbon Tetrachloride	ug/L	0.5	ND	11/23/92
1,2-Dichloroethane (EDC)	ug/L	0.5	0.5	11/23/92
Trichloroethene (TCE)	ug/L	0.5	ND	11/23/92
1,2-Dichloropropane	ug/L	0.5	ND	11/23/92
Bromodichloromethane	ug/L	0.5	ND	11/23/92
2-Chloroethylvinyl ether	ug/L	0.5	ND	11/23/92
cis-1,3-Dichloropropene	ug/L	0.5	ND	11/23/92
trans-1,3-Dichloropropene	ug/L	0.5	ND	11/23/92
1,1,2-Trichloroethane	ug/L	0.5	ND	11/23/92
Tetrachloroethene	ug/L	0.5	ND	11/23/92

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REPORT OF LABORATORY ANALYSIS

Mr. Brady Nagle
Page 3

December 01, 1992
PACE Project Number: 421113504

Client Reference: BP Station # 11127

PACE Sample Number:			70 0248701	
Date Collected:			11/12/92	
Date Received:			11/13/92	
Client Sample ID:			MW-2	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
HALOGENATED VOLATILE COMPOUNDS EPA 8010				
Dibromochloromethane	ug/L	0.5	ND	11/23/92
Chlorobenzene	ug/L	0.5	ND	11/23/92
Bromoform	ug/L	0.5	ND	11/23/92
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND	11/23/92
1,3-Dichlorobenzene	ug/L	0.5	ND	11/23/92
1,4-Dichlorobenzene	ug/L	0.5	ND	11/23/92
1,2-Dichlorobenzene	ug/L	0.5	ND	11/23/92
Bromochloromethane (Surrogate Recovery)			73%	11/23/92
1,4-Dichlorobutane (Surrogate Recovery)			107%	11/23/92
EXTRACTABLE FUELS EPA 3510/8015				
Extractable Fuels, as Diesel	mg/L	0.050	0.088	11/18/92
Date Extracted			11/16/92	
OIL AND GREASE, SILICA GEL (LUFT)				
Oil and Grease, Gravimetric (SM5520)	mg/L	5.0	ND	11/16/92
Date Extracted			11/16/92	

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REPORT OF LABORATORY ANALYSIS

Mr. Brady Nagle
Page 4

December 01, 1992
PACE Project Number: 421113504

Client Reference: BP Station # 11127

PACE Sample Number:			70 0248710	
Date Collected:			11/12/92	
Date Received:			11/13/92	
Client Sample ID:			MW-3	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
PURGEABLE FUELS AND AROMATICS				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	11/23/92
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	ND	11/23/92
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	11/23/92
Benzene	ug/L	0.5	ND	11/23/92
Toluene	ug/L	0.5	ND	11/23/92
Ethylbenzene	ug/L	0.5	ND	11/23/92
Xylenes, Total	ug/L	0.5	ND	11/23/92

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REPORT OF LABORATORY ANALYSIS

Mr. Brady Nagle
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December 01, 1992
PACE Project Number: 421113504

Client Reference: BP Station # 11127

PACE Sample Number:			70 0248728	
Date Collected:			11/12/92	
Date Received:			11/13/92	
Client Sample ID:			MW-4	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
PURGEABLE FUELS AND AROMATICS				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	11/20/92
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	ND	11/20/92
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	11/20/92
Benzene	ug/L	0.5	ND	11/20/92
Toluene	ug/L	0.5	ND	11/20/92
Ethylbenzene	ug/L	0.5	ND	11/20/92
Xylenes, Total	ug/L	0.5	ND	11/20/92

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REPORT OF LABORATORY ANALYSIS

Mr. Brady Nagle
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December 01, 1992
PACE Project Number: 421113504

Client Reference: BP Station # 11127

PACE Sample Number:			70 0248736	
Date Collected:			11/12/92	
Date Received:			11/13/92	
Client Sample ID:			MW-1	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
PURGEABLE FUELS AND AROMATICS				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	11/23/92
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	ND	11/23/92
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	11/23/92
Benzene	ug/L	0.5	ND	11/23/92
Toluene	ug/L	0.5	ND	11/23/92
Ethylbenzene	ug/L	0.5	ND	11/23/92
Xylenes, Total	ug/L	0.5	ND	11/23/92

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REPORT OF LABORATORY ANALYSIS

