Harding Lawson Associates

June 24, 1988

4167,224.02

Exxon Company, U.S.A.
P.O. Box 4415
Houston, Texas 77210-4415

Attention: Mr. James M. Kerr, Jr., P.G.
Environmental Geologist

Gentlemen:

Evaluation of Petroleum Hydrocarbons
Regal Station 405
1725 Park Street
Alameda, California

This report presents the results of the environmental sampling and testing conducted by Harding Lawson Associates (HLA) for the Exxon Company, U.S.A. at Regal Station 405, located at 1725 Park Street, Alameda, California. The objective of this investigation was to assess if petroleum hydrocarbons have leaked from the fuel storage and distribution system and impacted soil or ground-water quality. This investigation was conducted with HLA's fee estimate dated May 17, 1988, and authorized by Exxon Contract No. 8886.3923.

Regal Station 405 is located on the northwest corner of the intersection of Eagle Avenue and Park Street in Alameda, California. The location of the site is shown on Plate 1. The area surrounding the site contains a mixture of residential and commercial buildings. The area of investigation and the locations of the underground fuel tanks, station building, and dispenser islands are presented on Plate 2.

Regal Station 405 was acquired by Wickland Oil Company in January 1975. The site was remodeled in 1986, at which time three 10,000-gallon, double-wall fiberglass tanks were installed. These tanks are used to store regular, unleaded, and premium unleaded gasoline.

A Sensitive Receptor - Risk Assessment Site Survey for the site was prepared by EA Engineering, Science and Technology, Inc. The results of the assessment were presented in a letter report to Exxon dated May 13, 1988.

DRILLING AND SOIL SAMPLING

The site investigation procedures for the assessment were outlined in a document provided to HLA by Exxon titled "Exhibit H, Environmental Testing Procedures." Ground-water flow directions were estimated using topographic maps. Boring locations were cleared prior to the start of drilling by Mr. Peter Allen of Walton Engineering, Sacramento, California. On June 2, 1988 three borings were drilled to a maximum depth of approximately 15 feet using a truck-mounted hollow-stem auger. Each boring was logged by an HLA field engineer. The boring logs are presented on Plates 3 through 5.

Soil samples were collected at approximately 5-foot intervals using a 2.43-inch inside diameter split-barrel sampler equipped with 6-inch-long stainless steel liners. Soil samples for chemical analysis were covered with aluminum foil-lined plastic caps, taped, labeled, stored in a refrigerated environment, and transported under chain-of-custody to WESCO Laboratories, Novato, California; WESCO is a state-certified hazardous waste analytical laboratory.

GROUND-WATER MONITORING WELL INSTALLATION AND SAMPLING

Each of the three borings were completed as ground-water monitoring wells by inserting through the hollow-stem augers a 4-inch-diameter flush-threaded Schedule 40 PVC well casing from the ground surface to the bottom of the boring. The bottom 10 feet of each well consisted of 0.020-inch machine-slotted well screen. The remainder of the well was solid PVC casing. No. 3 Lonestar sand filter material was placed in the annular space between the 4-inch well casing and the 8-inch-diameter borehole, from the bottom of the well bore to approximately 6 inches above the screened interval. To prevent surface-water infiltration, an approximate 6-inch layer of bentonite was placed above the sand filter and charged with water. The remaining annular space was backfilled to the ground surface using a cement/bentonite grout mixture. A locking aluminum well cap was connected to the top of the 4-inch well casing. A Christy box was set in cement around the top of the well to protect it from surface traffic. Monitoring well construction details are shown on Plates 3, 4, and 5.

The monitoring wells were surveyed to a common datum and water levels measured by HLA on June 10, 1988. Ground-water elevation data is listed in Table 1. A water-table map showing the ground-water flow direction is attached as Plate 6.

Table 1. Ground-Water Elevations
June 10, 1988

Well No.	Top of Well Casing Elevation* (Feet)	Depth to Water BTOC** (Feet)	Water-Table Elevation (Feet)
MWA-1	98.78	6.35	92.43
MWA-2	98.08	6.20	91.88
MWA-3	98.52	6.05	92.47

* Elevations Relative to Benchmark Elevation 100.00 Feet
** BTOC - Below Top of Casing

Monitoring wells were developed by pumping until the discharge water was visibly clear. Measurements of pH, conductivity, and temperature were taken at each well prior to sample collection. All water samples were collected with a stainless steel bailer. Samples for organic chemical analysis were placed in 40-milliliter volatile organic analysis (VOA) vials. All samples were placed in a refrigerated environmental and delivered under chain-of-custody to WESCO Laboratories, Novato, California.

EQUIPMENT DECONTAMINATION

To minimize the possibility of cross contamination, all downhole drilling and sampling equipment was decontaminated prior to use. The augers were steam cleaned prior to drilling each boring. The soil and water sampling equipment was washed in a low-phosphorus soap solution and rinsed with tap water between each sample.

