EXXON COMPANY, U.S.A.

P.O. BOX 4032 • CONCORD, CA 94524-4032
MARKETING DEPARTMENT • ENVIRONMENTAL ENGINEERING

MARLA D. GUENSLER
SENIOR ENGINEER
(925) 246-8776
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#245

June 25, 1999

Mr. Barney Chan
Alameda County Health Care Services Agency
Department of Environmental Health
1131 Harbor Bay Parkway, Room 250
Alameda, California 94502-6577

RE: Exxon RAS #7-0238/2200 East 12 Street, Oakland, California.

Dear Mr. Chan:

Attached for your review and comment is a letter report entitled ***Report of Findings,*** dated June 23, 1999, for the above referenced site. The report was prepared by Environmental Resolutions, Inc. (ERI) of Novato, California, and details the results of a utility survey and the evaluation of historical groundwater flow direction for the subject site.

If you have any questions or comments, please contact me at (925) 246-8776.

Sincerely,

Marla D. Guensler
Senior Engineer

MDG/tjm

Attachment ERI's Report of Findings, dated June 23, 1999.

cc: w/ attachment
Mr. Stephen Hill - California Regional Water Quality Control Board-San Francisco Bay Region

w/o attachment
Ms. Tracy A. Faulkner - Environmental Resolutions, Inc.

ENVIRONMENTAL RESOLUTIONS, INC.

June 23, 1999
229303MG.L02

Ms. Marla D. Guensler
Exxon Company, U.S.A.
P.O. Box 4032
Concord, California 94524-4032

Subject: Report of Findings, Exxon Service Station 7-0238, 2200 East 12th Street, Oakland, California.

Ms. Guensler:

At the request of Exxon Company, U.S.A. (Exxon), Environmental Resolutions, Inc. (ERI) is submitting this letter report presenting the results of a utility survey and evaluation of historical groundwater flow direction for the subject site. These activities were conducted as a result of the April 22, 1999, meeting between the Alameda County Health Care Services Agency, Environmental Health Services (the County), ERI and Exxon. The purpose of this work was to analyze methyl tertiary butyl ether (MTBE) plume migration by calculating average groundwater flow direction, and assessing if any preferential pathways exist. To evaluate the nature/origin of MTBE in groundwater samples collected from on-site monitoring wells, Exxon will be conducting an equipment inspection and tank tightness test. The results of this investigation will be reported under separate cover.

The subject site is located at the northeast corner of 22nd Avenue and East 12th Street in Oakland, California as shown on the Site Vicinity Map (Plate 1). The locations of the underground storage tanks, dispenser islands and other select site features are shown on the Underground Utility Map (Plate 2).

The results of cumulative groundwater monitoring and sampling are listed on Table 1. Depth to groundwater at the site historically varies between 5 to 8 feet below ground surface (ft bgs). The predominant groundwater flow direction on the site (based on the last nine groundwater monitoring events) is between N 67.5° W and S 67.5° W, as shown on Plate 3.

ERI performed an underground utility conduit search to evaluate if underground utility conduits exist in the vicinity of the site. The results of this search indicate that telephone, cable, water, electric, gas, storm drain, and sewer conduits exist adjacent to the site beneath East 12th Street and 22nd Avenue. The approximate locations and depths of underground utility conduits are presented on Plate 2.

Underground utility conduits present beneath East 12th Street and 22nd Avenue (located between 1.5 ft bgs and 3.5 ft bgs) appear to be placed above historical depth to groundwater, with the exception of the sewer conduit which is located approximately 6 ft bgs in depth.

ERI recommends this letter report be sent to the following:

Mr. Barney Chan
Alameda County Health Care Services Agency
Department of Environmental Health
1131 Harbor Bay Parkway, Room 250
Alameda, California 94502-6577

Mr. Stephen Hill
California Regional Water Quality Control Board
San Francisco Bay Region
1515 Clay Street, Suite 1400
Oakland, California 94612

(415)
Page 1758 0298

If you should have any questions please contact Ms. Tracy A. Faulkner at (415) 382-5985.