Mr. Brady Nagle
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December 01, 1992
PACE Project Number: 421113504

Client Reference: BP Station # 11127

PACE Sample Number:			70 0248744	
Date Collected:			11/12/92	
Date Received:			11/13/92	
Client Sample ID:			QC-1	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
PURGEABLE FUELS AND AROMATICS				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	11/20/92
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	ND	11/20/92
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	11/20/92
Benzene	ug/L	0.5	ND	11/20/92
Toluene	ug/L	0.5	ND	11/20/92
Ethylbenzene	ug/L	0.5	ND	11/20/92
Xylenes, Total	ug/L	0.5	ND	11/20/92

These data have been reviewed and are approved for release.

Darrell C. Cain
Regional Director

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Client Reference: BP Station # 11127

MDL Method Detection Limit
ND Not detected at or above the MDL.

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QUALITY CONTROL DATA

December 01, 1992
PACE Project Number: 421113504

Client Reference: BP Station # 11127

EXTRACTABLE FUELS EPA 3510/8015
Batch: 70 17006
Samples: 70 0248701

METHOD BLANK:

Parameter	Units	MDL	Method Blank
Extractable Fuels, as Diesel	mg/L	0.050	ND

LABORATORY CONTROL SAMPLE AND CONTROL SAMPLE DUPLICATE:

Parameter	Units	MDL	Reference Value	Recv	Dupl Recv	RPD
Extractable Fuels, as Diesel	mg/L	0.050	1.00	64%	66%	3%

REPORT OF LABORATORY ANALYSIS

Mr. Brady Nagle
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QUALITY CONTROL DATA

December 01, 1992
PACE Project Number: 421113504

Client Reference: BP Station # 11127

HALOGENATED VOLATILE COMPOUNDS EPA 8010
Batch: 70 17167
Samples: 70 0248701

METHOD BLANK:

Parameter	Units	MDL	Method Blank
Dichlorodifluoromethane	ug/L	2.0	ND
Chloromethane	ug/L	2.0	ND
Vinyl Chloride	ug/L	0.5	ND
Bromomethane	ug/L	2.0	ND
Chloroethane	ug/L	2.0	ND
Trichlorofluoromethane (Freon 11)	ug/L	2.0	ND
1,1-Dichloroethene	ug/L	0.5	ND
Methylene Chloride	ug/L	2.0	ND
trans-1,2-Dichloroethene	ug/L	0.5	ND
cis-1,2-Dichloroethene	ug/L	0.5	ND
1,1-Dichloroethane	ug/L	0.5	ND
Chloroform	ug/L	0.5	ND
1,1,1-Trichloroethane (TCA)	ug/L	0.5	ND
Carbon Tetrachloride	ug/L	0.5	ND
1,2-Dichloroethane (EDC)	ug/L	0.5	ND
Trichloroethene (TCE)	ug/L	0.5	ND
1,2-Dichloropropane	ug/L	0.5	ND
Bromodichloromethane	ug/L	0.5	ND
2-Chloroethylvinyl ether	ug/L	0.5	ND
cis-1,3-Dichloropropene	ug/L	0.5	ND
trans-1,3-Dichloropropene	ug/L	0.5	ND
1,1,2-Trichloroethane	ug/L	0.5	ND
Tetrachloroethene	ug/L	0.5	ND
Dibromochloromethane	ug/L	0.5	ND
Chlorobenzene	ug/L	0.5	ND
Bromoform	ug/L	0.5	ND
1,1,2,2-Tetrachloroethane	ug/L	0.5	ND
1,3-Dichlorobenzene	ug/L	0.5	ND
1,4-Dichlorobenzene	ug/L	0.5	ND
1,2-Dichlorobenzene	ug/L	0.5	ND
Bromochloromethane (Surrogate Recovery)			74%
1,4-Dichlorobutane (Surrogate Recovery)			106%

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REPORT OF LABORATORY ANALYSIS

QUALITY CONTROL DATA

December 01, 1992
PACE Project Number: 421113504

Client Reference: BP Station # 11127

HALOGENATED VOLATILE COMPOUNDS EPA 8010
Batch: 70 17167
Samples: 70 0248701

LABORATORY CONTROL SAMPLE AND CONTROL SAMPLE DUPLICATE:

Parameter	Units	MDL	Reference Value	Recv	Dupl Recv	RPD
1,1-Dichloroethane	ug/L	0.5	10.00	101%	96%	5%
Trichloroethene (TCE)	ug/L	0.5	10.00	106%	101%	4%
trans-1,3-Dichloropropene	ug/L	0.5	3.8	96%	91%	5%
Tetrachloroethene	ug/L	0.5	10.00	109%	109%	0%

REPORT OF LABORATORY ANALYSIS

Mr. Brady Nagle
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QUALITY CONTROL DATA

December 01, 1992
PACE Project Number: 421113504

Client Reference: BP Station # 11127

OIL AND GREASE, SILICA GEL (LUFT)
Batch: 70 16949
Samples: 70 0248701

METHOD BLANK:

Parameter	Units	MDL	Method Blank
Oil and Grease, Gravimetric (SM5520)	mg/L	5.0	ND

LABORATORY CONTROL SAMPLE AND CONTROL SAMPLE DUPLICATE:

Parameter	Units	MDL	Reference Value	Recv	Dupl Recv	RPD
Oil and Grease, Gravimetric (SM5520)	mg/L	5.0	20.0	85%	80%	6%

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TEL: 415-883-6100
FAX: 415-883-2673

Client Reference: BP Station # 11127

PURGEABLE FUELS AND AROMATICS
Batch: 70 17026
Samples: 70 0248698

METHOD BLANK:

Parameter	Units	MDL	Method Blank
TOTAL FUEL HYDROCARBONS, (LIGHT):			-
Purgeable Fuels, as Gasoline (EPA 8015M	ug/L	50	ND
PURGEABLE AROMATICS (BTXE BY EPA 8020M)			-
Benzene	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Ethylbenzene	ug/L	0.5	ND
Xylenes, Total	ug/L	0.5	ND

LABORATORY CONTROL SAMPLE AND CONTROL SAMPLE DUPLICATE:

Parameter	Units	MDL	Reference Value	Recv	Dupl Recv	RPD
Purgeable Fuels, as Gasoline (EPA 8015M	ug/L	50	331	103%	104%	0%
Benzene	ug/L	0.5	40.0	111%	113%	1%
Toluene	ug/L	0.5	40.0	107%	109%	1%
Ethylbenzene	ug/L	0.5	40.0	109%	111%	1%
Xylenes, Total	ug/L	0.5	80.0	110%	111%	0%

REPORT OF LABORATORY ANALYSIS

Mr. Brady Nagle
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QUALITY CONTROL DATA

December 01, 1992
PACE Project Number: 421113504

Client Reference: BP Station # 11127

PURGEABLE FUELS AND AROMATICS
Batch: 70 17165
Samples: 70 0248728, 70 0248736, 70 0248744

METHOD BLANK:

Parameter	Units	MDL	Method Blank
TOTAL FUEL HYDROCARBONS, (LIGHT):			-
Purgeable Fuels, as Gasoline (EPA 8015M	ug/L	50	ND
PURGEABLE AROMATICS (BTXE BY EPA 8020M)			-
Benzene	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Ethylbenzene	ug/L	0.5	ND
Xylenes, Total	ug/L	0.5	ND

LABORATORY CONTROL SAMPLE AND CONTROL SAMPLE DUPLICATE:

Parameter	Units	MDL	Reference Value	Recv	Dupl Recv	RPD
Purgeable Fuels, as Gasoline (EPA 8015M	ug/L	50	272	110%	109%	0%
Benzene	ug/L	0.5	40.0	113%	115%	1%
Toluene	ug/L	0.5	40.0	104%	105%	0%
Ethylbenzene	ug/L	0.5	40.0	102%	103%	0%
Xylenes, Total	ug/L	0.5	80.0	107%	109%	1%

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REPORT OF LABORATORY ANALYSIS

Mr. Brady Nagle
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QUALITY CONTROL DATA

December 01, 1992
PACE Project Number: 421113504

Client Reference: BP Station # 11127

PURGEABLE FUELS AND AROMATICS
Batch: 70 17168
Samples: 70 0248701

METHOD BLANK:

Parameter	Units	MDL	Method Blank
TOTAL FUEL HYDROCARBONS, (LIGHT):			-
Purgeable Fuels, as Gasoline (EPA 8015M	ug/L	50	ND
PURGEABLE AROMATICS (BTXE BY EPA 8020M)			-
Benzene	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Ethylbenzene	ug/L	0.5	ND
Xylenes, Total	ug/L	0.5	ND