LABORATORY ANALYSIS

One soil sample was selected for laboratory analysis from each boring from depths exhibiting the maximum OVA readings and product odors. Laboratory analysis of the boring cuttings was required to identify appropriate disposal methods. The soil samples were analyzed for total petroleum hydrocarbons (TPH) as gasoline and benzene, ethylbenzene, toluene, and xylenes (BETX). The laboratory analytical results for the soil samples are listed in Table 2.

Ground-water samples from each well were analyzed for TPH as gasoline and BETX. The laboratory analytical results for the water samples are listed in Table 3.

Table 2. Analytical Results (ppm) - Soil Samples
Soil Boring Sampling - [redacted]

Boring	Sample Depth (feet)	TPH as Gasoline	Benzene	Toluene	Ethylbenzene	Xylenes
BA-1	10	11	0.67	ND	0.15	0.37
BA-2	5	1400	ND	32	25	150
BA-3	5	74	ND	ND	ND	2.4

ND - Not Detected

Table 3. Analytical Results (ppb) - Water Samples
Ground-Water Sampling - [redacted]

Well	TPH as Gasoline	Benzene	Toluene	Ethylbenzene	Xylenes
MWA-1	27,000	5,000	77	1,100	2,700
MWA-2	110,000	12,000	12,000	2,100	12,000
MWA-3	28,000	6,000	80	940	1,900

DISCUSSION

Ground water is present at this site at a depth of approximately 6 feet. Water level data shows that the ground-water flow direction is to the east towards the Oakland Estuary. Laboratory analytical results indicate that the ground water beneath this site has significant concentrations of dissolved petroleum contamination. The contamination detected could be due to surface spillage, a delivery line or tank leak, or from an off-site source(s).

The area surrounding the site is highly industrialized. There are many potential sources of subsurface contamination in the area. At the intersection where the Regal Station is located, there are two active and two former service stations. Ground-water contamination of this shallow

aquifer has been documented in the area. Numerous contamination investigations have been conducted within the City of Alameda. EA Engineering, Science, and Technology, Inc. (EA), in their Sensitive Receptor - Risk Assessment Survey, identified five monitoring well locations within a one-half mile radius of the site.

EA also identified an industrial and irrigation well within a one-half mile radius of the Regal Station. These wells are probably not screened in the shallow ground-water aquifer. However, there is a possible hydrologic connection between the shallow aquifer and deeper confined aquifers.

RECOMMENDATIONS

Ground-water contamination of the unconfined aquifer has been documented in this part of the East Bay. Although regulatory agencies probably will not require cleanup of contamination to drinking water standards, the aquifer must be protected for its intended use. The shallow aquifer is probably hydrologically connected to deeper aquifers that are reportedly currently being used as a source for irrigation and industrial water supplies.

State regulations require that further site investigative work be conducted to evaluate the extent and magnitude of petroleum contamination. A phased approach is the most cost efficient way to conduct a subsurface contamination investigation. Depending on actual site conditions, up to three phases could be implemented. A description of these phases and a cost range for each is detailed below.

Phase I

- Conduct a detailed site survey of the surrounding area to identify potential sources of subsurface contamination
- Evaluate regional ground-water quality and contact the Regional Water Quality Control Board (RWQCB) to assess ground-water cleanup requirements for the shallow aquifer in this area
- Install two additional monitoring wells to evaluate if off-site sources are impacting ground-water quality on site
- Resample all existing wells on the site
- Prepare report detailing site impact on local ground-water quality

Estimated cost: $15,000 to $20,000

Phase II

If the RWQCB determines that a full site characterization is required:

- Determine lateral and vertical extent of contamination
- Evaluate impact of contamination on soil and ground-water quality
- Determine contribution of contamination release from this site on overall contamination of shallow ground-water aquifer in the area
- Evaluate remediation measures if warranted
- Prepare report

Estimated cost: $50,000 to $100,000

Phase III

If, after the completion of Phase II, it is warranted to implement remedial measures to comply with state and local regulations, the following options are available:

- Soil removal and disposal or treatment by aeration
- In situ soil venting
- In situ bioremediation
- Ground-water extraction with treatment by carbon filtration, air stripping or bioremediation

Estimated cost: $100,000 to $500,000

Additional site investigation and possible remediation work is required. Depending on site conditions, investigative costs could be as little as $15,000. However, if all three phases of work are necessary, the total estimated cost could range between $165,000 and $620,000.

June 24, 1988
4167,224.02
Mr. James M. Kerr, Jr.
Exxon Company, U.S.A.
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If you have any questions regarding this report, please call us at 415/892-0821.

Yours very truly,

HARDING LAWSON ASSOCIATES

Thomas R. Williams

Thomas R. Williams
Senior Geologist

Michael L. Siembieda
Senior Geologist - 4007

TRW/MLS/bht

Enclosures

REGISTERED GEOLOGIST
MICHAEL L. SIEMBIEDA
No: 4007
Exp. 6/30/89
STATE OF CALIFORNIA

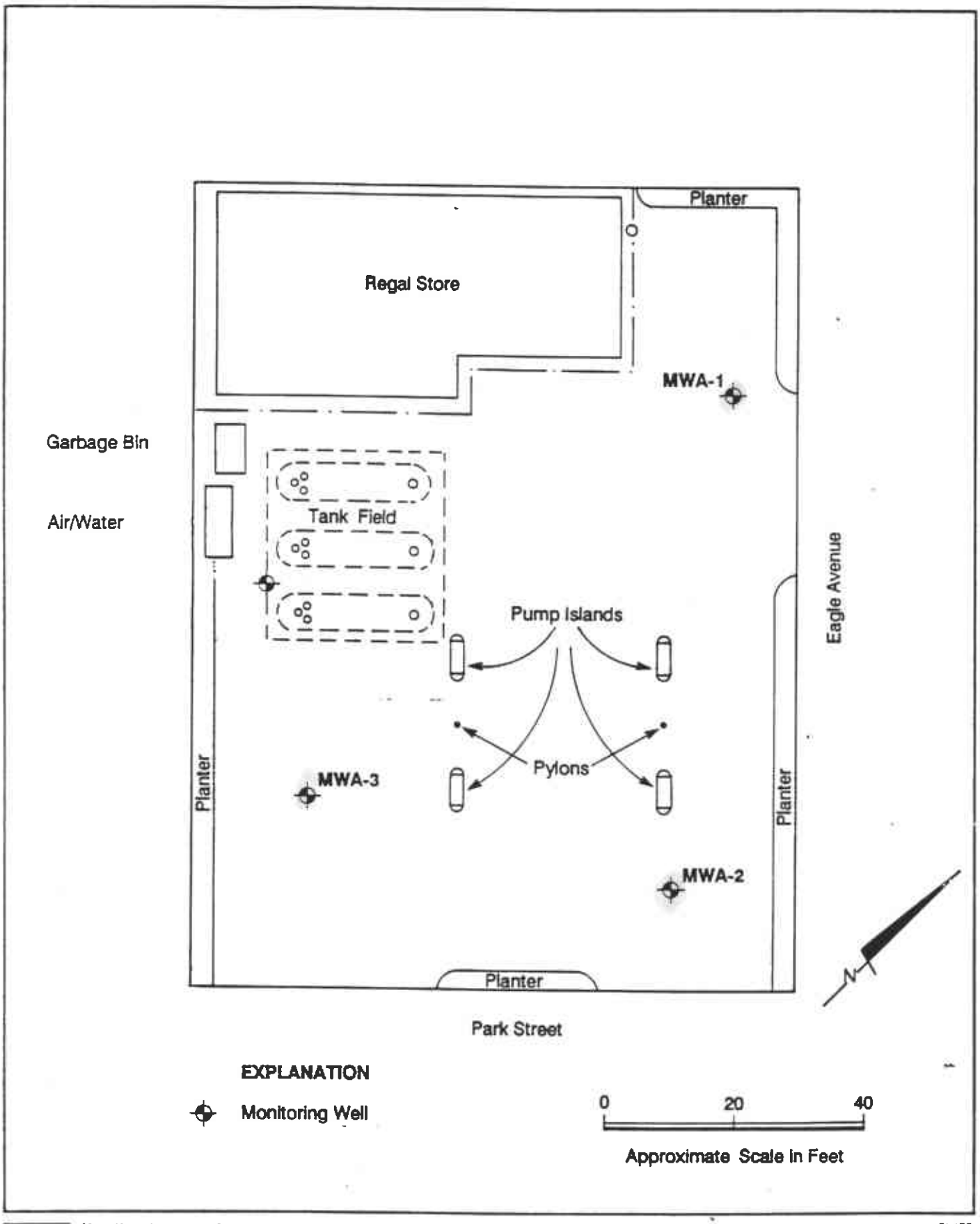
Harding Lawson Associates
Engineers and Geoscientists

HLA

Area Map
Exxon Environmental Monitoring
Alameda, California

PLATE
1

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
EH	4167,224.02		6/88		



HLA

Harding Lawson Associates
Engineers and Geoscientists

Site Plan
Exxon Environmental Monitoring
Alameda, California

PLATE
2

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
RHC	4167.224.02		6/88		

Top of SS Casing
Elevation_____

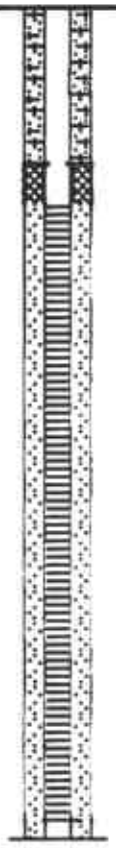
GROUND SURFACE

Equipment B-53

Elevation_____ Date 5/31/88

Depth (ft)	Sample	Blows/foot	OVA Reading (ppm)	
0				A.C. Pavement STRONG BROWN SANDY GRAVEL (GP) (7.5YR 5/6) dense, moist
		30	2	DARK BROWN SILTY SAND (SM) (10YR 3/3) medium dense, moist
5		11	1	
				▼
10		23	25	DARK GRAY CLAYEY SAND (SC) (5Y 4/1) medium dense, saturated GRAY SAND (SP) (5Y 5/1) medium dense, saturated
15		31	25	DARK YELLOWISH BROWN SAND (SP) (10YR 4/6) medium dense, saturated, trace silt
				DARK GRAY SILTY SAND (SM) (5Y 5/1) medium dense, saturated
20		36	35	DARK GRAY SAND (SP) (5Y 5/1) medium dense, saturated, with silt bottom of boring at 22.0 ft
25				
30				
35				
40				

12 IN. DIAMETER BORING
0 to 21 ft
BENTONITE-CEMENT SEAL
0 to 4 ft
4 IN. DIAMETER SCHEDULE 40
PVC WELL CASING
0.5 to 6 ft
BENTONITE PELLET SEAL
4 to 5 ft
4 IN. DIAMETER SCHEDULE 40
SLOTTED WELL SCREEN
(0.020 in slot size)
6 to 21 ft
LONE STAR #3 SAND PACK
5 to 21.5 ft
4 IN. DIAMETER SCHEDULE 40
PVC BLANK SILT TRAP
21.5 to 22 ft
BOTTOM WELL CAP at 21.5 ft
HOLE CLEANED OUT TO
to 21.5 ft



Harding Lawson Associates
Engineers and Geoscientists

Log of Boring and Well Completion Detail MMA-1
Exxon - Alameda
Alameda, California

PLATE 3

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
	04167, 224.02		6/88		

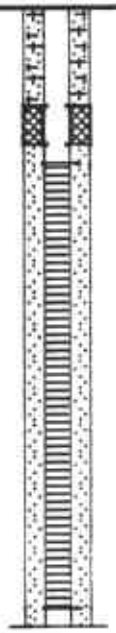
Top of SS Casing
Elevation_____

GROUND SURFACE

Equipment B-53

Elevation_____ Date 6/1/88

Blows/foot	OVA Reading (ppm)	Depth (ft)	Sample
27	0	0	
21	700	5	
38	400	10	
10	400	15	
		20	
		25	
		30	
		35	
		40	



10-3/4 IN. DIAMETER BORING
0 to 16 ft
BENTONITE-CEMENT SEAL
0.5 to 2.5 ft
4 IN. DIAMETER SCHEDULE 40
PVC WELL CASING
0.5 to 4 ft
BENTONITE PELLET SEAL
2.5 to 3.5 ft
4 IN. DIAMETER SCHEDULE 40
SLOTTED WELL SCREEN
(0.020 in slot size)
4 to 15 ft
LONE STAR #3 SAND PACK
3.5 to 16 ft
4 IN. DIAMETER SCHEDULE 40
PVC BLANK SILT TRAP
15.5 to 16 ft
BOTTOM WELL CAP at 16 ft
HOLE CLEANED OUT TO
to 16 ft

A.C. Pavement
STRONG BROWN SANDY GRAVEL (GP)
dense, moist to wet
VERY DARK GRAY SAND (SP) (5Y 3/1)
medium dense, wet, fine-grained

MOTTLED DARK GRAY AND DARK YELLOWISH BROWN
SILTY SAND (SM) (5Y 4/1; 10YR 4/6)
medium dense, moist

▽ decrease in silt

OLIVE GRAY SAND (SP) (5Y 5/2)
medium dense, saturated, medium-grained

BROWN SAND (SP)
medium dense, saturated, fine- to
medium-grained, trace silt
OLIVE SILTY SAND (SM) (10YR 4/3)
loose, saturated, fine- to medium-grained
bottom of boring at 16.0 ft

Harding Lawson Associates
Engineers and Geoscientists

Log of Boring and Well Completion Detail MWA-2
Exxon - Alameda
Alameda, California

PLATE 4

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
	04167, 224.02		6/88		

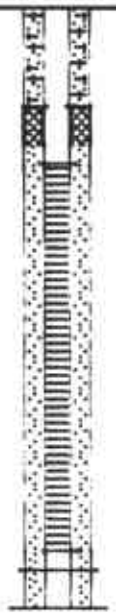
Top of SS Casing
Elevation_____

GROUND SURFACE

Equipment B-53

Elevation_____ Date 6/1/88

Blows/foot	OVA Reading (ppm)	Depth (ft)	Sample
41	0.6	0	
16	400	5	
6		10	
28	40	15	
		20	
		25	
		30	
		35	
		40	



10-3/4 IN. DIAMETER BORING
0 to 15.5 ft
BENTONITE-CEMENT SEAL
0.5 to 2.5 ft
4 IN. DIAMETER SCHEDULE 40
PVC WELL CASING
0.5 to 4 ft
BENTONITE PELLET SEAL
2.5 to 3.5 ft
4 IN. DIAMETER SCHEDULE 40
SLOTTED WELL SCREEN
(0.020 in slot size)
4 to 14.5 ft
LONE STAR #3 SAND PACK
3.5 to 14 ft

4 IN. DIAMETER SCHEDULE 40
PVC BLANK SILT TRAP
14.5 to 15.5 ft
BOTTOM WELL CAP at 14.5 ft
HOLE CLEANED OUT TO
to 14.5 ft

A.C.Pavement
STRONG BROWN SANDY GRAVEL (GP) (7.5YR 5/6)
dense, moist
DARK GRAY SAND (SP) (5Y 3/1)
medium dense, moist, fine- to
medium-grained, trace silt
becoming finer grained at 4 ft

color change to DARK GRAY (5Y 4/1)
at 5.0 ft

▼ becomes wet at 7.0 ft

GRAY SAND (SP) (5Y 5/1)
loose, wet

OLIVE BROWN SILTY SAND (SM) (2.5Y 4/4)
medium dense, saturated, medium-grained

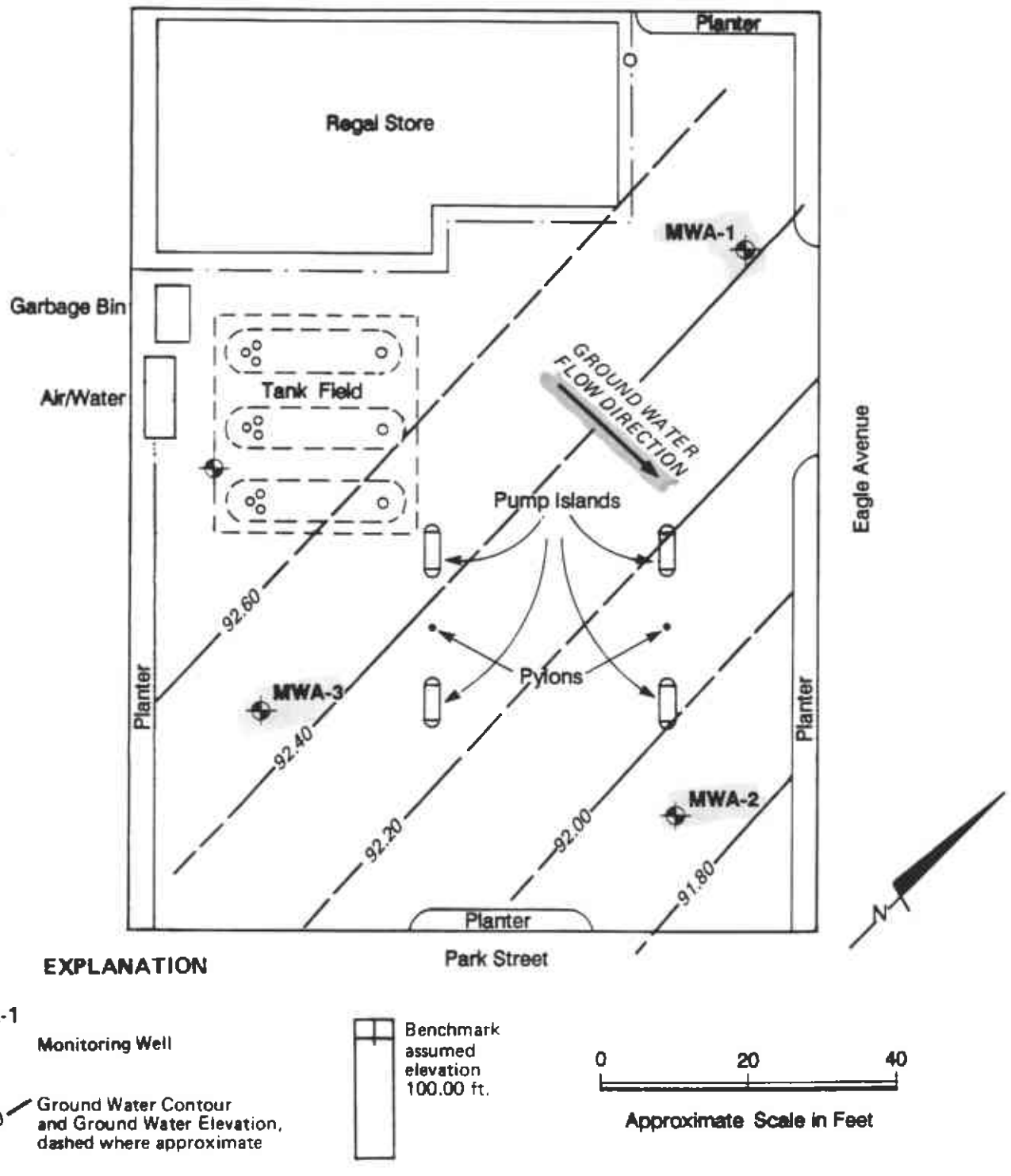
bottom of boring at 16.0 ft

Harding Lawson Associates
Engineers and Geoscientists

Log of Boring and Well Completion Detail MMA-3
Exxon - Alameda
Alameda, California

PLATE
5

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
	04167, 224.02		6/88		



Harding Lawson Associates
Engineers and Geoscientists

Ground Water Contours on 6-10-88
Exxon Environmental Monitoring
Alameda, California

PLATE
6

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
RHC	4167,224.02		6/88		

WESCO Laboratories

Report date: June 16, 1988 Wescojob #: HLA 08100 -L

Client: Harding Lawson Associates
P.O Box 578
Novato, CA 94947

Date sampled: May 31, 1988 Site: Exxon Alameda
Sampled by: M. Thompson Attn.: M. Thompson

Date received: June 1, 1988 P.O.: 4167,224.02
Submitted by: M. Thompson

Lab #	Client ID	Matrix	Analysis
8- 5427	BA1-10.0	soil	TPH with BTXE

Dear Client,

No problems were encountered with the analysis of your samples. We will store samples for 30 days after the report date. the samples will be returned to you after the 30-day period, unless other arrangements are made.
If you have any questions, please feel free to call, (415)883-6425.

Sample Controller

14 Galli Drive, Suite A
Novato, California 94947 415 883-6425
A Division of Western Ecological Services Company

Report Date: 16-Jun-88
WESCO JOB #: HLA 08100-L
Analytical Method: EPA 5030/8015/8020
MATRIX: SOIL

Extract/Purge Date: 10-Jun-88
Completion Date: 10-Jun-88
Analyst: Attia

LAB #: 8-5427

CLIENT'S ID: BA1-10.0

COMPOUND	RESULT (ug/kg)	Detection Limit(ug/kg)
Benzene	670	25.0
Toluene	N.D.	25.0
Ethylbenzene	150	25.0
Xylene	370	25.0
Total Petroleum Hydrocarbons (light)	11000	2,500.0

QUALITY CONTROL DATA	Surrogate Spike % Recovery
Fluorobenzene	96 %

N.D.: Not Detected

Analytical Supervisor

QUALITY CONTROL DATA
METHOD: EPA 5030/8015/8020 WESCO JOB #: HLA 08100-L

COMPOUND	Blank ug/l	Spike Duplicate % deviation	Spike % recovery
Benzene----------	N.D.	2	115
Toluene----------	N.D.	11	112
p-Xylene----------	N.D.	11	112
Gasoline----------	N.D.	11	97

QUALITY CONTROL DATA
Surrogate Spike % Recovery

Fluorobenzene	98 %	97 %	76 %

N.D.: Not Detected

Analytical Supervisor

HLA 60166-C

Harding Lawson Associates
7655 Redwood Blvd.
P.O. Box 578
Novato, CA 94948
(415) 892-0821

CHAIN OF CUSTODY FORM

Job Number: 4167,224.02
Name/Location: Exxon Alameda
Project Manager: M. Thompson

Samplers: Michael Thompson
Bob Stoltzman
Recorder: Michael Thompson (Signature Required)

SOURCE CODE	MATRIX: Water	Sediment	Soil	Oil	CONTAINERS & PRESERV.: Unpres.	H_2SO_4	HNO_3	SAMPLE NUMBER OR LAB NUMBER: Yr	Wk	Seq	DATE: Yr	Mo	Dy	Time	STATION DESCRIPTION/ NOTES	EPA 601/8010	EPA 602/8020	EPA 624/8240	EPA 625/8270	Priority Pllnt. Metals	Benzene/Toluene/Xylene	Total Petrol. Hydrocarb. (418.1)
					1			BA1	-	01.5	88	05	31	1325	Hold							
					1			BA1	-	05.0	88	05	31	1335	Hold							
					1			BA1	-	10.0	88	05	31	1350	Light THMBTXE						XX	
					1			BA1	-	15.0	88	05	31	1415	Hold							
					1			BA1	-	20.0	88	05	31	1440	Hold							

LAB NUMBER: Yr	Wk	Seq	DEPTH IN FEET	COL MTD CD	QA CODE	MISCELLANEOUS

CHAIN OF CUSTODY RECORD

	RECEIVED BY: (Signature)	DATE/TIME
RELINQUISHED BY: (Signature) Michael Thompson	Robert A. Stolzman	5-31-88 1910
RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE/TIME
RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE/TIME
RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE/TIME
DISPATCHED BY: (Signature) Robert A. Stolzman — DATE/TIME 6-1-88 9:00	RECEIVED FOR LAB BY: (Signature) Donald Ikuchi 6/1	DATE/TIME 900H

METHOD OF SHIPMENT: WESCO Courier

Laboratory Copy V | Project Office Copy Yell | Field or Office Copy Pnk

6533

Report Date: 16-Jun-88 Extract/Purge Date: 15-Jun-88
WESCO JOB #: HLA 08102-L Completion Date: 15-Jun-88
Analytical Method: EPA 5030/8015/8020 Analyst: Attia/Farah
MATRIX: SOIL

LAB #: 8-5476 CLIENT'S ID: BA2 05.0

COMPOUND	RESULT (ug/kg)	Detection Limit(ug/kg)
Benzene	N.D.	2000
Toluene	32000	2000
Ethylbenzene	25000	2000
Xylene	150000	2000
Total Petroleum Hydrocarbons (light)	1400000	200000

QUALITY CONTROL DATA	Surrogate Spike % Recovery
Fluorobenzene	89 %

LAB #: 8-5480 CLIENT'S ID: BA3 0.05

COMPOUND	RESULT (ug/kg)	Detection Limit(ug/kg)
Benzene	N.D.	500
Toluene	N.D.	500
Ethylbenzene	N.D.	500
Xylene	2400	500
Total Petroleum Hydrocarbons (light)	74000	50000

QUALITY CONTROL DATA	Surrogate Spike % Recovery
Fluorobenzene	108 %

N.D.: Not Detected

Analytical Supervisor

Harding Lawson Associates
7655 Redwood Blvd.
P.O. Box 578
Novato, CA 94948
(415) 892-0821

HLA 21162-2

CHAIN OF CUSTODY FORM

Job Number: 4167,224.02

Name/Location: Exxon Alameda

Project Manager: MDT

Samplers: Michael Thompson

Recorder: Michael Thompson (Signature Required)

Source Code	Water	Sediment	Soil	Oil	Unpres.	H_2SO_4	HNO_3	Sample Number or Lab Number (Yr Wk Seq)	Date Yr	Mo	Dy	Time	Station Description/Notes	EPA 601/8010	EPA 602/8020	EPA 624/8240	EPA 625/8270	Priority Pllnt. Metals	Benzene/Toluene/Xylene	Total Petrol. Hydrocarb. (Lt)
50			X		X			BA-201.5	88	06	01	0710	HOLD							
50			X		X			BA-205.0	88	06	01	0720	TPH light & BTXE						X	X
			X		X			BA-215.0	88	06	01	0745	HOLD							
50			X		X			BA-301.5	88	06	01	1050	HOLD							
50			X		X			BA-305.0	88	06	01	1100	TPH light & BTXE						X	X
50			X		X			BA-310.0	88	06	01	1115	HOLD							
50			X		X			BA-315.0	88	06	01	1135	HOLD							

Lab Number (Yr Wk Seq)	Depth in Feet	Col Mtd Cd	QA Code	Miscellaneous

CHAIN OF CUSTODY RECORD

Relinquished by: (Signature)	Received by: (Signature)	Date/Time
Michael Thompson	Robert A. Stolzman	6-2-88 8:00
Robert A. Stolzman	Donald Zokarchi WCAS	6/2 1030

Dispatched by: (Signature)	Date/Time	Received for Lab by: (Signature)	Date/Time
		Michelle Carey	6/2 11:10 AM

Method of Shipment: Courier

Laboratory Copy White | Project Office Copy Yellow | Field or Office Copy Pink

6533

WESCO Laboratories

Report date: June 16, 1988 Wescojob #: HLA 08104 -L
Client: Harding Lawson Associates
200 Rush Landing Road
Novato, CA 94947

Date sampled: June 7, 1988 Site: Exxon Alameda
Sampled by: C. Larkin Attn.: M. Thompson

Date received: June 8, 1988 P.O.: 4167,224.02
Submitted by: C. Larkin

Lab #	Client ID	Matrix	Analysis
8- 5629	8823EXA1	water	TPH with BTXE
8- 5630	8823EXA2	water	TPH with BTXE
8- 5631	8823EXA3	water	TPH with BTXE
8- 5632	8823EXA4	water	TPH with BTXE

Dear Client,

No problems were encountered with the analysis of your samples. We will store samples for 30 days after the report date. the samples will be returned to you after the 30-day period, unless other arrangements are made.
If you have any questions, please feel free to call, (415)883-6425.

Sample Controller

14 Galli Drive, Suite A
Novato, California 94947 415 883-6425
A Division of Western Ecological Services Company

Report Date: 16-Jun-88 Extracted Date: 10-Jun-88
WESCO JOB #: HLA 08104-L Completion Date: 10-Jun-88
Analytical Method: EPA 5030/8015/602 Analyst: Lewis/Arntzen
MATRIX: WATER

LAB #: 8-5629 CLIENT'S ID: 23EXA1

COMPOUND	RESULT (ug/l)	Detection Limit (ug/l)
Benzene	6000	25
Toluene	80	25
Ethylbenzene	940	25
Xylene	1900	25
Total Petroleum Hydrocarbons (light)	28000	2500

QUALITY CONTROL DATA
Surrogate Spike % Recovery
Fluorobenzene 91 %

LAB #: 8-5630 CLIENT'S ID: 23EXA2

COMPOUND	RESULT (ug/l)	Detection Limit (ug/l)
Benzene	12000	125
Toluene	12000	125
Ethylbenzene	2100	125
Xylene	12000	125
Total Petroleum Hydrocarbons (light)	110000	12500

QUALITY CONTROL DATA
Surrogate Spike % Recovery
Fluorobenzene 100 %

N.D.: Not Detected

Analytical Supervisor

Report Date: 16-Jun-88 Extracted Date: 10-Jun-88
WESCO JOB #: HLA 08106-L Completion Date: 10-Jun-88
Analytical Method: EPA 5030/8015/602 Analyst: Lewis
MATRIX: WATER

LAB #: 8-5631 CLIENT'S ID: 23EXA3

COMPOUND	RESULT (ug/l)	Detection Limit (ug/l)
Benzene	N.D.	0.5
Toluene	N.D.	0.5
Ethylbenzene	N.D.	0.5
Xylene	N.D.	0.5
Total Petroleum Hydrocarbons (light)	N.D.	50.0

QUALITY CONTROL DATA
Surrogate Spike % Recovery
Fluorobenzene 105 %

LAB #: 8-5632 CLIENT'S ID: 23EXA4

COMPOUND	RESULT (ug/l)	Detection Limit (ug/l)
Benzene	5000	50
Toluene	77	50
Ethylbenzene	1100	50
Xylene	2700	50
Total Petroleum Hydrocarbons (light)	27000	5000

QUALITY CONTROL DATA
Surrogate Spike % Recovery
Fluorobenzene 95 %

N.D.: Not Detected

Analytical Supervisor

QUALITY CONTROL DATA
BLANK, SPIKE DUPLICATE AND SPIKE REPORT FOR JOB # HLA 08104-L
METHOD: EPA 5030/8015/602

COMPOUND	Blank ug/l	Spike Duplicate % deviation	Spike % recovery
Benzene----------	N.D.	2	115
Toluene----------	N.D.	11	112
p-Xylene----------	N.D.	11	112
Gasoline----------	N.D.	11	97

QUALITY CONTROL DATA

Surrogate Spike % Recovery			
Fluorobenzene	98 %	97 %	76 %

N.D.: Not Detected

Analytical Supervisor

Harding Lawson Associates
Environmental Services Division
200 Rush Landing Road
Novato, California 94947
(415) 892-0821

CHAIN OF CUSTODY FORM

Samplers: CHRIS LARSON

Job Number: 4167,224.02

Name/Location: EXXON - ALAMEDA

Project Manager: MICHAEL THOMPSON

Recorder: Christopher Lobi (Signature Required)

SOURCE CODE	MATRIX: Water	Sediment	Soil	Oil	#CONTAINERS & PRESERV.: Unpres.	H_2SO_4	HNO_3	SAMPLE NUMBER OR LAB NUMBER	DATE: Yr	Mo	Dy	Time	STATION DESCRIPTION/ NOTES	ANALYSIS REQUESTED: EPA 601/8010	EPA 602/8020	EPA 624/8240	EPA 625/8270	Priority Pllnt. Metals	Benzene/Toluene/Xylene (E)	Total Petrol. Hydrocarb. (L)
23	X				2			88231EXA1	880607			1500							X	X
23	X				2			88231EXA2	880607			1803							X	X
23	X				2			88231EXA3	880607			1954							X	X
23	X				2			88231EXA4	880607			2005							X	X

LAB NUMBER: Yr	Wk	Seq	DEPTH IN FEET	COL MTD CD	QA CODE	MISCELLANEOUS

CHAIN OF CUSTODY RECORD

RELINQUISHED BY: (Signature) Christopher Lobi	RECEIVED BY: (Signature)	DATE/TIME
RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE/TIME
RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE/TIME
RELINQUISHED BY: (Signature)	RECEIVED BY: (Signature)	DATE/TIME
DISPATCHED BY: (Signature) DATE/TIME	RECEIVED FOR LAB BY: (Signature)	DATE/TIME 0938 2/2/88
METHOD OF SHIPMENT		

6533

Laboratory Copy (White) Project Office Copy (Yellow) Field or Office Copy (Pink)