Sincerely,
Environmental Resolutions, Inc.

Jennifer Schulte
Staff Geologist

Mark S. Dockum, R.G., C.E.G.
Senior Project Manager

Attachments
Table 1: Cumulative Groundwater Monitoring and Sampling Data

Plate 1: Site Vicinity Map
Plate 2: Underground Utilities Map
Plate 3: Groundwater Flow Direction, Rose Diagram

TABLE 1
CUMULATIVE GROUNDWATER MONITORING AND SAMPLING DATA
Exxon Service Station 7-0238
2200 East 12th Street
Oakland, California

Well ID # (TOC)	Sampling Date	SUBJ	DTW	Elev	TPPHg	MTBE	B	T	E	X
		<	feet	>	<		ug/L			>
MW9A	11/2/95	NLPH	7.16	4.30	<50	<10	<0.5	<0.5	<0.5	<0.5
(11.46)	4/26/96	NLPH	6.33	5.13	---	---	---	---	---	---
	8/22/96	NLPH	7.02	4.44	---	---	---	---	---	---
	2/24/97	---	---	---	---	---	---	---	---	---
	3/16/98	NLPH	6.14	5.32	<200	40,000	7.9	<2.0	<2.0	<2.0
	4/21/98	NLPH	6.29	5.17	<50	53,000	3.8	<0.5	<0.5	<0.5
(14.53)	7/22/98	NLPH	6.58	7.95	<250	18,000	<2.5	<2.5	<2.5	<2.5
	12/22/98	NLPH	6.47	8.06	<50	5,200	<0.5	<0.5	<0.5	<0.5
	2/26/99	NLPH	6.38	8.15	<100	10,000	<1.0	<1.0	<1.0	<1.0
MW9B	11/2/95	NLPH	6.14	3.66	130	<10	3.3	<0.5	<0.5	<0.5
(9.80)	4/26/96	NLPH	5.66	4.14	270	70	130	2.8	6.7	<3
	8/22/96	NLPH	6.16	3.64	210	31	5.7	6.8	1.1	9.2
	2/24/97	NLPH	5.58	4.22	1,400	1,300	76	1.4	4.1	1.2
	3/16/98	NLPH	5.32	4.48	860	1,500	140	2.0	11	<2.0
	4/21/98	NLPH	5.49	4.31	1,800	18,000	300	<5.0	7.9	<5.0
(12.83)	7/22/98	NLPH	5.79	7.04	<500	26,000	13	<5.0	<5.0	<5.0
	12/22/98	NLPH	5.69	7.14	700	21,000	110	3.1	9.1	14
	2/26/99	NLPH	5.10	7.73	8,800	8,000	2,000	<25	52	38
MW9C	11/2/95	---	---	---	---	---	---	---	---	---
(11.14)	4/26/96	---	---	---	---	---	---	---	---	---
	8/22/96	---	---	---	---	---	---	---	---	---
	2/24/97	---	---	---	---	---	---	---	---	---
	3/16/98	NLPH	5.51	5.63	<500	150,000	24	<5.0	<5.0	<5.0
	4/21/98	NLPH	5.83	5.31	150	130,000/150,000*	<0.5	<0.5	<0.5	<0.5
(14.19)	7/22/98	NLPH	6.43	7.76	<500	95,000	<5.0	<5.0	<5.0	<5.0
	12/22/98	NLPH	6.16	8.03	<500	84,000	<5.0	<5.0	<5.0	<5.0
	2/26/99	NLPH	5.46	8.73	<250	55,000	<2.5	<2.5	<2.5	<2.5

TABLE 1
CUMULATIVE GROUNDWATER MONITORING AND SAMPLING DATA
Exxon Service Station 7-0238
2200 East 12th Street
Oakland, California
(Page 2 of 3)

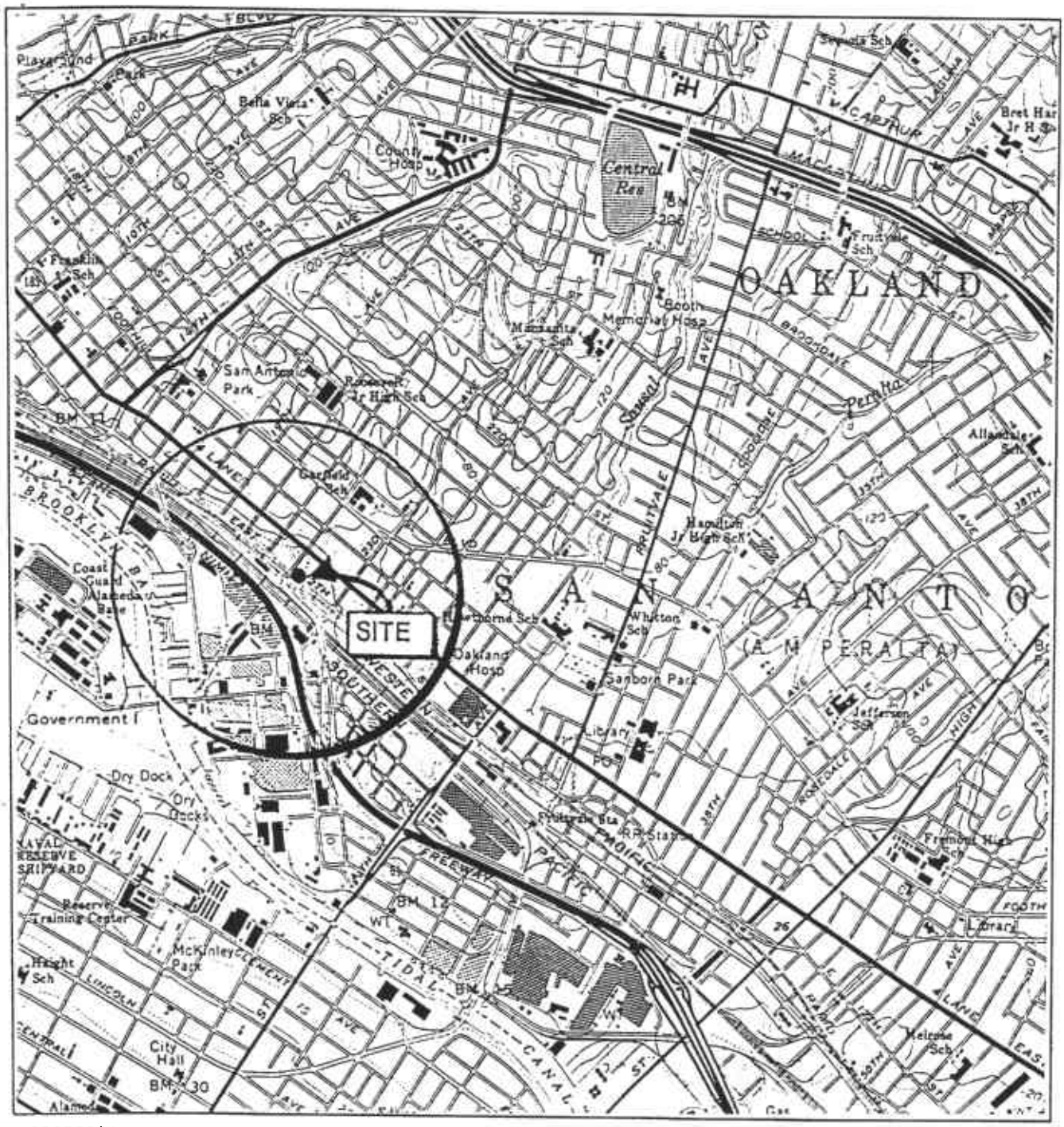
Well ID #	Sampling	SUBJ	DTW	Elev.	TPPHg	MTBE	B	T	E	X
(TOC)	Date	<	feet	>	<		ug/L			>
MW9D	11/2/95	---	---	---	---	---	---	---	---	---
(12.90)	4/26/96	---	--	--	---	---	---	---	---	---
	8/22/96	---	---	---	---	---	---	---	---	---
	2/24/97	---	---	---	---	---	---	---	---	---
	3/16/98	NLPH	6.94	5.96	<50	10	<0.5	<0.5	<0.5	<0.5
	4/21/98	NLPH	7.22	5.68	<50	12	<0.5	<0.5	<0.5	<0.5
(15.98)	7/22/98	NLPH	7.85	8.13	<50	13	<0.5	<0.5	<0.5	<0.5
	12/22/98	NLPH	7.58	8.40	<50	12	<0.5	<0.5	<0.5	<0.5
	2/26/99	NLPH	6.42	9.56	<50	310	<0.5	<0.5	<0.5	<0.5
MW9F	11/2/95	---	---	---	---	---	---	---	---	---
(8.37)	4/26/96	NLPH	---	---	<50	57	<0.5	<0.5	<0.5	<0.5
	8/22/96	NLPH	---	---	<50	5.8	<0.5	<0.5	<0.5	<0.5
	2/24/97	NLPH	---	---	<50	<30	<0.5	<0.5	<0.5	<0.5
	3/16/98	NLPH	---	---	---	---	---	---	---	---
	4/21/98	---	---	---	---	---	---	---	---	---
(11.38)	7/22/98	---	---	---	---	---	---	---	---	---
	12/22/98	NLPH	5.47	5.91	<50	81	<0.5	<0.5	<0.5	<0.5
	2/26/99	NLPH	5.35	6.03	<50	<2.5	<0.5	<0.5	<0.5	<0.5
MW9G	11/2/95	NLPH	5.92	4.03	<50	<10	<0.5	<0.5	<0.5	<0.5
(9.95)	4/26/96	NLPH	5.28	4.67	<50	18	<0.5	<0.5	<0.5	<0.5
	8/22/96	NLPH	5.57	4.38	<50	18	<0.5	<0.5	<0.5	<0.5
	2/24/97	NLPH	5.30	4.65	<50	240	<0.5	0.57	<0.5	0.62
	3/16/98	---	---	---	---	---	---	---	---	---
	4/21/98	---	---	---	---	---	---	---	---	---
(12.99)	7/22/98	---	---	---	---	---	---	---	---	---
	12/22/98	NLPH	5.28	7.71	<50	1,100	<0.5	<0.5	<0.5	<0.5
	2/26/99	NLPH	5.31	7.68	<50	50	<0.5	<0.5	<0.5	<0.5

TABLE 1
CUMULATIVE GROUNDWATER MONITORING AND SAMPLING DATA
Exxon Service Station 7-0238
2200 East 12th Street
Oakland, California

Well ID # (TOC)	Sampling Date	SUBJ	DTW	Elev.	TPPHg	MTBE	B	T	E	X
		<	feet	>	<		ug/L			>
MW9H	11/2/95	NLPH	8.40	0.18	<50	<10	<0.5	<0.5	<0.5	<0.5
(8.58)	4/26/96	NLPH	8.05	0.53	---	---	---	---	---	---
	8/22/96	NLPH	8.17	0.41	---	---	---	---	---	---
	2/24/97	---	---	---	---	---	---	---	---	---
	3/16/98	---	---	---	---	---	---	--	---	---
	4/21/98	---	---	---	---	---	---	---	---	---
(11.61)	7/22/98	---	---	---	---	---	---	---	---	---
	12/22/98	NLPH	7.81	3.80	<50	<2.5	<0.5	<0.5	<0.5	<0.5
	2/26/99	NLPH	7.61	4.00	<50	<2.5	<0.5	<0.5	<0.5	<0.5
MW9I	11/2/95	NLPH	6.04	4.07	<50	<10	<0.5	<0.5	<0.5	<0.5
(10.11)	4/26/96	NLPH	5.27	4.84	<50	99	<0.5	<0.5	<0.5	<0.5
	8/22/96	NLPH	5.66	4.45	<50	170	<0.5	<0.5	<0.5	<0.5
	2/24/97	NLPH	5.24	4.87	120	9,100	<0.5	<0.5	<0.5	<0.5
	3/16/98	NLPH	4.91	5.20	<200	59,000	13	<2.0	<2.0	<2.0
	4/21/98	NLPH	5.08	5.03	<500	59,000	<5.0	<5.0	<5.0	<5.0
(13.14)	7/22/98	NLPH	5.44	7.70	<500	62,000	<5.0	<5.0	<5.0	<5.0
	12/22/98	NLPH	5.32	7.82	200	51,000	1.7	<0.5	<0.5	<0.5
	2/26/99	NLPH	4.71	8.43	<500	9,700	<5.0	<5.0	<5.0	<5.0

Notes:

SUBJ	=	Results of subjective evaluation.
NLPH	=	No liquid-phase hydrocarbons present in well.
TOC	=	Elevation of top of well casing; relative to mean sea level.
DTW	=	Depth to water.
Elev.	=	Elevation of groundwater surface; relative to mean sea level.
TPPHg	=	Total purgeable petroleum hydrocarbons as gasoline analyzed using EPA method 5030/8015 (modified).
MTBE	=	Methyl tertiary butyl ether analyzed using EPA method 5030/8020.
BTEX	=	Benzene, toluene, ethylbenzene, and total xylenes using EPA method 5030/8020.
<	=	Less than the indicated detection limit shown by the laboratory.
---	=	Not measured or sampled.
*	=	MTBE confirmed using EPA method 8260.
**	=	Miscalculation in field. Field technician may have inadvertently monitored and sampled the wrong well. Resampled 5/27/99.



FN 22930001

EXPLANATION

N

Source: U.S.G.S. 7.5 minute topographic quadrangle map Oakland East, California (Photorevised 1980)

APPROXIMATE SCALE

0 1/2 1

MILE

ERI ENVIRONMENTAL RESOLUTIONS, INC.

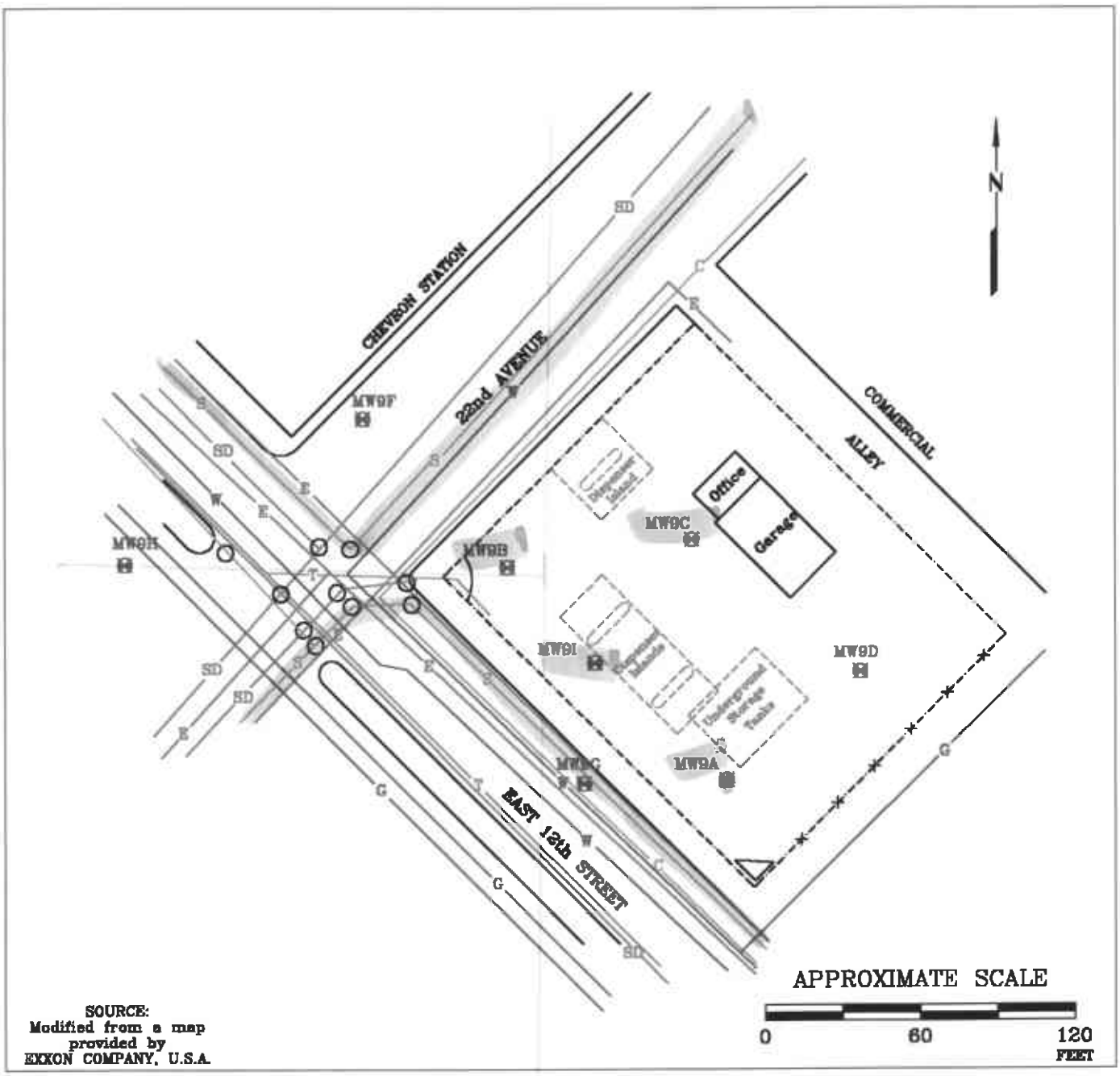
PROJECT ERI 2293

SITE VICINITY MAP

EXXON SERVICE STATION 7-0238
2200 East 12th Street
Oakland, California

PLATE

1



SOURCE:
Modified from a map provided by EXXON COMPANY, U.S.A.

FN 22930002

EXPLANATION

MW9I
Groundwater Monitoring Well

SD	Storm Drain	3.5'
W	Water	3.5'
E	Electric	3'
S	Sewer	6'
G	Gas	3'
C	Cable	1.5'
T	Telephone	2'-3'
○	Manhole	

ERI ENVIRONMENTAL RESOLUTIONS, INC.

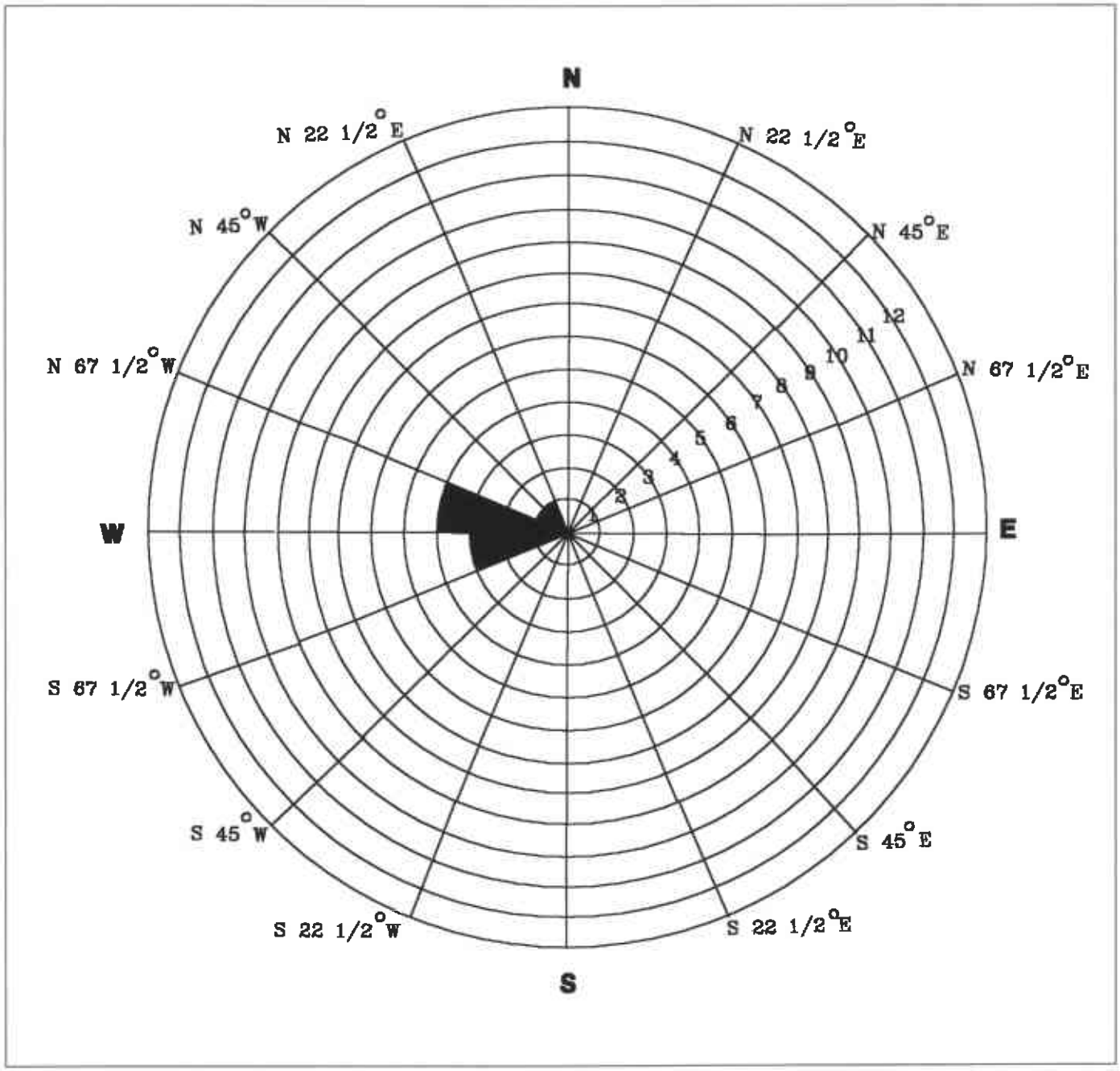
UNDERGROUND UTILITY MAP

EXXON SERVICE STATION 7-0238
2200 East 12th Street
Oakland, California

PROJECT NO.
2293

PLATE
2

June 16, 1999



FN 22930004

EXPLANATION

N Compass Direction

Nine Data Points Shown

Rose diagram developed by evaluating the groundwater gradient direction from the existing monitoring data set. Each circle on the rose diagram represents the number of monitoring events that the gradient plotted in that 22 1/2 degree sector. For example, five quarterly groundwater gradient directions plotted between due west and north 67 1/2 degrees west. Therefore, the dominant groundwater gradient direction as depicted by the rose diagram is between south 67 1/2 degrees west and north 67 1/2 degrees west.

ENVIRONMENTAL RESOLUTIONS, INC.

GROUNDWATER FLOW DIRECTION ROSE DIAGRAM

EXXON SERVICE STATION 7-00238
2200 East 12th Street
Oakland, California

PROJECT NO. 2293

PLATE 3

June 21, 1993