LABORATORY CONTROL SAMPLE AND CONTROL SAMPLE DUPLICATE:

Parameter	Units	MDL	Reference Value	Recv	Dupl Recv	RPD
Purgeable Fuels, as Gasoline (EPA 8015M	ug/L	50	308	118%	118%	0%
Benzene	ug/L	0.5	40.0	110%	105%	4%
Toluene	ug/L	0.5	40.0	109%	106%	2%
Ethylbenzene	ug/L	0.5	40.0	111%	105%	5%
Xylenes, Total	ug/L	0.5	80.0	109%	106%	2%

REPORT OF LABORATORY ANALYSIS

Mr. Brady Nagle
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QUALITY CONTROL DATA

December 01, 1992
PACE Project Number: 421113504

Client Reference: BP Station # 11127

PURGEABLE FUELS AND AROMATICS
Batch: 70 17189
Samples: 70 0248710

METHOD BLANK:

Parameter	Units	MDL	Method Blank
TOTAL FUEL HYDROCARBONS, (LIGHT):			-
Purgeable Fuels, as Gasoline (EPA 8015M	ug/L	50	ND
PURGEABLE AROMATICS (BTXE BY EPA 8020M)			-
Benzene	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Ethylbenzene	ug/L	0.5	ND
Xylenes, Total	ug/L	0.5	ND

LABORATORY CONTROL SAMPLE AND CONTROL SAMPLE DUPLICATE:

Parameter	Units	MDL	Reference Value	Recv	Dupl Recv	RPD
Purgeable Fuels, as Gasoline (EPA 8015M	ug/L	50	292	93%	102%	9%
Benzene	ug/L	0.5	40.0	110%	107%	2%
Toluene	ug/L	0.5	40.0	108%	106%	1%
Ethylbenzene	ug/L	0.5	40.0	111%	108%	2%
Xylenes, Total	ug/L	0.5	80.0	107%	104%	2%

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FOOTNOTES
for pages 9 through 16

December 01, 1992
PACE Project Number: 421113504

Client Reference: BP Station # 11127

MDL	Method Detection Limit
ND	Not detected at or above the MDL.
RPD	Relative Percent Difference

11 Digital Drive
Novato, CA 94949
TEL: 415-883-6100
FAX: 415-883-2673

PACE INCORPORATED
THE ASSURANCE OF QUALITY

B.P. OIL MARKETING COMPANY
33305 First Way South, Federal Way, WA 98003
CHAIN OF COUNTRY
☒ Novato, CA, 11 Digital Drive, 94949
Phone: (415) 883-6100 Fax: (415) 883-2673

4211132.04

Consultant's Name: Alisto Engineering Group

Address: 1000 Burnett Ave, Concord, Ca 94520

Project Contact: Brady Nagle

Consultant Project #: 10-022-02

Phone #: (510) 798-4070 Fax #: 798-4099

Sampled by (print): Larry Buenvenida

Sampler's Signature: [signature]

Shipment Method: Courier

B.P. Site Location #: 1127

B.P. Site Location: Oakland, Ca

TAT: ☐ 24 hr ☐ 48 hr ☐ 72 hr ☒ Standard (10 day)

ANALYSIS REQUIRED

Sample Description	Collection Date/Time	Matrix Soil/Water	Prsv	# of Cont	PACE Sample #	TPH/GAS/BTEX EPA 8015/8020	TPH/Diesel EPA 8015	Oil & Grease SM 5520	HVOC 8010									COMMENTS
QC-2	11/12/92/1404	W	HCL Voas	2	24867.8	X												
MW-2	↓ /1503	↓	↓	10	70.1	↓	X	X	X									unpreserved amber Liters
MW-3	/1534			3	71.0													
MW-4	/1618			3	72.8													
MW-1	/1407			3	73.6													
QC-1	/1409	↓	↓	3	74.4	↓												

Sample Condition as Received
Temperature ° C: ______
Cooler #: ______
Inbound Seal Yes No
Outbound Seal Yes No

Relinquished by/Affiliation	Date	Time	Accepted by/Affiliation	Date	Time
[signature]	11/13/92	1400	[signature] · Pace	11/13	1400
[signature] · Pace	11/13	1?70	[signature] PACE	11/13	15:20

Additional Comments: