

EXXON COMPANY, U.S.A.

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

DARIN L. ROUSE
SENIOR ENGINEER

(925) 246-8768
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December 10, 1999

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

RE: Former Exxon RAS #7-3006/720 High Street, Oakland, California.

Dear Mr. Chan:

Attached for your review and comment is a letter report entitled *Natural Attenuation Monitoring Results and Presentation of Risk-Based Corrective Action Results*, dated November 23, 1999, for the above referenced site. The report was prepared by Environmental Resolutions, Inc. (ERI) of Novato, California, and details the results of laboratory analyses for natural attenuation indicators and also provides the results of a risk-based corrective action analysis. Based on the results and discussions in previous meetings, Exxon requests closure of the site as low risk.

If you have any questions or comments, please contact me at (925) 246-8768.

Sincerely,



Darin L. Rouse
Senior Engineer

Attachment: ERI's Natural Attenuation Monitoring Results and Presentation of Risk-Based Corrective Action Results, dated November 23, 1999.

cc: w/attachment

Mr. Stephen Hill - California Regional Water Quality Control Board-San Francisco Bay Region

w/o attachment

Mr. James F. Chappell - Environmental Resolutions, Inc.
Ms. Kathy Simonelli - Geologic Services Corporation

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ENVIRONMENTAL
PROTECTION



November 23, 1999
ERI 201014.R01

Mr. Darin L. Rouse
Exxon Company, U.S.A.
P.O. Box 4032
Concord, California 94524-4032

Subject: Natural Attenuation Monitoring Results and Presentation of Risk-Based Corrective Action Results for Former Exxon Service Station 7-3006, 720 High Street, Oakland, California.

Mr. Rouse:

At the request of Exxon Company, U.S.A. (Exxon), Environmental Resolutions, Inc. (ERI) has prepared this letter report presenting the results of laboratory analyses for natural attenuation indicators in groundwater samples collected from the monitoring wells at the site. The location of the site is shown on the Site Vicinity Map (Plate 1). The locations of selected site features are shown on the Generalized Site Plan (Plate 2). Plates 3 and 4 show the location of the benzene and total purgeable petroleum hydrocarbons as gasoline (TPPHg), respectively. A Site Conceptual Exposure Model showing subsurface lithology and selected site features is presented on Plate 5. Field activities were performed on September 21, 1999, in general accordance with ERI's *Biodegradation Monitoring Program, Reduced Monitoring and System Shutdown* (the Biodegradation Program) dated May 25, 1999. The purpose of the work was to evaluate if conditions conducive to natural attenuation exist at the subject site. Natural attenuation includes chemical and biological degradation. Chemical degradation of hydrocarbons occurs when molecules present in the subsurface sever chemical bonds of hydrocarbons, thereby breaking them down to smaller molecules. Biodegradation involves in-situ bacteria participating in the degradation of hydrocarbons to smaller molecules.

NATURAL ATTENUATION INDICATOR PARAMETERS

On September 21, 1999, ERI sampled existing wells MW1, MW2, MW4, MW9, MW10, MW12, MW13, and MW14 for the following constituents: nitrates as nitrate (using EPA Method 300.0), dissolved ferrous iron (using EPA Method 6010 Modified), dissolved hydrogen sulfide (using EPA Method 9030), and dissolved methane (by RSK 175 (preservation) and ASTM 3416 Modified (analysis)). In addition to collecting groundwater samples, reduction/oxidation (redox) potential and dissolved oxygen (D.O.) field measurements were conducted on samples from each well to indicate the activity of chemical degradation of hydrocarbons at the subject site. Samples, redox and D.O. measurements were collected from monitoring wells MW1, MW9, and MW10 to evaluate natural attenuation conditions outside of the hydrocarbon-impacted groundwater area. Samples, redox and D.O. measurements were collected from monitoring wells MW2, MW4, MW12, and MW13 to evaluate natural attenuation conditions within the hydrocarbon-impacted area. Results of laboratory analyses are presented in Table 1. Analytical laboratory reports and Chain of Custody records are

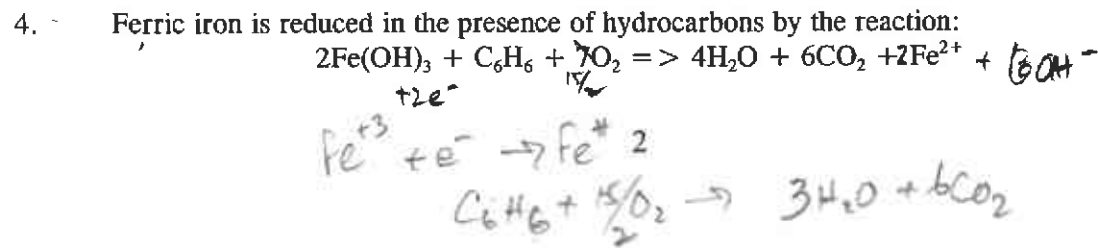
presented in Attachment A.

Monitoring wells MW9 and MW10 are in the upgradient direction of the source location and, historically, have had the lowest dissolved-phase hydrocarbon concentrations present in the groundwater samples. Therefore, these wells, for the purpose of this investigation, are the most representative of background conditions. Monitoring well MW1 is an off-site well located outside of the impacted area in the downgradient direction of the source. A rose diagram depicting historical flow direction is provided on Plate 6. MW1 was sampled to evaluate off-site conditions in the downgradient direction. Monitoring wells MW2, MW12, MW13, and MW14 were sampled to represent conditions within the interior of the plume. Comparison of natural attenuation indicator (NAI) concentrations inside and outside the plume allows for evaluation of whether or not natural attenuation is occurring.

It should be noted that natural attenuation does not typically occur by all processes at the same time. Therefore, the absence of a change in an NAI concentration does not indicate that natural attenuation is not occurring; it could be that it is not occurring by the process that consumes or produces that indicator at that time. However, a change in an NAI concentration ~~does~~ mean that natural attenuation is occurring by the process that consumes or produces that indicator.

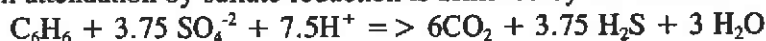
NATURAL ATTENUATION INDICATORS

1. Dissolved oxygen (D.O.) is the most energetic electron acceptor for natural attenuation of hydrocarbons, and is therefore consumed by the attenuation of hydrocarbons. D.O. measurements collected within the plume are lower than outside the plume, indicating that hydrocarbons are being attenuated by oxygenation within the plume. Table 1 presents the D.O. measurements of all wells monitored. An isoconcentration map showing D.O. is provided on Plate 7. The concentrations are also presented on Graph 1.
2. According to Norris et al (1994), areas of positive redox values indicate that either the contaminant plume has not reached that area or it is an area where degradation has not yet occurred. Conversely, lower or negative redox potential measurements indicate that degradation of hydrocarbons is occurring. Reduction oxidation (redox) potential measurements collected outside the plume are positive, whereas negative measurements were recorded inside the plume. Therefore, based on redox measurements at this site, degradation is occurring within the plume. Table 1 presents the redox measurements of all wells monitored. An isoconcentration map presenting redox measurements is provided on Plate 8. Graph 2 represents redox potential for the wells that were sampled.
3. Nitrogen is an essential nutrient of microbial growth and biodegradation. Nitrates (NO₃) are consumed by the attenuation of hydrocarbons. NO₃ concentrations are higher outside than inside the plume indicating that bacteria are using NO₃ as an energy source. Concentrations of less than the laboratory method detection limit (LMDL) of NO₃ are present (MW2, MW12, MW13, and MW14). NO₃ are present in wells MW1, MW9, and MW10 (Plate 9). This loss of NO₃ inside the plume indicates that attenuation of hydrocarbons is occurring by the consumption of NO₃. Table 1 presents the nitrates analytical results of all wells monitored. Graph 3 represents concentrations of nitrates for the wells that were sampled.



Hydrocarbons are consumed during this reaction while Fe^{2+} is being produced. Ferrous iron (Fe^{2+}) concentrations outside the plume are less than the laboratory method detection limit (LMDL) for wells MW9 and MW10. Analytical results of Fe^{2+} for monitoring wells MW1, MW2, MW12, MW13, and MW14 (within the plume) have elevated ferrous iron concentrations indicating reduction of Fe^{3+} (Plate 10). Table 1 presents the ferrous iron analytical results of all wells monitored. Graph 4 represents the ferrous iron concentrations for the wells that were sampled.) anaerobic

5. Hydrocarbon attenuation by sulfate reduction is achieved by the reaction:



Sulfate levels inside the plume are at lower levels than down gradient boundary wells. This indicates sulfate-reducing bacteria may be at work inside the plume. As sulfate concentrations decrease, the activity of methanogenic bacteria increases. The sulfate concentrations in wells outside the plume (MW1, MW9, and MW10) are considerably higher than concentrations inside the plume and, in ERI's opinion, these results are most representative of background sulfate concentrations (Plate 11). Table 1 presents the sulfate analytical results of all wells monitored. Graph 4 represents the sulfate concentrations for the wells sampled.

6. Methane is a product of natural attenuation produced by reduction of carbon dioxide. Elevated methane concentrations indicate anaerobic and/or methanogenic conditions exist at the site. Table 1 presents the nitrates analytical results of all wells monitored. An isoconcentration map presenting methane concentrations is provided on Plate 12. Graph 4 represents the methane concentrations for the wells sampled.

INCONCLUSIVE EVIDENCE

1. Analytical results of the sulfate concentrations in monitoring wells MW2 and MW13 are inconsistent with the trend for wells inside the plume. Sulfate concentrations within the plume should be less than the concentrations outside the plume, indicative of sulfate uptake by chemical and biological degradation.
2. The soluble sulfide concentration in the groundwater is at non-detectable levels in all wells. Sulfide is the product of chemical and biological degradation of sulfate. Therefore, sulfide concentrations within the plume should be higher than sulfide concentrations outside the plume if biodegradation is occurring.

CONCLUSIONS

Based on the data available, ERI believes the evidence for natural attenuation occurring at the site includes:

- Decreased dissolved oxygen, nitrates, and sulfate concentrations within the plume.
- Increased ferrous iron and methane concentrations within the plume.
- Redox potential and D.O. field measurements also indicate aerobic biodegradation has occurred in the past, and that natural attenuation through biodegradation and chemical degradation is still occurring at the site.

RISK-BASED CORRECTIVE ACTION

On February 9, 1999, ERI performed a risk-based corrective action (RBCA) analysis for the subject site. The results are presented in Attachment B. ERI evaluated the following exposure pathways in the Tier II assessment:

- Surface soil leaching to groundwater (direct ingestion: commercial and residential)
- Surface soil direct ingestion and dermal contact (construction worker)
- Surface soil volatilization to outdoor air (inhalation: commercial receptor)
- Subsurface soil leaching to groundwater (direct ingestion: commercial and residential)
- Subsurface soil direct ingestion and dermal contact (construction worker)
- Subsurface soil volatilization to indoor air (inhalation: commercial receptor)
- Subsurface soil volatilization to outdoor air (inhalation: commercial and residential receptors)
- Groundwater direct ingestion (not applicable)
- Groundwater volatilization to indoor air (inhalation: commercial and residential receptors)
- Groundwater volatilization to outdoor air (inhalation: commercial and residential receptors)

Tier II Results

Analytical results of soil, at the 90% confidence level, and groundwater samples, at the 95% confidence level, do not exceed the regulatory site-specific target levels (SSTLs) for any of the evaluated exposure pathways for benzene, toluene, ethylbenzene, and total xylenes (BTEX) based on the permissible exposure limit (PEL). The RBCA Tier II Analysis output files are provided in Attachment B.

RECOMMENDATIONS

It is ERI's opinion that environmental conditions at this site do not warrant additional assessment or remedial activities and that low risk case closure for this site is warranted based on two principles. The first principle is that natural attenuation is occurring based on the information provided above. The second principle is that health risks do not exist based on no exceedance of the SSTLs in the RBCA Tier II analysis. ERI recommends that a low risk case closure be granted and that four perimeter groundwater monitoring wells (MW2, MW9, MW10, MW12) remain on an annual monitoring basis. ERI recommends destruction of the remaining groundwater monitoring wells and removal of the remediation system.

ERI recommends that a copy of this report be sent to the following:

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

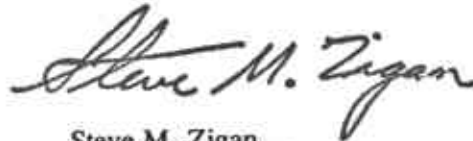
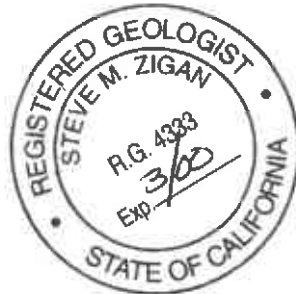
Mr. Stephen Hill
California Regional Water Quality Control Board
San Francisco Bay Region
1515 Clay Street, Suite 1400
Oakland, California 94612

Please call Mr. Peter A. Petro, the ERI project manager for this site, at (415) 382-5995 if you have any questions.

Sincerely,
Environmental Resolutions, Inc.



Peter A. Petro
Assistant Project Manager



Steve M. Zigan
R.G. 4333
H.G. 133

Attachments: Table 1: Natural Attenuation Monitoring and Sampling Data
Table 2: Cumulative Groundwater Monitoring and Sampling Data

Plate 1: Site Vicinity Map
Plate 2: Generalized Site Plan
Plate 3: Benzene Isoconcentration Map
Plate 4: TPPHg Isoconcentration Map
Plate 5: Site Conceptual Exposure Model
Plate 6: Groundwater Flow Direction Rose Diagram
Plate 7: Dissolved Oxygen Isoconcentration Map
Plate 8: Redox Potential Isoconcentration Map
Plate 9: Nitrates Isoconcentration Map
Plate 10: Ferrous Iron Isoconcentration Map
Plate 11: Sulfate Isoconcentration Map
Plate 12: Dissolved Methane Isoconcentration Map

Graph 1: Dissolved Oxygen Field Measurements
Graph 2: Redox Potential Field Measurements
Graph 3: Natural Attenuation Reactants
Graph 4: Natural Attenuation Products

Attachment A: Laboratory Analysis Reports and Chain of Custody Records
Attachment B: RBCA Data Results

REFERENCES

Norris, et. al. Handbook of Bioremediation. Florida: CRC Press, Inc., 1994

TABLE 1
NATURAL ATTENUATION MONITORING AND SAMPLING DATA
Former Exxon Service Station 7-3006
720 High Street
Oakland, California
(Page 1 of 1)

Well ID # (TOC)	Sampling Date	SUBJ <.....>	DTW feet	Elev. >.....<	Redox <...mV...>	D.O. <.....>	Nitrate	Ferrous Iron	Sulfate mg/L	Hydrogen Sulfide	Methane >.....<
MW1 (12.87)	9/21/99	---	8.81	4.06	+197.5	0.17	15.7	0.017	44.4	<1.0	<0.5
MW2 (12.98)	9/21/99	---	7.92	5.06	-74.5	0.26	<1.0	0.077	15.1	<1.0	0.81
MW9 (14.64)	9/21/99	---	8.36	6.28	+217	0.28	22.3	<0.01	58.1	<1.0	<0.5
MW10 (14.05)	9/21/99	---	7.63	6.42	+252	1.39	50.4	<0.01	57.7	<1.0	<0.5
MW12 (12.61)	9/21/99	---	7.32	5.29	-125.1	0.23	<1.0	6.10	<5.0	<1.0	4.7
MW13 (14.20)	9/21/99	---	8.02	6.18	-166.7	0.25	<1.0	1.20	47.0	<1.0	0.83
MW14 (15.18)	9/21/99	---	9.00	6.18	-40.3	0.26	<1.0	0.077	<5.0	<1.0	0.70

offsite
plume up grad
in
in
in
in
in
in

- Notes:
- SUBJ = Results of subjective evaluation, liquid-phase hydrocarbon thickness (HT) in feet.
 - 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. If liquid-phase hydrocarbons present, elevation adjusted using TOC - [DTW - (PT x 0.8)].
 - mV = milliVolts
 - Redox = Reduction/Oxidation potential measured in the field.
 - D.O. = Dissolved oxygen measured in the field.
 - Nitrate = Nitrate as NO₃ analyzed using EPA Method 300.0.
 - Ferrous Iron = Analyzed using EPA Method 6010 Modified.
 - Sulfate = Sulfate as SO₄ analyzed using EPA Method 300.0.
 - Hydrogen Sulfide = Analyzed using EPA Method 9030.
 - Methane = Analyzed using American Society for Testing and Materials (ASTM) 3416 Modified.
 - = Not measured/not analyzed.
 - < = Less than the indicated detection limit shown by the laboratory.

TABLE 2
 CUMULATIVE GROUNDWATER MONITORING AND SAMPLING DATA
 Former Exxon Service Station 7-3006
 720 High Street
 Oakland, California
 (Page 2 of 11)

Well ID #	Sampling	SUBI	DTW	Elev.	TEPHd	TPPHg	MTBE	B	T	E	X	VOCs	EHCs	TOG
(TOC)	Date	<.....>	feet.	>	<.....ug/l.....>									
MW2 (cont.) (12.98)	6/7/95	Sheen	7.14	5.84	---	---	---	---	---	---	---	---	---	---
	9/18/95	Sheen	10.82	2.16	---	---	---	---	---	---	---	---	---	---
	11/1/95	Sheen	11.65	1.33	---	---	---	---	---	---	---	---	---	---
	2/14/96	Sheen	8.39	4.59	---	---	---	---	---	---	---	---	---	---
	6/19/96	Sheen	6.55	6.43	---	---	---	---	---	---	---	---	---	---
	9/24/96	Sheen	11.56	1.42	---	---	---	---	---	---	---	---	---	---
	12/11/96	Sheen	8.02	4.96	---	---	---	---	---	---	---	---	---	---
	3/19/97	Sheen	8.63	4.35	---	---	---	---	---	---	---	---	---	---
	6/4/97	Sheen	10.57	2.41	---	---	---	---	---	---	---	---	---	---
	9/2/97	Sheen	11.51	1.47	---	---	---	---	---	---	---	---	---	---
	12/2/97	NLPH	11.24	1.74	820	1,400	57	15	2.8	8.6	<2.5	---	---	---
	3/27/98	NLPH	6.06	6.92	2,000	7,400	<50	1,400	350	490	1,500	---	---	---
	6/23/98	Sheen	11.06	1.92	2,900	180	9.5	3.2	0.55	0.92	1.3	---	---	---
	9/29/98	NLPH	10.51	2.47	180	290	9.3	<0.50	0.65	1.5	1.5	---	---	---
	12/30/98	NLPH	9.83	3.15	700	520	16	17	0.96	2.6	3.5	---	---	---
	3/24/99	NLPH	4.47	8.51	1,440	14,000	<40	1,300	336	786	3,420	---	---	---
	6/22/99	NLPH	6.42	6.56	2,310	1,080	25.2	54.3	14.9	38.8	107	---	---	---
	9/29/99	NLPH	8.00	4.98	2,720 ^f	517	15.4	37.5	7.48	12.9	15.2	---	---	---
MW3 (12.92)	1/20/94	Sheen	8.24	4.68	---	---	---	---	---	---	---	---	---	---
	02/02-03/94	Sheen	7.68	5.24	---	---	---	---	---	---	---	---	---	---
	3/10/94	Sheen	7.24	5.68	---	---	---	---	---	---	---	---	---	---
	4/22/94	Sheen	6.79	6.13	---	---	---	---	---	---	---	---	---	---
	05/10-11/94	Sheen	6.43	6.49	---	---	---	---	---	---	---	---	---	---
	6/27/94	0.01 [NR]	6.97	5.95	---	---	---	---	---	---	---	---	---	---
	8/31/94	Sheen	8.41	4.51	---	---	---	---	---	---	---	---	---	---
	9/29/94	Sheen	8.97	3.95	---	---	---	---	---	---	---	---	---	---
	10/25/94	Sheen	9.43	3.49	---	---	---	---	---	---	---	---	---	---
	11/28/94	---	7.19	5.73	---	---	---	---	---	---	---	---	---	---
	12/27/94	Sheen	6.64	6.28	---	---	---	---	---	---	---	---	---	---
	2/6/95	Sheen	4.87	8.05	---	---	---	---	---	---	---	---	---	---
	6/7/95	Sheen	7.05	5.87	---	---	---	---	---	---	---	---	---	---
	9/18/95	Sheen	10.61	2.31	---	---	---	---	---	---	---	---	---	---
	11/1/95	Sheen	11.58	1.34	---	---	---	---	---	---	---	---	---	---
	2/14/96	Sheen	8.34	4.58	---	---	---	---	---	---	---	---	---	---
	6/19/96	Sheen	6.35	6.57	---	---	---	---	---	---	---	---	---	---
	9/24/96	Sheen	11.45	1.47	---	---	---	---	---	---	---	---	---	---
12/11/96	NLPH	7.89	5.03	17,000*	4,800	30	340	<5.0	8.2	20	---	---	---	
3/19/97	NLPH	9.83	3.09	3,000	1,900	80	160	11	5.6	10	---	---	---	
6/4/97	NLPH	10.43	2.49	8,000	920	11	15	2.8	2.4	<2.0	---	---	---	
9/2/97	Sheen	12.45	0.47	---	---	---	---	---	---	---	---	---	---	
12/2/97	NLPH	11.21	1.71	6,700	920	21	10	2.1	<1.0	2.7	---	---	---	

TABLE 2
 CUMULATIVE GROUNDWATER MONITORING AND SAMPLING DATA
 Former Exxon Service Station 7-3006
 720 High Street
 Oakland, California
 (Page 3 of 11)

Well ID # (TOC)	Sampling Date	SUBJ <.....>	DTW feet	Elev. >.....<	TEPHd <.....>	TPPHg <.....>	MTBE <.....>	B <.....>	T ug/l	E <.....>	X <.....>	VOCs <.....>	EHCs <.....>	TOG >.....<
MW3 (cont.) (12.92)	3/24/98	NLPH	5.93	6.99	4,600	1,500	25	5,500	<5.0	<5.0	<5.0	---	---	---
	6/23/98	NLPH	11.13	1.79	39,000	1,300	9.4	53	<1.0	<1.0	<1.0	---	---	---
	9/29/98	Sheen	10.46	2.46	2,600	540	<5.0	6.8	1.9	1.4	2.3	---	---	---
	12/30/98	NLPH	9.72	3.20	11,000	4,000	<50	74	<10	<10	<10	---	---	---
	3/24/99	Sheen	4.36	8.56	3,850	2,330	<20	<5.0	<5.0	<5.0	<5.0	---	---	---
	6/22/99	NLPH	6.22	6.70	6,860	1,470	<10	492	<2.5	<2.5	<2.5	---	---	---
	9/29/99	NLPH	8.10	4.82	2,290 ^f	315	<5.0	11.5	3.07	<1.0	2.54	---	---	---
MW4 (12.77)	1/20/94	--- [NR]	---	---	---	---	---	---	---	---	---	---	---	---
	02/02-03/94	--- [1 c.]	---	---	---	---	---	---	---	---	---	---	---	---
	3/10/94	[8 c.]	7.12	5.65	---	---	---	---	---	---	---	---	---	---
	4/22/94	[10 c.]	---	---	---	---	---	---	---	---	---	---	---	---
	05/10-11/94	[5 c.]	---	---	---	---	---	---	---	---	---	---	---	---
	6/27/94	0.01 [NR]	6.50	6.27	---	---	---	---	---	---	---	---	---	---
	8/31/94	0.02 [NR]	7.84	4.93	---	---	---	---	---	---	---	---	---	---
	9/29/94	0.03 [NR]	8.43	4.34	---	---	---	---	---	---	---	---	---	---
	10/25/94	Sheen	9.24	3.53	---	---	---	---	---	---	---	---	---	---
	11/30/94	---	6.77	6.00	---	---	---	---	---	---	---	---	---	---
	12/27/94	Sheen	6.14	6.63	---	---	---	---	---	---	---	---	---	---
	2/6/95	Sheen	4.87	7.90	---	---	---	---	---	---	---	---	---	---
	6/7/95	Sheen	6.91	5.86	---	---	---	---	---	---	---	---	---	---
	9/18/95	Sheen	9.59	3.18	---	---	---	---	---	---	---	---	---	---
	11/1/95	Sheen	11.52	1.25	---	---	---	---	---	---	---	---	---	---
	2/14/96	Sheen	8.56	4.21	---	---	---	---	---	---	---	---	---	---
	6/19/96	Sheen	6.09	6.68	---	---	---	---	---	---	---	---	---	---
	9/24/96	Sheen	10.20	2.57	---	---	---	---	---	---	---	---	---	---
	12/11/96	Sheen	7.78	4.99	---	---	---	---	---	---	---	---	---	---
	3/19/97	Sheen	8.56	4.21	---	---	---	---	---	---	---	---	---	---
6/4/97	Sheen	9.31	3.46	---	---	---	---	---	---	---	---	---	---	
9/2/97	Sheen	10.00	2.77	---	---	---	---	---	---	---	---	---	---	
12/2/97	NLPH	8.72	4.05	15,000	1,500	50	<2.5	9.7	3.0	10	---	---	---	
3/24/98	NLPH	5.79	6.98	6,400	540	38	<0.5	4.4	1.6	5.4	---	---	---	
6/23/98	Sheen	8.50	4.27	7,500	1,000	25	3.3	<2.0	<2.0	<2.0	---	---	---	
9/29/98	Sheen	9.77	3.00	65,000	7,300	<50	<10	<10	<10	<10	---	---	---	
12/30/98	Sheen	8.54	4.23	12,000	1,000	170	3.8	5.1	<2.5	4.1	---	---	---	
3/24/99	Sheen	4.41	8.36	20,500	1,300	4.40	2.64	<1.0	<1.0	<1.0	---	---	---	
6/22/99	NLPH	5.71	7.06	9,760	1,470	<10	404	<2.5	<2.5	<2.5	---	---	---	
9/29/99	NLPH	7.32	5.45	2,470 ^g	589 ^e	8.12	12.6	<1.0	<1.0	<1.0	---	---	---	
MW5	7/18/89	Well Destroyed												

TABLE 2
 CUMULATIVE GROUNDWATER MONITORING AND SAMPLING DATA
 Former Exxon Service Station 7-3006
 720 High Street
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Well ID # (TOC)	Sampling Date	SUBJ <.....>	DTW feet	Elev. >.....<	TEPHd <.....>	TPPHg <.....>	MTBE <.....>	B <.....>	T ug/l	E <.....>	X <.....>	VOCs <.....>	EHCs <.....>	TOG >.....<
MW6 (14.27)	1/20/94	--- [NR]	---	---	---	---	---	---	---	---	---	---	---	---
	02/02-03/94	--- [NR]	---	---	---	---	---	---	---	---	---	---	---	---
	3/10/94	[¼ c.]	7.82	6.45	---	---	---	---	---	---	---	---	---	---
	4/22/94	[10 c.]	---	---	---	---	---	---	---	---	---	---	---	---
	05/10-11/94	[3 c.]	---	---	---	---	---	---	---	---	---	---	---	---
	6/27/94	Sheen	7.77	6.50	---	---	---	---	---	---	---	---	---	---
	8/31/94	Sheen	9.02	5.25	---	---	---	---	---	---	---	---	---	---
	9/29/94	Sheen	9.51	4.76	---	---	---	---	---	---	---	---	---	---
	10/25/94	Sheen	9.93	4.34	---	---	---	---	---	---	---	---	---	---
	11/30/94	---	8.05	6.22	---	---	---	---	---	---	---	---	---	---
	12/27/94	---	7.54	6.73	---	---	---	---	---	---	---	---	---	---
	2/6/95	Sheen	5.86	8.41	---	---	---	---	---	---	---	---	---	---
	6/7/95	Sheen	8.07	6.20	---	---	---	---	---	---	---	---	---	---
	9/18/95	Sheen	10.54	3.73	---	---	---	---	---	---	---	---	---	---
	11/1/95	Sheen	11.41	2.86	---	---	---	---	---	---	---	---	---	---
	2/14/96	Sheen	9.17	5.10	---	---	---	---	---	---	---	---	---	---
	6/19/96	Sheen	7.13	7.14	---	---	---	---	---	---	---	---	---	---
	9/24/96	Sheen	11.24	3.03	---	---	---	---	---	---	---	---	---	---
	12/11/96	NLPH	9.20	5.07	2,900	9,100	<100	2,100	22	160	260	---	---	---
	3/19/97	NLPH	10.14	4.13	3,800	24,000	250	5,800	91	1,300	1,900	---	---	---
	6/4/97	NLPH	10.58	3.69	3,300	20,000	270	4,400	<50	540	480	---	---	---
	9/2/97	NLPH	11.02	3.25	2,100	8,100	<25	1,800	<25	140	170	---	---	---
	12/2/97	NLPH	10.45	3.82	2,300	6,800	<100	1,100	<20	77	74	---	---	---
	3/24/98	NLPH	7.09	7.18	3,800	20,000	<250	4,300	<50	2,200	1,500	---	---	---
	6/23/98	Sheen	9.79	4.48	4,100	19,000	<500	3,400	<100	1,800	1,100	---	---	---
	9/29/98	NLPH	10.56	3.71	2,300	8,600	<100	2,100	25	300	260	---	---	---
12/30/98	NLPH	9.97	4.30	2,700	6,800	<125	1,600	<25	84	200	---	---	---	
3/24/99	Sheen	5.02	9.25	2,670	12,600	<20	3,380	16.5	221	190	---	---	---	
6/22/99	NLPH	6.91	7.36	5,670	6,720	<40	2,400	<10	767	14.4	---	---	---	
9/29/99	NLPH	8.66	5.61	1,370 ^d	6,310 ^d	<250	<25	<25	133	<25	---	---	---	
MW7 (14.84)	1/20/94	NLPH	8.67	6.17	---	---	---	---	---	---	---	---	---	
	02/02-03/94	NLPH	8.47	6.37	1,300	2,900	---	79	5	8.2	21	---	4,701	
	3/10/94	NLPH	8.24	6.60	---	---	---	---	---	---	---	---	---	
	4/22/94	NLPH	7.95	6.89	---	---	---	---	---	---	---	---	---	
	05/10-11/94	NLPH	7.53	7.31	1,300	2,400	---	88	5.6	5.2	15	---	1,400	
	6/27/94	NLPH	8.01	6.83	---	---	---	---	---	---	---	---	---	
	8/31/94	NLPH	9.19	5.65	---	---	---	---	---	---	---	---	---	
	9/29/94	NLPH	9.65	5.19	56	1,900	---	71	3.1	3.5	7.8	---	---	
	10/25/94	NLPH	9.96	4.88	89	1,400	---	51	1.5	24	6.8	---	---	
	11/30/94	---	7.78	7.06	---	---	---	---	---	---	---	---	---	
	12/27/94	---	7.51	7.33	---	---	---	---	---	---	---	---	---	
2/6/95	NLPH	5.79	9.05	1,300	2,500	---	130	<10	<10	<10	ND	1,100		

TABLE 2
 CUMULATIVE GROUNDWATER MONITORING AND SAMPLING DATA
 Former Exxon Service Station 7-3006
 720 High Street
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Well ID # (TOC)	Sampling Date	SUBJ <----->	DTW feet	Elev.	ug/l										VOCs	EHCs ₈	TOG
					TEPHd	TPPhg	MTBE	B	T	E	X						
MW7 (cont.) (14.84)	6/7/95	NLPH	7.73	7.11	1,200	2,400	39	91	5	7.6	14	---	1,000	---			
	9/18/95	NLPH	9.81	5.03	1,100	1,800	<25	17	<5.0	<5.0	<5.0	---	870	---			
	11/1/95	NLPH	10.56	4.28	1,700	3,000	<13	2.7	11	25	<2.5	---	1,400	---			
	2/14/96	NLPH	8.04	6.80	1,200	1,900	<25	59	<5.0	<5.0	<5.0	---	940	---			
	6/19/96	NLPH	7.33	7.51	1,400	2,000	<25	96	<5.0	<5.0	5.6	ND	1,000	---			
	9/24/96	NLPH	10.10	4.74	1,100	950	<25	6.8	<5.0	<5.0	<5.0	ND	910	---			
	12/11/96	NLPH	8.50	6.34	1,600	2,500	<10	50	<2.0	6.4	30	ND	1,100	---			
	3/19/97	NLPH	8.88	5.96	840	2,700	<25	61	8.0	21	68	ND	580	---			
	6/4/97	NLPH	9.38	5.46	1,000	1,900	<2.5	45	<2.0	5.3	13	ND	780	---			
	9/2/97	NLPH	9.69	5.15	790	1,700	<2.5	28	2.2	<2.0	5.9	ND	740	---			
	12/2/97	NLPH	8.65	6.19	1,100	2,000	14	33	2.2	2.0	5.8	---	---	---			
	3/24/98	NLPH	6.40	8.44	950	2,300	<25	73	<5.0	<5.0	22	---	---	---			
	6/23/98	NLPH	8.34	6.50	1,600	4,700	140	50	<5.0	12	20	---	---	---			
	9/29/98	NLPH	9.76	5.08	630	700	<5.0	2.7	1.3	2.4	5.3	---	---	---			
	12/30/98	NLPH	8.86	5.98	1,700	1,400	<5.0	17	7.7	2.8	16	---	---	---			
	3/24/99	Sheen	5.48	9.36	860	1,740	6.73	59.2	2.76	4.33	15.1	---	---	---			
	6/22/99	NLPH	6.54	8.30	5,330 ^a	3,250	<4.0	59.5	3.96	2.89	6.38	---	---	---			
9/29/99	NLPH	8.45	6.39	1,750 ^a	1,360 ^a	<25	3.07	<2.5	5.02	6.32	---	---	---				
MW8 (13.45)	1/20/94	Sheen	8.90	4.55	---	---	---	---	---	---	---	---	---				
	02/02-03/94	Sheen	8.58	4.87	---	---	---	---	---	---	---	---	---				
	3/10/94	Sheen	7.16	6.29	---	---	---	---	---	---	---	---	---				
	4/22/94	Sheen	7.34	6.11	---	---	---	---	---	---	---	---	---				
	05/10-11/94	Sheen	7.04	6.41	---	---	---	---	---	---	---	---	---				
	6/27/94	Sheen	6.01	7.44	---	---	---	---	---	---	---	---	---				
	8/31/94	Sheen	9.26	4.19	---	---	---	---	---	---	---	---	---				
	9/29/94	Sheen	9.76	3.69	---	---	---	---	---	---	---	---	---				
	10/25/94	Sheen	10.05	3.40	---	---	---	---	---	---	---	---	---				
	11/30/94	---	7.68	5.77	---	---	---	---	---	---	---	---	---				
	12/27/94	Sheen	7.11	6.34	---	---	---	---	---	---	---	---	---				
	2/6/95	Sheen	5.39	8.06	---	---	---	---	---	---	---	---	---				
	6/7/95	Sheen	7.53	5.92	---	---	---	---	---	---	---	---	---				
	9/18/95	Sheen	9.84	3.61	---	---	---	---	---	---	---	---	---				
	11/1/95	Sheen	10.47	2.98	---	---	---	---	---	---	---	---	---				
	2/14/96	Sheen	8.27	5.18	---	---	---	---	---	---	---	---	---				
	6/19/96	Sheen	6.88	6.57	---	---	---	---	---	---	---	---	---				
	9/24/96	Sheen	10.13	3.32	---	---	---	---	---	---	---	---	---				
	12/11/96	Sheen	8.53	4.92	---	---	---	---	---	---	---	---	---				
	3/19/97	Sheen	9.09	4.36	---	---	---	---	---	---	---	---	---				
6/4/97	Sheen	9.52	3.93	---	---	---	---	---	---	---	---	---					
9/2/97	NLPH	9.72	3.73	8,000	20,000	<50	57	<50	850	660	ND	---	---				
12/2/97	NLPH	8.83	4.62	2,700	6,900	130	83	<10	<10	100	---	---	---				
3/24/98	NLPH	6.52	6.93	2,900	10,000	<125	190	<25	470	330	---	---	---				

TABLE 2
 CUMULATIVE GROUNDWATER MONITORING AND SAMPLING DATA
 Former Exxon Service Station 7-3006
 720 High Street
 Oakland, California
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Well ID #	Sampling	SUBI	DTW	Elev.	TEPHd	TPPHg	MTBE	B	T	E	X	VOCs	ERCs	TOG	
(TOC)	Date	<-----	feet	>	<-----	ug/l									>
MW8 (cont.) (13.45)	6/23/98	NLPH	9.02	4.43	3,700	10,000	<50	140	<10	460	260	---	---	---	
	9/29/98	NLPH	9.72	3.73	3,600	12,000	130	46	<10	340	190	---	---	---	
	12/30/98	NLPH	9.06	4.39	3,000	11,000	140	170	<25	230	160	---	---	---	
	3/24/99	Sheen	5.21	8.24	2,250	13,000	22.6	336	53.2	415	326	---	---	---	
	6/22/99	Sheen	6.51	6.94	4,010	13,000	64.9	174	<5.0	186	13.1	---	---	---	
	9/29/99	NLPH	8.22	5.23	2,170 ^b	5,420	<25	20.4	<5.0	<5.0	38.5	2	---	---	
MW9 (14.64)	1/20/94	---	---	---	---	---	---	---	---	---	---	---	---	---	
	02/02-03/94	---	---	---	---	---	---	---	---	---	---	---	---	---	
	3/10/94	NLPH	6.90	7.74	---	---	---	---	---	---	---	---	---	---	
	4/22/94	NLPH	7.38	7.26	---	---	---	---	---	---	---	---	---	---	
	05/10-11/94	NLPH	6.96	7.68	---	---	---	---	---	---	---	---	---	---	
	6/27/94	NLPH	7.65	6.99	---	---	---	---	---	---	---	---	---	---	
	8/31/94	NLPH	8.87	5.77	---	---	---	---	---	---	---	---	---	---	
	9/29/94	NLPH	9.19	5.45	<50	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---	
	10/25/94	NLPH	9.66	4.98	<50	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---	
	11/30/94	---	8.38	6.26	---	---	---	---	---	---	---	---	---	---	
	12/27/94	NLPH	7.29	7.35	---	---	---	---	---	---	---	---	---	---	
	2/6/95	NLPH	5.74	8.90	56	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---	
	6/7/95	NLPH	8.33	6.31	72	<50	<2.5	<0.5	<0.5	<0.5	<0.5	---	---	---	
	9/18/95	NLPH	9.28	5.36	60	<50	<2.5	<0.5	<0.5	<0.5	<0.5	---	---	---	
	11/1/95	NLPH	10.09	4.55	61	<50	<2.5	<0.5	<0.5	<0.5	<0.5	---	---	---	
	2/14/96	NLPH	6.26	8.38	83	<50	<2.5	<0.5	<0.5	<0.5	<0.5	---	---	---	
	6/19/96	NLPH	6.68	7.96	68	<50	<2.5	<0.5	<0.5	<0.5	<0.5	---	<50	---	
	9/24/96	NLPH	9.72	4.92	<50	<50	<2.5	<0.5	<0.5	<0.5	<0.5	---	---	---	
	12/11/96	NLPH	8.11	6.53	91	<50	<2.5	<0.5	<0.5	<0.5	<0.5	---	---	---	
	3/19/97	NLPH	7.72	6.92	140	<50	<2.5	0.83	<0.5	<0.5	<0.5	---	---	---	
	6/4/97	NLPH	8.87	5.77	<50	<50	<2.5	<0.5	<0.5	<0.5	<0.5	---	---	---	
	9/2/97	NLPH	9.44	5.20	140	<50	<2.5	<0.5	<0.5	<0.5	<0.5	---	---	---	
	12/2/97	NLPH	8.43	6.21	71	<50	<2.5	<0.5	<0.5	<0.5	<0.5	---	---	---	
3/24/98	NLPH	5.84	8.80	62	<50	<2.5	<0.5	<0.5	<0.5	<0.5	---	---	---		
6/23/98	NLPH	7.81	6.83	69	<50	<2.5	<0.5	<0.5	<0.5	<0.5	---	---	---		
9/29/98	NLPH	9.26	5.38	52	<50	<2.5	<0.5	<0.5	<0.5	<0.5	---	---	---		
12/30/98	NLPH	8.28	6.36	74	<50	<2.5	<0.5	<0.5	<0.5	<0.5	---	---	---		
3/24/99	NLPH	4.74	9.90	71.1	b	---	---	---	---	---	---	---	---		
6/22/99	Well not sampled		---	---	---	---	---	---	---	---	---	---	---	---	
9/29/99	NLPH	8.41	6.23	---	---	---	---	---	---	---	---	---	---	---	
MW10 (14.05)	1/20/94	NLPH	8.40	5.65	---	---	---	---	---	---	---	---	---	---	
	02/02-03/94	NLPH	8.00	6.05	<50	<50	---	<0.5	1	<0.5	1.8	---	---	---	
	3/10/94	NLPH	7.56	6.49	---	---	---	---	---	---	---	---	---	---	
	4/22/94	NLPH	7.35	6.70	---	---	---	---	---	---	---	---	---	---	
	05/10-11/94	NLPH	7.06	6.99	<50	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---	

TABLE 2
 CUMULATIVE GROUNDWATER MONITORING AND SAMPLING DATA
 Former Exxon Service Station 7-3006
 720 High Street
 Oakland, California
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Well ID #	Sampling	SUBJ	DTW	Elev.	TEPHd	TPPHg	MTBE	B	T	E	X	VOCs	EHCs	TOG
(TOC)	Date	<.....>	feet	>	<.....>									
					ug/l									
MW10 (cont.) (14.05)	6/27/94	NLPH	7.59	6.46	---	---	---	---	---	---	---	---	---	---
	8/31/94	NLPH	8.73	5.32	---	---	---	---	---	---	---	---	---	---
	9/29/94	NLPH	9.07	4.98	<50	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---
	10/25/94	NLPH	9.41	4.64	<50	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---
	11/30/94	---	7.62	6.43	---	---	---	---	---	---	---	---	---	---
	12/27/94	NLPH	7.01	7.04	---	---	---	---	---	---	---	---	---	---
	2/6/95	NLPH	5.60	8.45	---	<50	<50	<0.5	<0.5	<0.5	<0.5	---	---	---
	6/7/95	NLPH	7.12	6.93	<50	<50	<2.5	<0.5	<0.5	<0.5	<0.5	---	---	---
	9/18/95	NLPH	8.54	5.51	<50	<50	<2.5	<0.5	<0.5	<0.5	<0.5	---	---	---
	11/1/95	NLPH	9.44	4.61	<50	<50	<2.5	<0.5	<0.5	<0.5	<0.5	---	---	---
	2/14/96	NLPH	9.36	4.69	64	<50	<2.5	<0.5	<0.5	<0.5	<0.5	---	---	---
	6/19/96	NLPH	7.32	6.73	<50	<50	<2.5	<0.5	<0.5	<0.5	<0.5	---	<50	---
	9/24/96	NLPH	9.07	4.98	<50	<50	<2.5	<0.5	<0.5	<0.5	<0.5	---	---	---
	12/11/96	NLPH	7.73	6.32	67	<50	<2.5	<0.5	<0.5	<0.5	<0.5	---	---	---
	3/19/97	NLPH	7.62	6.43	51	<50	<2.5	<0.5	<0.5	<0.5	<0.5	---	---	---
	6/4/97	NLPH	8.38	5.67	<50	<50	<2.5	<0.5	<0.5	<0.5	<0.5	---	---	---
	9/2/97	NLPH	8.64	5.41	120	<50	<2.5	<0.5	<0.5	<0.5	<0.5	---	---	---
	12/2/97	NLPH	7.22	6.83	<50	<50	<2.5	<0.5	<0.5	<0.5	<0.5	---	---	---
	3/24/98	NLPH	5.71	8.34	<50	<50	<2.5	<0.5	<0.5	<0.5	<0.5	---	---	---
	6/23/98	NLPH	7.23	6.82	90	<50	<2.5	<0.5	<0.5	<0.5	<0.5	---	---	---
9/29/98	NLPH	8.39	5.66	<50	<50	<2.5	<0.5	<0.5	<0.5	<0.5	---	---	---	
12/30/98	NLPH	7.74	6.31	58	<50	<2.5	<0.5	<0.5	<0.5	<0.5	---	---	---	
3/24/99	NLPH	4.74	9.31	<50	<50	<2.0	<0.5	<0.5	<0.5	<0.5	---	---	---	
6/22/99	Well not sampled			---	---	---	---	---	---	---	---	---	---	
9/29/99	NLPH	8.17	5.88	---	---	---	---	---	---	---	---	---	---	
MW11 (13.55)	1/20/94	NLPH	9.61	3.94	---	---	---	---	---	---	---	---	---	---
	02/02-03/94	NLPH	9.56	3.99	160	<50	---	<0.5	1	<0.5	0.9	---	---	---
	3/10/94	NLPH	8.59	4.96	---	---	---	---	---	---	---	---	---	---
	4/22/94	NLPH	8.47	5.08	---	---	---	---	---	---	---	---	---	---
	05/10-11/94	NLPH	8.12	5.43	1002	<50	---	<0.53	<0.5	<0.5	3.2	---	---	---
	6/27/94	NLPH	8.65	4.90	---	---	---	---	---	---	---	---	---	---
	8/31/94	NLPH	9.80	3.75	---	---	---	---	---	---	---	---	---	---
	9/29/94	NLPH	10.16	3.39	<50	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---
	10/25/94	NLPH	10.48	3.07	<50	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---
	11/30/94	---	8.55	5.00	---	---	---	---	---	---	---	---	---	---
	12/27/94	NLPH	7.98	5.57	---	---	---	---	---	---	---	---	---	---
	2/6/95	NLPH	6.49	7.06	160	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---
	6/7/95	NLPH	7.98	5.57	50	<50	42	<0.5	<0.5	<0.5	<0.5	---	---	---
9/18/95	NLPH	10.12	3.43	56	<50	32	<0.5	<0.5	<0.5	<0.5	---	---	---	
11/1/95	NLPH	10.75	2.80	170	<50	35	<0.5	<0.5	<0.5	<0.5	---	---	---	

TABLE 2
 CUMULATIVE GROUNDWATER MONITORING AND SAMPLING DATA
 Former Exxon Service Station 7-3006
 720 High Street
 Oakland, California
 (Page 8 of 11)

Well ID #	Sampling Date	SUBJ	DTW feet	Elev.	TEPHd	TPPHg	MTBE	B	T	E	X	VOCs	EHCss	TOG	
(TOC)		<	>		<	>			ug/l						>
MW11 (cont.) (13.55)	2/14/96	NLPH	8.03	5.52	76	<50	37	<0.5	<0.5	<0.5	<0.5	---	---	---	
	6/19/96	NLPH	7.85	5.70	92	<50	33	<0.5	<0.5	<0.5	<0.5	---	<50	---	
	9/24/96	NLPH	10.45	3.10	58	<50	40	<0.5	<0.5	<0.5	<0.5	---	---	---	
	12/11/96	NLPH	9.02	4.53	110	<50	10	<0.5	<0.5	<0.5	<0.5	---	---	---	
	3/19/97	NLPH	9.16	4.39	100	<50	6.9	<0.5	<0.5	<0.5	<0.5	---	---	---	
	6/4/97	NLPH	9.91	3.64	<50	<50	5.6	<0.5	<0.5	<0.5	<0.5	---	---	---	
	9/2/97	NLPH	10.25	3.30	150	<50	4.5	<0.5	<0.5	<0.5	<0.5	---	---	---	
	12/2/97	NLPH	9.33	4.22	70	<50	5.8	<0.5	<0.5	<0.5	<0.5	---	---	---	
	3/24/98	NLPH	6.77	6.78	<50	<50	4.1	<0.5	<0.5	<0.5	<0.5	---	---	---	
	6/23/98	NLPH	8.99	4.56	70	<50	<2.5	<0.5	<0.5	<0.5	<0.5	---	---	---	
	9/29/98	NLPH	9.89	3.66	76	<50	7.7	<0.5	<0.5	<0.5	<0.5	---	---	---	
	12/30/98	NLPH	9.17	4.38	71	<50	3.5	<0.5	<0.5	<0.5	<0.5	---	---	---	
	3/24/99	NLPH	5.79	7.76	58.2	<50	4.51	<0.5	1.20	<0.5	<0.5	---	---	---	
	6/22/99	Well not sampled		---	---	---	---	---	---	---	---	---	---	---	---
	9/29/99	NLPH	9.14	4.41	---	---	---	---	---	---	---	---	---	---	---
MW12 (12.61)	1/20/94	NLPH	7.81	4.80	---	---	---	---	---	---	---	---	---	---	
	02/02-03/94	NLPH	7.22	5.39	18,000	48,000	---	4,000	2,700	2,900	9,900	---	---	---	
	3/10/94	NLPH	6.16	6.45	---	---	---	---	---	---	---	---	---	---	
	4/22/94	NLPH	6.31	6.30	---	---	---	---	---	---	---	---	---	---	
	05/10-11/94	NLPH	6.16	6.45	8,200	46,000	---	30,003	1,600	2,900	9,100	---	---	---	
	6/27/94	NLPH	6.55	6.06	---	---	---	---	---	---	---	---	---	---	
	8/31/94	NLPH	7.97	4.64	---	---	---	---	---	---	---	---	---	---	
	9/29/94	Sheen	8.52	4.09	---	---	---	---	---	---	---	---	---	---	
	10/25/94	Sheen	8.74	3.87	---	---	---	---	---	---	---	---	---	---	
	11/30/94	---	8.73	3.88	---	---	---	---	---	---	---	---	---	---	
	12/30/94	NLPH	6.17	6.44	---	---	---	---	---	---	---	---	---	---	
	2/6/95	Sheen	4.44	8.17	---	---	---	---	---	---	---	---	---	---	
	6/7/95	Sheen	6.59	6.02	---	---	---	---	---	---	---	---	---	---	
	9/18/95	Sheen	8.96	3.65	---	---	---	---	---	---	---	---	---	---	
	11/1/95	Sheen	10.75	1.86	---	---	---	---	---	---	---	---	---	---	
	2/14/96	Sheen	7.73	4.88	---	---	---	---	---	---	---	---	---	---	
	6/19/96	Sheen	5.80	6.81	---	---	---	---	---	---	---	---	---	---	
	9/24/96	Sheen	9.14	3.47	---	---	---	---	---	---	---	---	---	---	
	12/11/96	Sheen	7.31	5.30	---	---	---	---	---	---	---	---	---	---	
	3/19/97	Sheen	9.96	2.65	---	---	---	---	---	---	---	---	---	---	
6/4/97	Sheen	8.81	3.80	---	---	---	---	---	---	---	---	---	---		
9/2/97	Sheen	8.93	3.68	---	---	---	---	---	---	---	---	---	---		
12/2/97	NLPH	8.41	4.20	3,900	45,000	<250	1,800	560	3,100	8,700	---	---	---		
3/24/98	NLPH	5.37	7.24	8,800	42,000	<250	820	280	2,800	6,800	---	---	---		
6/23/98	Sheen	8.43	4.18	7,800	39,000	560	1,000	200	2,300	4,900	---	---	---		
9/29/98	Sheen	8.94	3.67	21,000	40,000	<500	1,100	150	2,200	3,100	---	---	---		
12/30/98	Sheen	8.47	4.14	49,000	79,000	<500	1,400	400	3,300	8,500	---	---	---		

TABLE 2
 CUMULATIVE GROUNDWATER MONITORING AND SAMPLING DATA
 Former Exxon Service Station 7-3006
 720 High Street
 Oakland, California
 (Page 9 of 11)

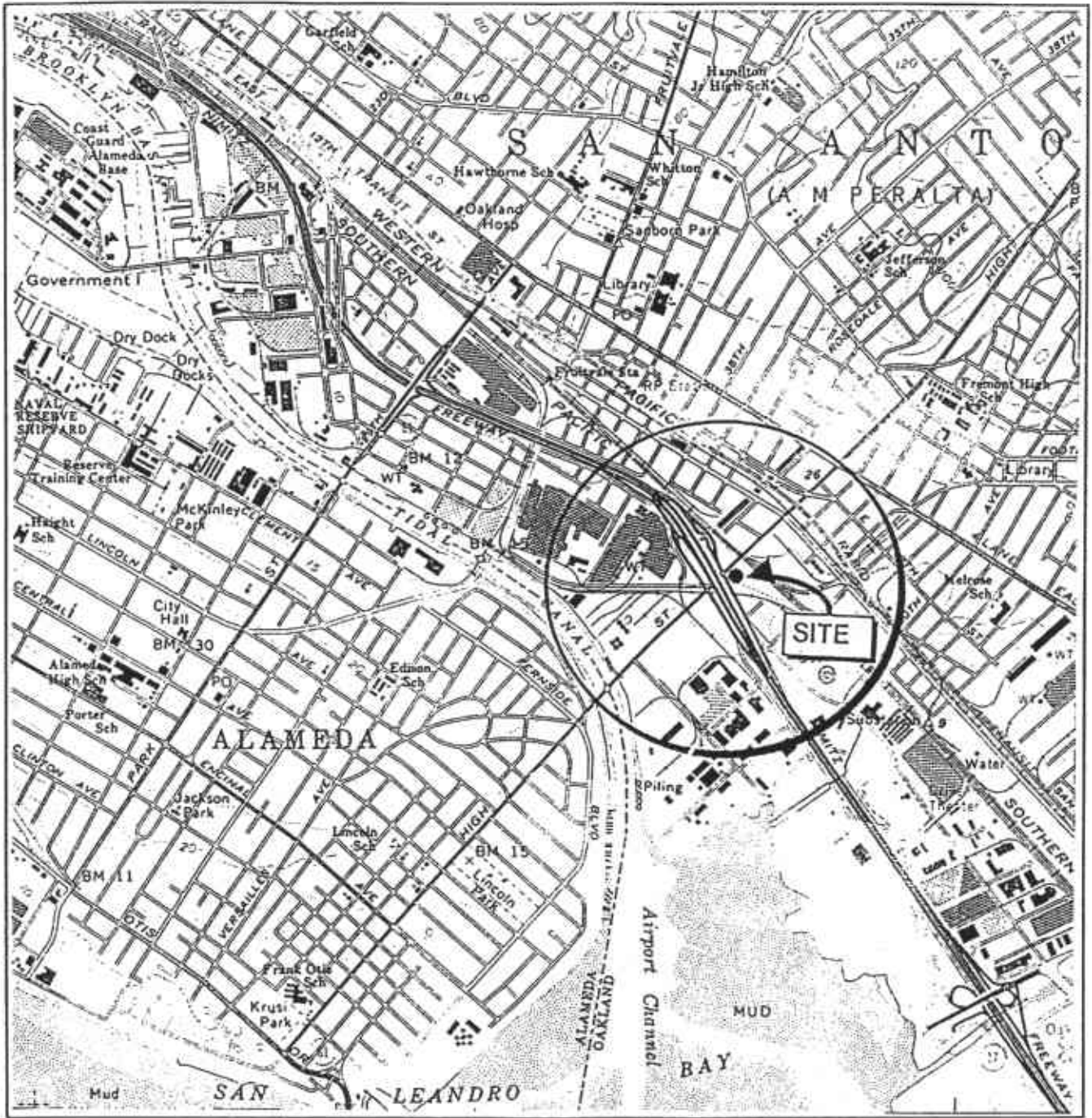
Well ID # (TOC)	Sampling Date	SUBJ <.....>	DTW feet	Elev. >	TEPHd, TPPHg, MTBE, B, T, E, X								VOCs	EHCss	TOG
					ug/l										
MW12 (cont.) (12.61)	3/24/99	Sheen	3.71	8.90	5,070	40,600	<20	328	182	1,690	3,930	---	---	---	
	6/22/99	Sheen	4.91	7.70	15,000	54,800	109	203	244	1,530	3,790	---	---	---	
	9/29/99	NLPH	7.41	5.20	6,830 ^f	22,900	194	422	72.6	1,790	2,270	---	---	---	
MW13 (14.20)	1/20/94	NLPH	9.08	5.12	---	---	---	---	---	---	---	---	---	---	
	02/02-03/94	NLPH	8.75	5.45	8,100	41,000	---	3,800	1,500	2,700	9,500	---	---	---	
	3/10/94	Sheen	7.46	6.74	---	---	---	---	---	---	---	---	---	---	
	4/22/94	Sheen	7.78	6.42	---	---	---	---	---	---	---	---	---	---	
	05/10-11/94	NLPH	7.61	6.59	15,000	39,000	---	3,400	930	2,400	8,900	---	---	---	
	6/27/94	NLPH	7.97	6.23	---	---	---	---	---	---	---	---	---	---	
	8/31/94	NLPH	9.21	4.99	---	---	---	---	---	---	---	---	---	---	
	9/29/94	NLPH	9.61	4.59	320	57,000	---	2,100	470	2,600	8,100	---	---	---	
	10/25/94	Sheen	9.93	4.27	---	---	---	---	---	---	---	---	---	---	
	11/30/94	---	8.16	6.04	---	---	---	---	---	---	---	---	---	---	
	12/27/94	---	7.61	6.59	---	---	---	---	---	---	---	---	---	---	
	2/6/95	Sheen	5.89	8.31	---	---	---	---	---	---	---	---	---	---	
	6/7/95	Sheen	8.05	6.15	---	---	---	---	---	---	---	---	---	---	
	9/18/95	Sheen	9.94	4.26	---	---	---	---	---	---	---	---	---	---	
	11/1/95	Sheen	10.48	3.72	---	---	---	---	---	---	---	---	---	---	
	2/14/96	Sheen	8.88	5.32	---	---	---	---	---	---	---	---	---	---	
	6/19/96	Sheen	7.22	6.98	---	---	---	---	---	---	---	---	---	---	
	9/24/96	Sheen	10.27	3.93	---	---	---	---	---	---	---	---	---	---	
	12/11/96	Sheen	8.77	5.43	---	---	---	---	---	---	---	---	---	---	
	3/19/97	Sheen	9.46	4.74	---	---	---	---	---	---	---	---	---	---	
	6/4/97	Sheen	9.59	4.61	---	---	---	---	---	---	---	---	---	---	
	9/2/97	Sheen	9.68	4.52	---	---	---	---	---	---	---	---	---	---	
	12/2/97	NLPH	9.16	5.04	16,000	14,000	<250	210	<50	920	1,000	---	---	---	
3/24/98	NLPH	6.71	7.49	1,700	5,600	55	110	6.0	420	330	---	---	---		
6/23/98	NLPH	8.87	5.33	3,800	12,000	200	120	<20	300	300	---	---	---		
9/29/98	NLPH	9.79	4.41	2,400	4,900	130	130	12.0	410	200	---	---	---		
12/30/98	NLPH	9.03	5.17	2,000	6,700	520	100	11	400	250	---	---	---		
3/24/99	Sheen	4.91	9.29	688	3,730	15.5	35.9	1.58	150	112	---	---	---		
6/22/99	Sheen	5.66	8.54	4,090	7,220	56.4	29.0	<5.0	496	318	---	---	---		
9/29/99	NLPH	8.62	5.58	1,060 ^f	5,200	103	83.0	5.90	322	126	---	---	---		
MW14 (15.18)	1/20/94	---	---	---	---	---	---	---	---	---	---	---	---	---	
	02/02-03/94	Not Accessible	---	---	---	---	---	---	---	---	---	---	---	---	
	3/10/94	NLPH	7.84	7.34	---	---	---	---	---	---	---	---	---	---	
	4/22/94	NLPH	8.00	7.18	---	---	---	---	---	---	---	---	---	---	
	05/10-11/94	NLPH	7.93	7.25	11,002	300	---	2.7	7.9	2	27	---	---	---	
	6/27/94	NLPH	8.19	6.99	---	---	---	---	---	---	---	---	---	---	
	8/31/94	NLPH	9.44	5.74	---	---	---	---	---	---	---	---	---	---	
9/29/94	NLPH	9.82	5.36	NA	300	1,600	<0.5	<0.5	0.9	1.3	---	---	---		

TABLE 2
 CUMULATIVE GROUNDWATER MONITORING AND SAMPLING DATA
 Former Exxon Service Station 7-3006
 720 High Street
 Oakland, California
 (Page 11 of 11)

Well ID # (TOC)	Sampling Date	SUBJ <.....>	DTW feet	Elev. >.....<	TEPHd <.....>	TPPHg >.....<	MTBE >.....<	B >.....<	T ug/l	E >.....<	X >.....<	VOCs >.....<	EHCs ⁸ >.....<	TOG >.....<
MW15 (cont.) (13,73)	6/4/97	Sbeen	8.62	5.11	---	---	---	---	---	---	---	---	---	---
	9/2/97	NLPH	9.04	4.69	480	1,100	23	19	<2.0	11	4.9	---	---	---
	12/2/97	NLPH	8.43	5.30	600	1,700	58	20	<5.0	11	<5.0	---	---	---
	3/24/98	NLPH	6.35	7.38	450	2,100	<100	570	<20	<20	<20	---	---	---
	6/23/98	NLPH	7.79	5.94	570	2,300	<25	440	<5.0	30	<5.0	---	---	---
	9/29/98	Not Accessible	---	---	---	---	---	---	---	---	---	---	---	---
	12/30/98	NLPH	8.42	5.31	510	900	14	6.2	1.5	5.8	3.4	---	---	---
	3/24/99	NLPH	4.69	9.04	346	1,480	12.7	181	1.15	29.8	<1.0	---	---	---
	6/22/99	NLPH	5.42	8.31	558	864	6.49	12.7	<0.5	3.28	1.38	---	---	---
	9/29/99	NLPH	7.08	6.65	306 ^a	316	<5.0	1.44	7.51	1.60	3.2	---	---	---

Notes:

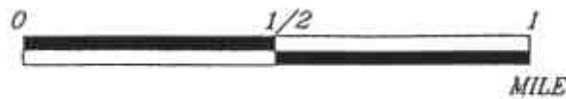
- SUBJ = Results of subjective evaluation, liquid-phase hydrocarbon thickness (HT) in feet.
- NLPH = No liquid-phase hydrocarbons present in well.
- TOC = Elevation of top of well casing, relative to mean sea level.
- DTW = Depth to water.
- Elev. = Elevation of groundwater. If liquid-phase hydrocarbons present, elevation adjusted using TOC - [DTW - (PT x 0.8)].
- [] = amount recovered
- gal. = gallons
- TEPHd = Total extractable petroleum hydrocarbons as diesel analyzed using EPA method 3510/8015 (modified).
- 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 analyzed using EPA method 5030/8020.
- VOCs = Volatile organic compounds/purgeable halocarbons analyzed using EPA method 601.
- TOG = Total oil and grease analyzed using Standard Method 5520.
- EHCs⁸ = Extractable Hydrocarbons as Stoddard Solvent analyzed using EPA method 8015.
- = Not measured/not analyzed.
- < = Less than the indicated detection limit shown by the laboratory.
- * = TEPH note: Analyst notes samples resemble paint thinner more than Stoddard Solvent.
- a = A peak eluting earlier than benzene and suspected to be methyl tertiary butyl ether was present.
- b = Sample containers for TPPHg, BTEX, and MTBE were broken in transit.
- c = Chromatogram pattern: unidentified hydrocarbons C6 - C12.
- d = Chromatogram pattern: weathered gasoline C6 - C12.
- e = Chromatogram pattern: weathered gasoline C6 - C12 and unidentified hydrocarbons C6 - C12.
- f = Chromatogram pattern: weathered diesel C9 - C24 and unidentified hydrocarbons C9 - C36.
- g = Chromatogram pattern: unidentified hydrocarbons C9 - C24.



Fn 2010001



APPROXIMATE SCALE



SOURCE: U.S.G.S. 7.5 minute topographic quadrangle map Oakland East, California (Photorevised 1990)



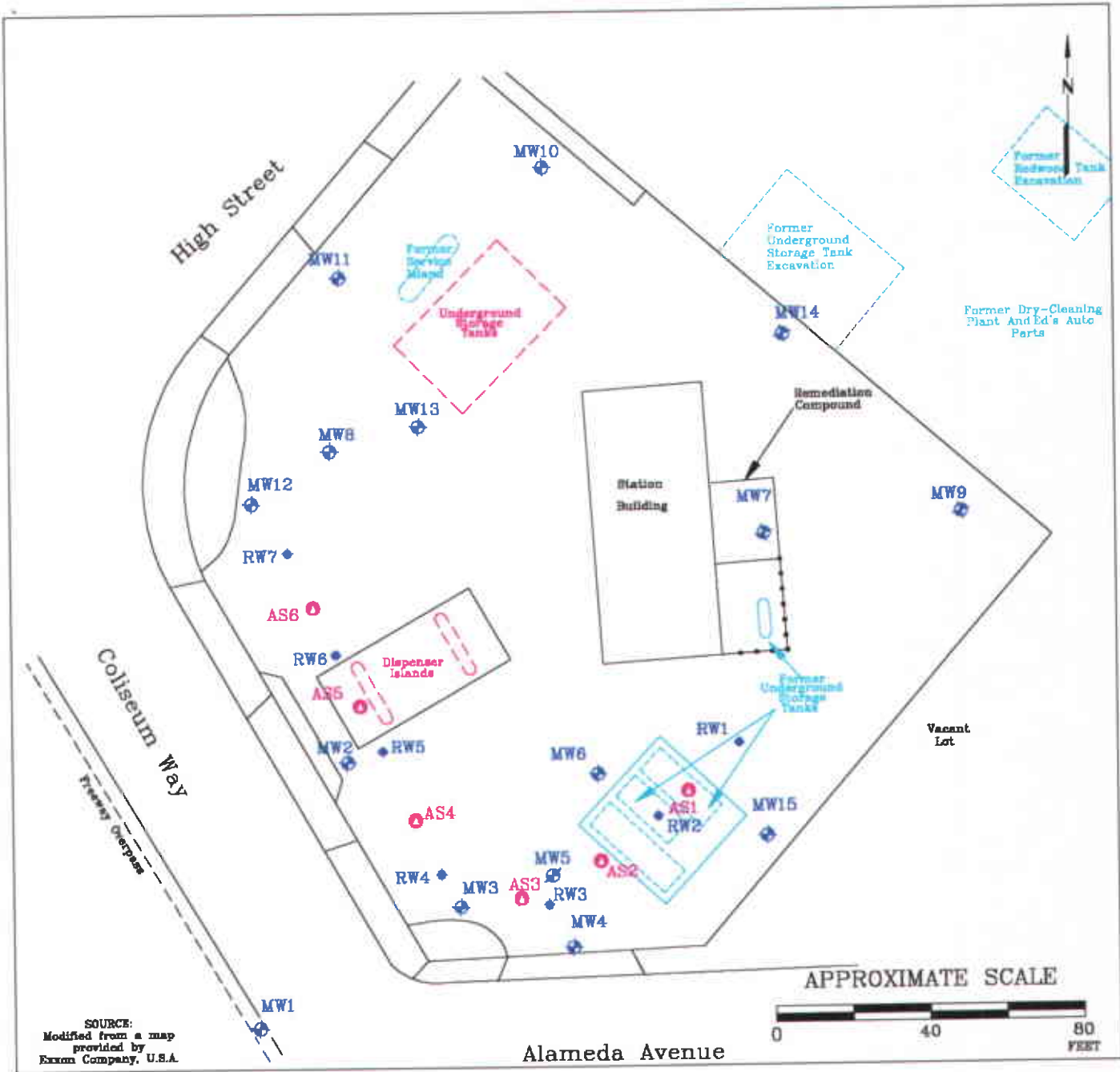
PROJECT ERI 2010

SITE VICINITY MAP

FORMER EXXON SERVICE STATION 7-3006
720 High Street
Oakland, California

PLATE

1



FN 20100002

EXPLANATION

- MW15 Groundwater Monitoring Well
- Groundwater Elevation in feet above mean sea level
- MW5 Groundwater Monitoring Well (Destroyed)
- RW7 Recovery Monitoring Well
- AS6 Air Sparging/Vapor Extraction Well



GENERALIZED SITE PLAN

FORMER EXXON SERVICE STATION 7-3006
 720 High Street
 Oakland, California

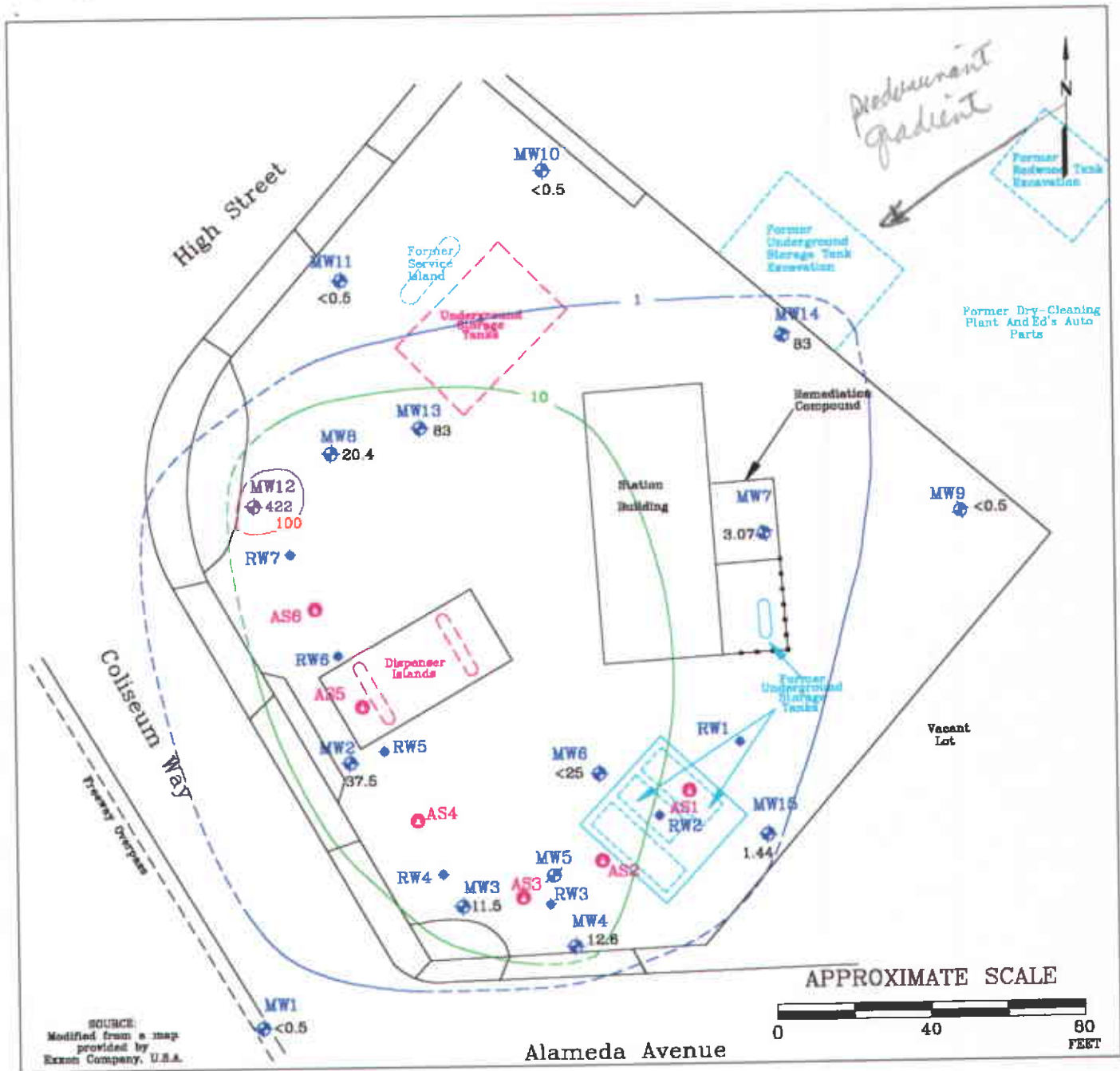
PROJECT NO.

2010

PLATE

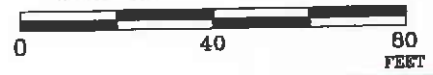
2

October 4, 1999



SOURCE:
Modified from a map
provided by
Exxon Company, U.S.A.

APPROXIMATE SCALE



FN 20100002

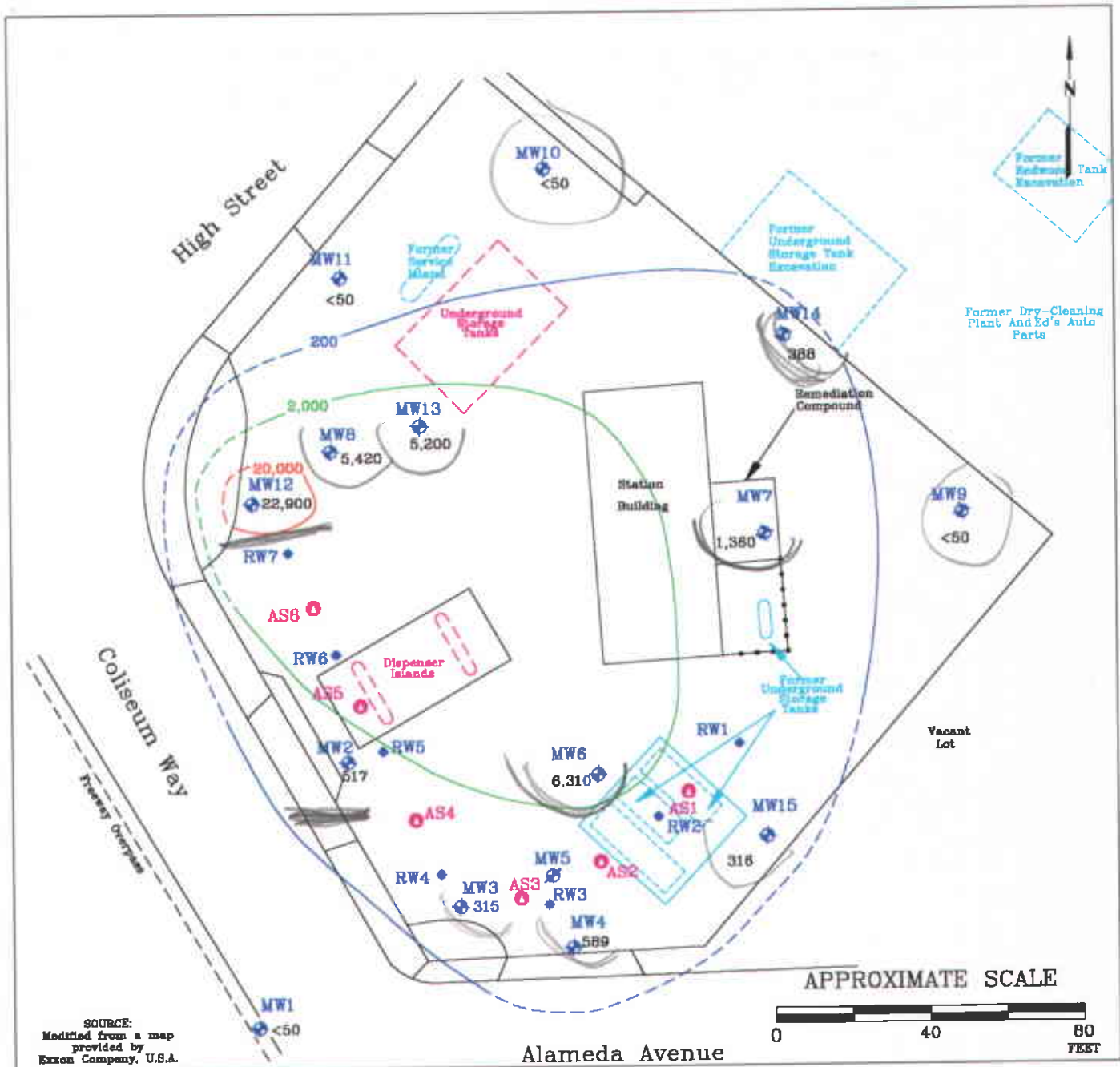
EXPLANATION

- MW15 Groundwater Monitoring Well
- Groundwater Elevation in feet above mean sea level
- MW5 Groundwater Monitoring Well (Destroyed)
- RW7 Recovery Monitoring Well
- 422 422 parts per billion benzene
- AS6 Air Sparging/Vapor Extraction Well
- 100 --- Concentration of benzene in parts per billion
- - - - - Interpreted concentration gradient



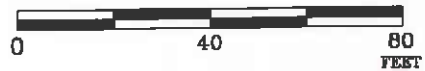
BENZENE ISOCONCENTRATION MAP
 FORMER EXXON SERVICE STATION 7-3006
 720 High Street
 Oakland, California

PROJECT NO.
 2010
PLATE
 3
 October 4, 1998



SOURCE:
Modified from a map
provided by
Exxon Company, U.S.A.

APPROXIMATE SCALE



FN 20100002

EXPLANATION

- MW15 Groundwater Monitoring Well
 - Groundwater Elevation in feet above mean sea level
 - MW5 Groundwater Monitoring Well (Destroyed)
 - RW7 Recovery Monitoring Well
 - AS6 Air Sparging/Vapor Extraction Well
 - 100 — Concentration of benzene in parts per billion
 - - - - - Interpreted concentration gradient
- 22,900 22,900 parts per billion total purgeable petroleum hydrocarbons as gasoline (TPPHg)



TPPHG ISOCONCENTRATION MAP
FORMER EXXON SERVICE STATION 7-3006
720 High Street
Oakland, California

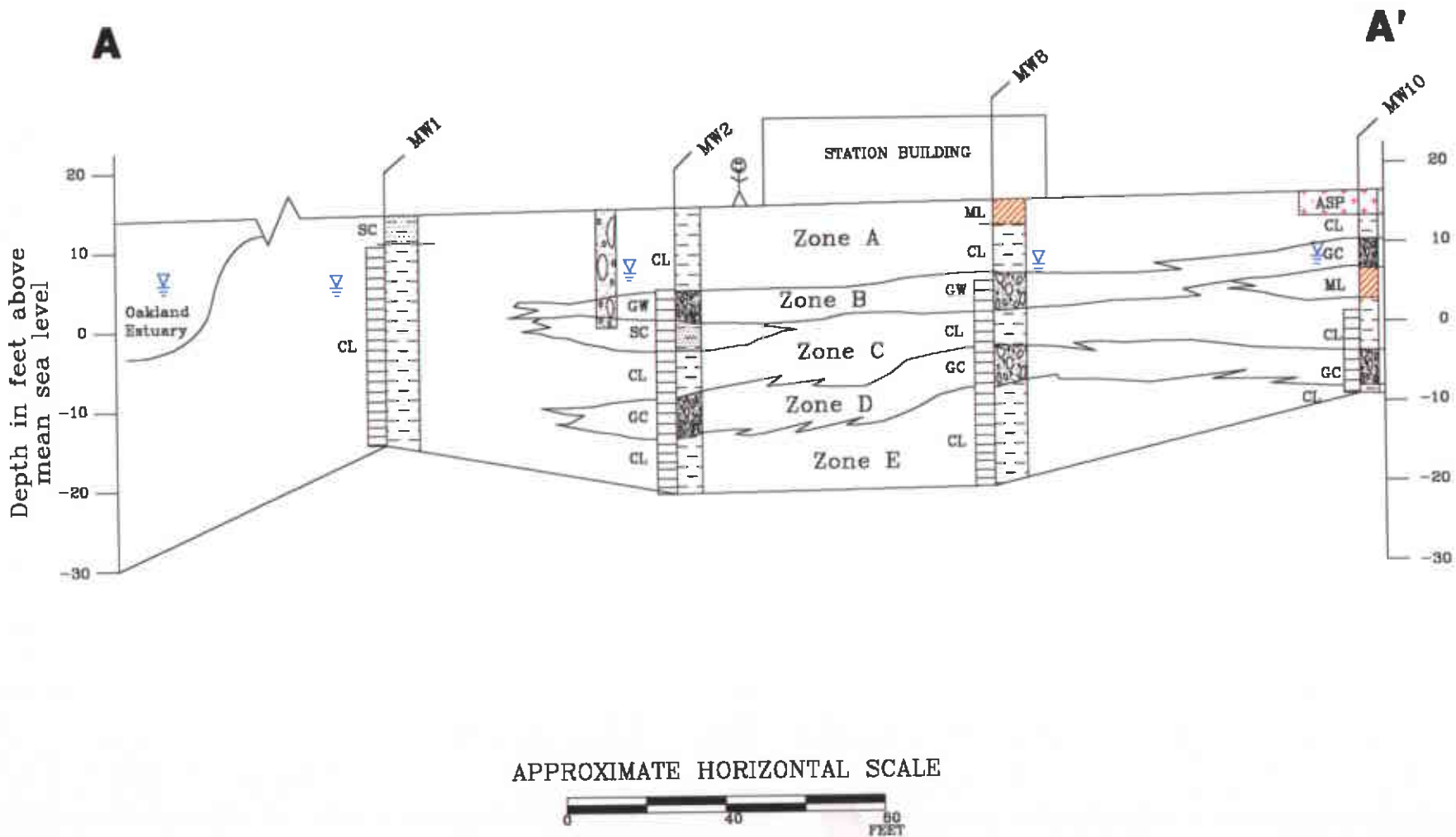
PROJECT NO.

2010

PLATE

4

October 4, 1998



FN 2010XSAA



**SITE CONCEPTUAL
EXPOSURE MODEL**
FORMER EXXON
SERVICE STATION 7-3006
720 High Street
Oakland, California

EXPLANATION

- CL - Clay
- SC - Sandy clay
- GW, GC - Gravel
- ML - Clayey silt
- ASP - Asphalt and Base
- Approximately 1/3 mile

- Static groundwater level (Measured September 9, 1999)
- Zone A Interceptor Trench

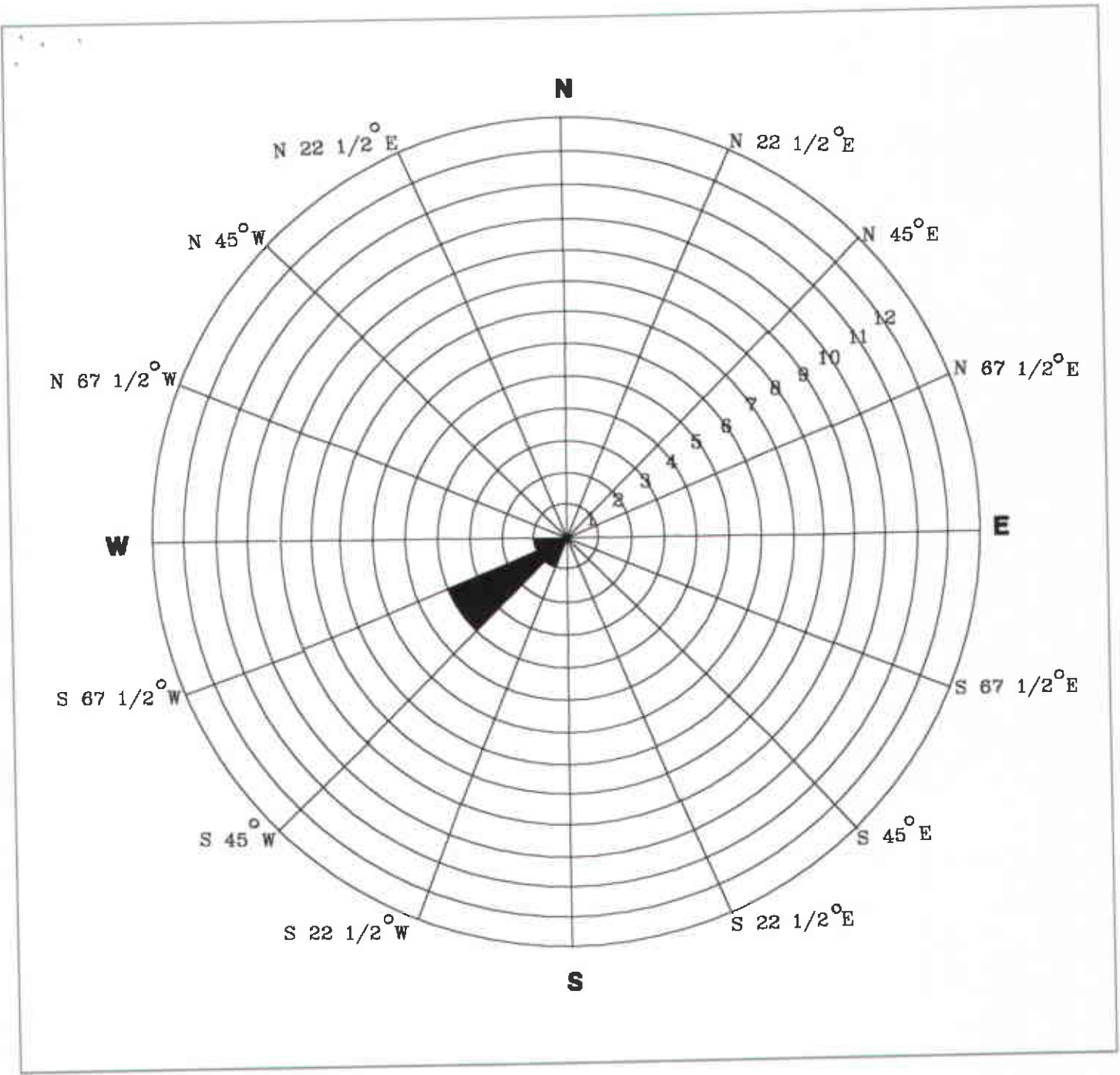
PROJECT NO.

2010

PLATE

5

October 12, 1999



FN 2010rose

EXPLANATION

N Compass Direction
Six Data Points Shown

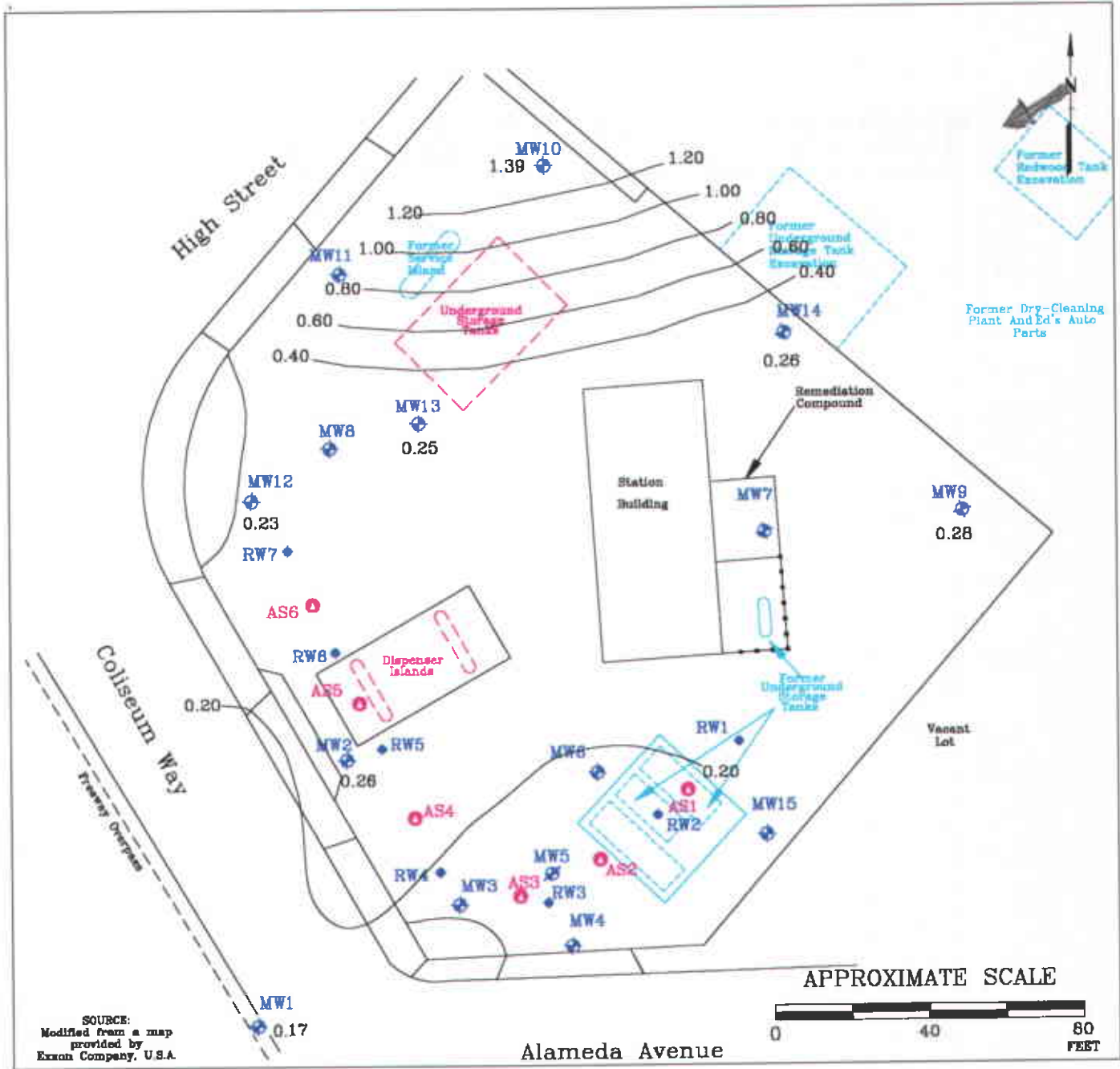
Rose diagram developed by evaluating the groundwater gradient direction from the quarterly monitoring data. Each circle on the rose diagram represents the number of monitoring events that the gradient plotted in that 22 1/2 degree sector. For example, four quarterly groundwater gradient directions plotted between south 45 degrees west and south 67 1/2 degrees west. Therefore, the dominant groundwater gradient direction as depicted by the rose diagram is between south 45 degrees west and south 67 1/2 degrees west.



GROUNDWATER FLOW DIRECTION ROSE DIAGRAM

FORMER EXXON SERVICE STATION 7-3006
720 High Street
Oakland, California

PROJECT NO.	2010
PLATE	6
	October 30, 1998



SOURCE:
Modified from a map
provided by
Exxon Company, U.S.A.

APPROXIMATE SCALE



FN 20100002

EXPLANATION

- MW15 Groundwater Monitoring Well
- Groundwater Elevation in feet above mean sea level
- MW5 Groundwater Monitoring Well (Destroyed)
- RW7 Recovery Monitoring Well

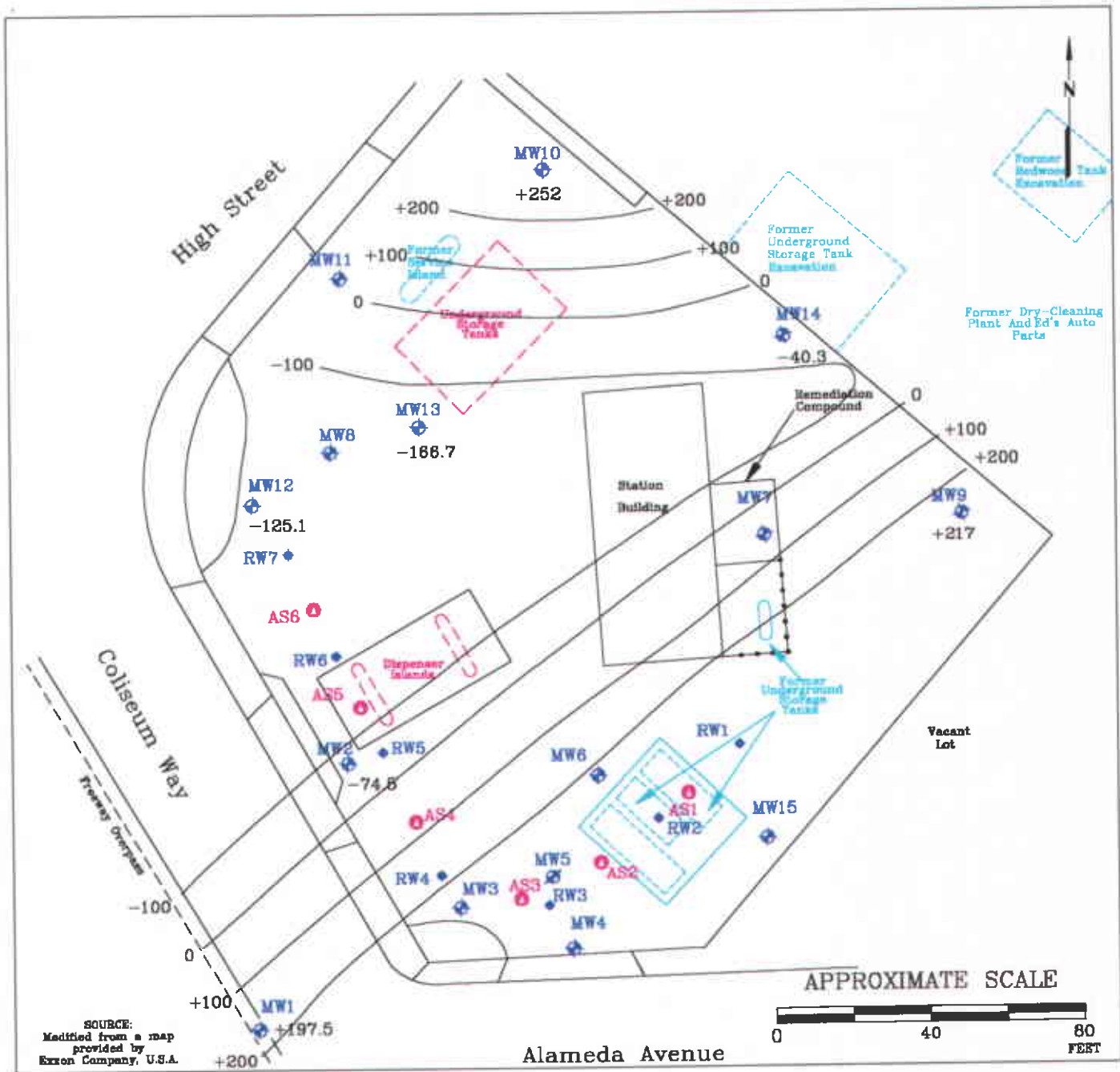
0.20 = 0.20 parts per million of dissolved oxygen

AS6 Air Sparging/Vapor Extraction Well



**DISSOLVED OXYGEN
ISOCONCENTRATION MAP**
FORMER EXXON SERVICE STATION 7-3006
720 High Street
Oakland, California

PROJECT NO.
2010
PLATE
7
October 4, 1999



SOURCE:
Modified from a map
provided by
Exxon Company, U.S.A.

APPROXIMATE SCALE



FN 20100002

EXPLANATION

- MW15 Groundwater Monitoring Well
- MW5 Groundwater Monitoring Well (Destroyed)
- RW7 Recovery Monitoring Well
- AS6 Air Sparging/Vapor Extraction Well

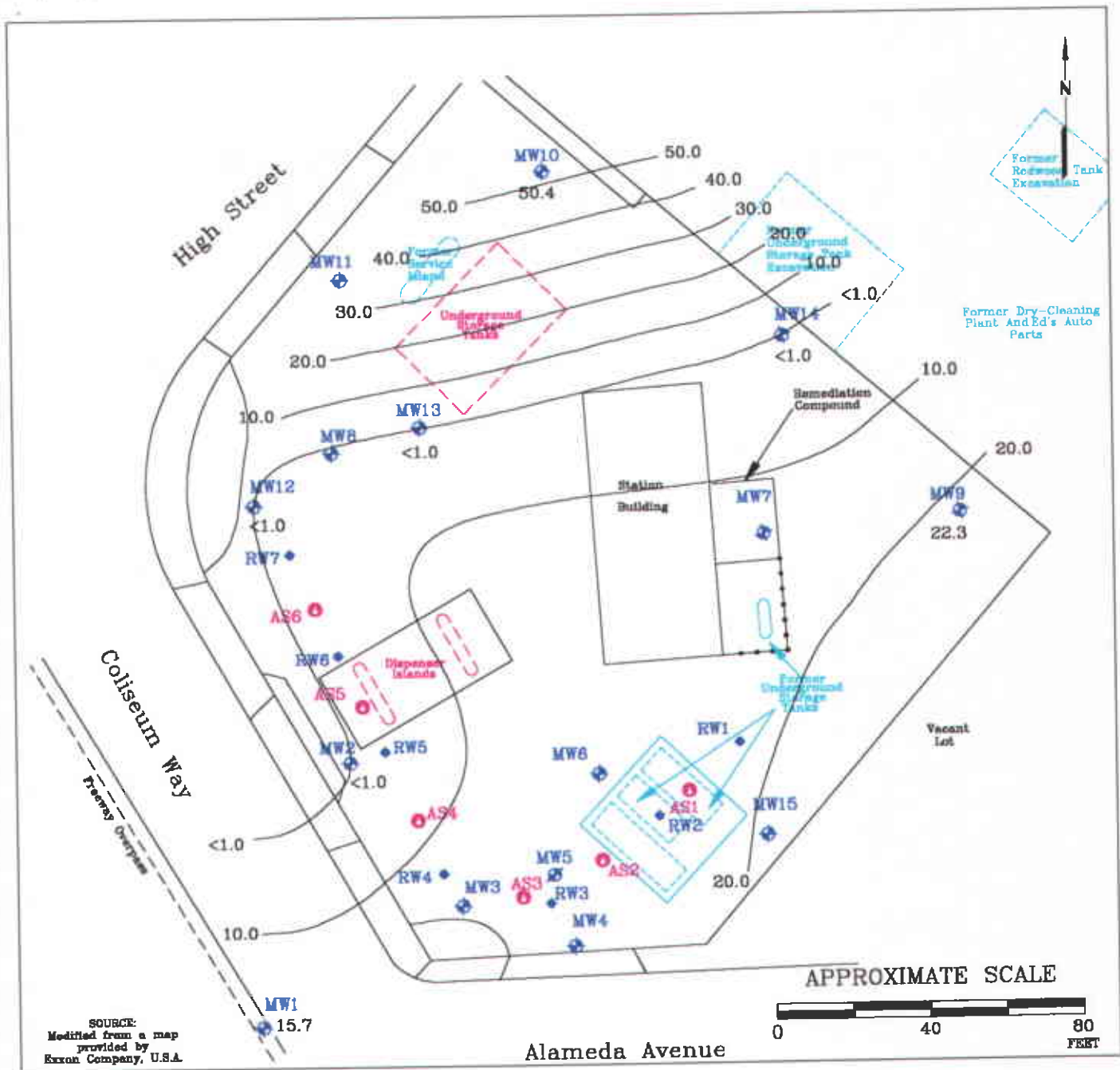
+200 = positive 200 millivolts field instrument reading

Probably is not this simple



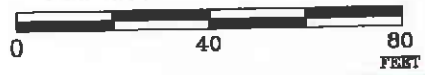
**REDOX POTENTIAL
ISOCONCENTRATION MAP**
FORMER EXXON SERVICE STATION 7-3006
720 High Street
Oakland, California

PROJECT NO.
2010
PLATE
8
October 4, 1989



SOURCE:
Modified from a map
provided by
Exxon Company, U.S.A.

APPROXIMATE SCALE



FN 20100002

EXPLANATION

- MW15 Groundwater Monitoring Well
- Groundwater Elevation in feet above mean sea level
- MW5 Groundwater Monitoring Well (Destroyed)
- RW7 Recovery Monitoring Well

<1.0 = less than 1 part per million nitrates

AS6 Air Sparging/Vapor Extraction Well



**NITRATES
ISOCONCENTRATION MAP**
FORMER EXXON SERVICE STATION 7-3006
720 High Street
Oakland, California

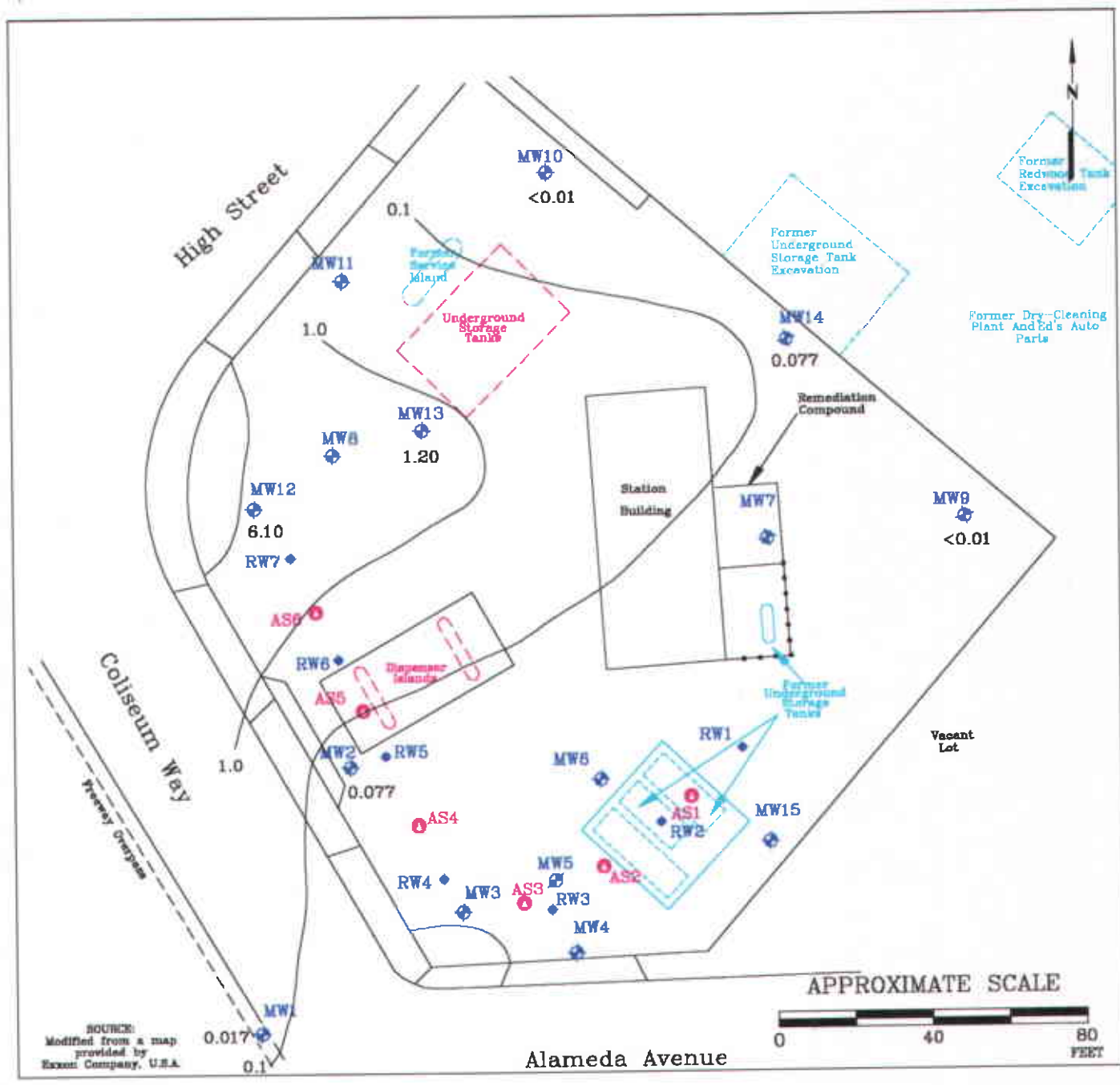
PROJECT NO.

2010

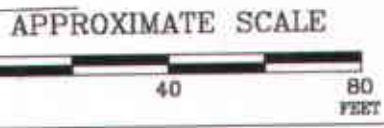
PLATE

9

October 4, 1999



SOURCE:
Modified from a map
provided by
Exxon Company, U.S.A.



FN 20100002

EXPLANATION

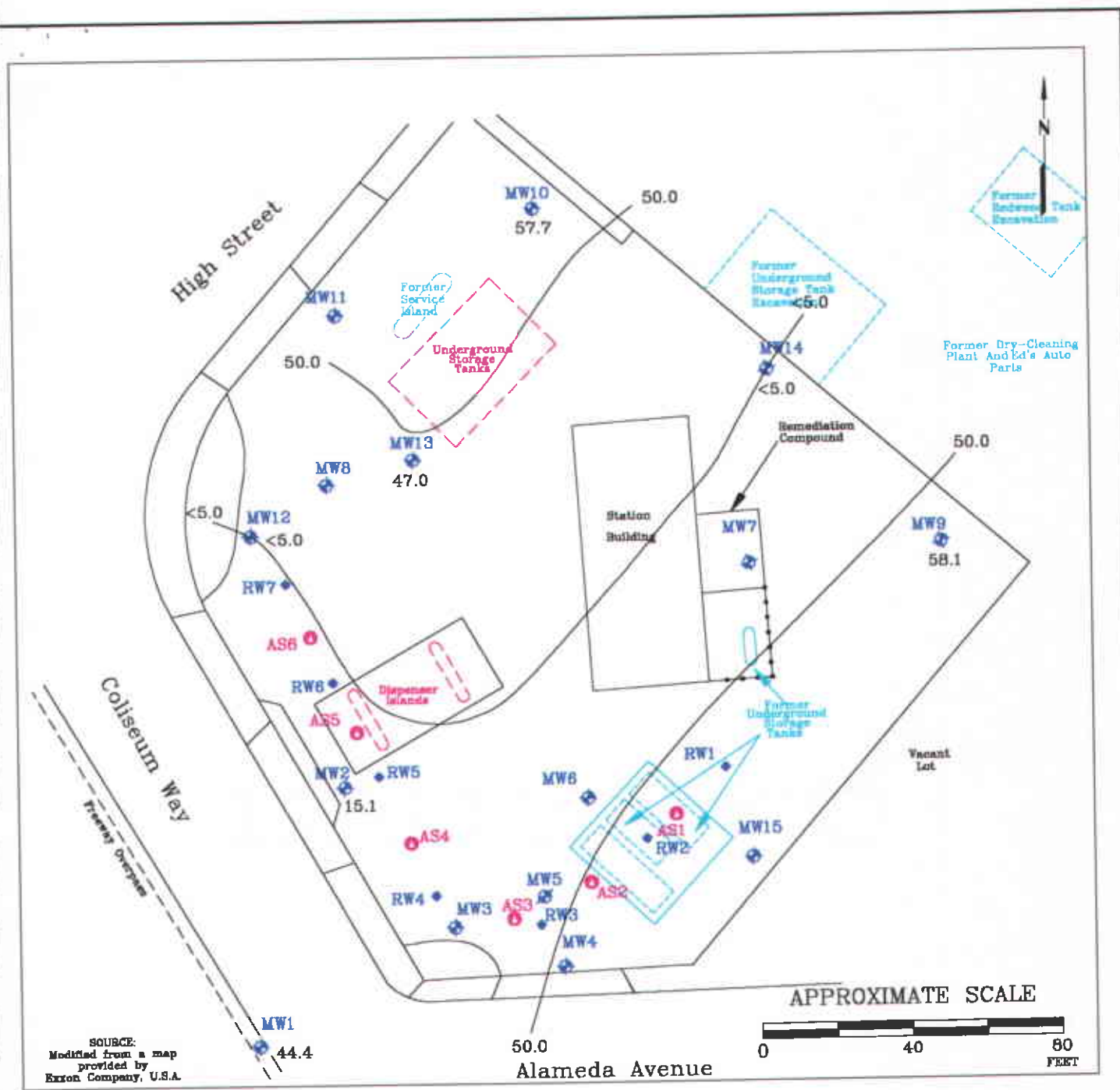
- MW15 Groundwater Monitoring Well
- Groundwater Elevation in feet above mean sea level
- MW5 Groundwater Monitoring Well (Destroyed)
- RW7 Recovery Monitoring Well
- AS6 Air Sparging/Vapor Extraction Well

0.1 = 0.1 parts per million of ferrous iron



**FERROUS IRON
ISOCONCENTRATION MAP**
FORMER EXXON SERVICE STATION 7-3006
720 High Street
Oakland, California

PROJECT NO.	2010
PLATE	10
	October 4, 1999



FN 20100002

EXPLANATION

- MW15 Groundwater Monitoring Well
Groundwater Elevation in feet
above mean sea level
- MW5 Groundwater Monitoring Well (Destroyed)
- RW7 Recovery Monitoring Well

50.0 = 50 parts per million of sulfate

AS6 Air Sparging/Vapor Extraction Well



**SULFATE
ISOCONCENTRATION MAP**
FORMER EXXON SERVICE STATION 7-3006
720 High Street
Oakland, California

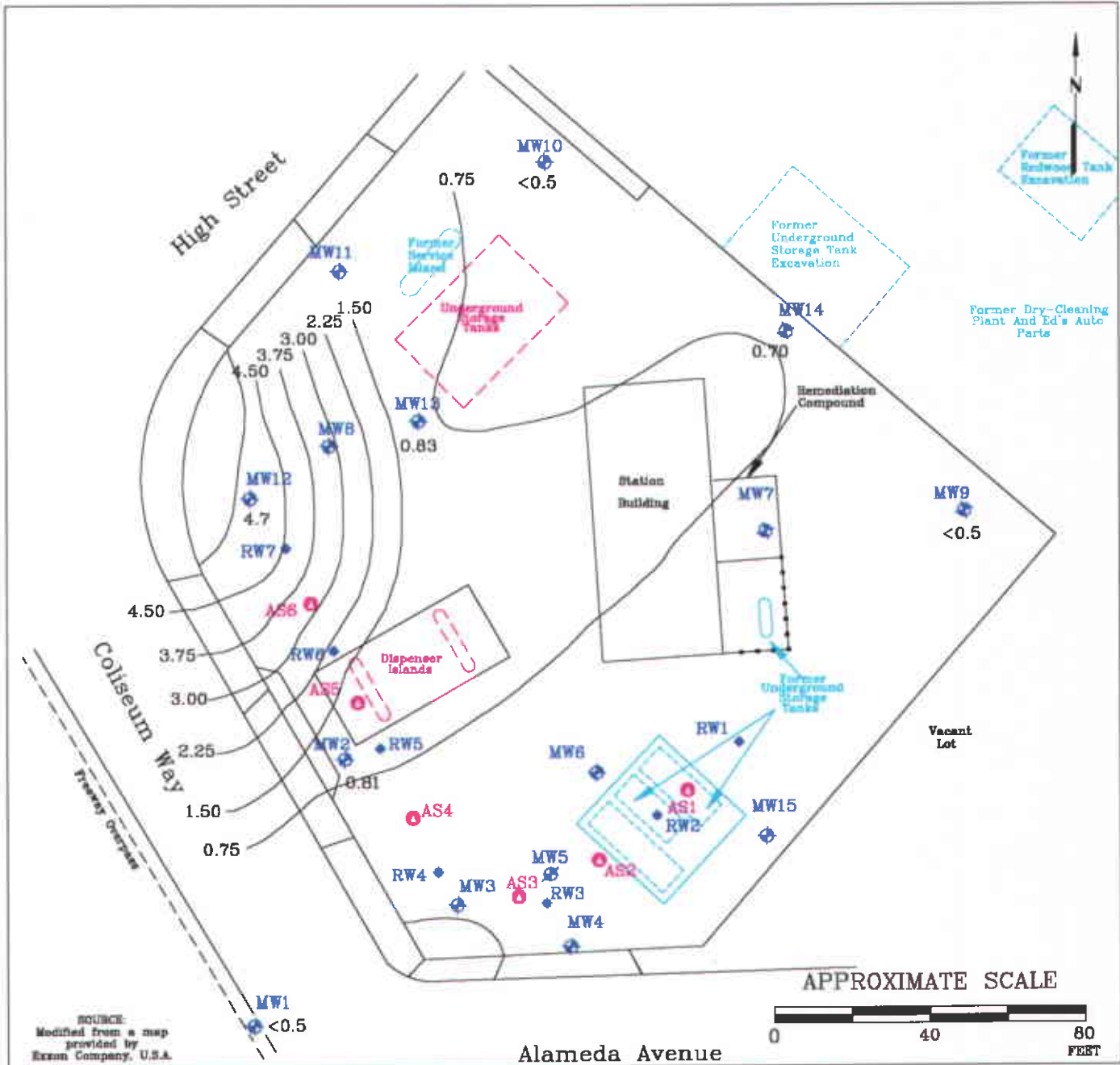
PROJECT NO.

2010

PLATE

11

October 4, 1998



SOURCE:
Modified from a map
provided by
Exxon Company, U.S.A.

APPROXIMATE SCALE



FN 20100002

EXPLANATION

- MW15 Groundwater Monitoring Well
Groundwater Elevation in feet
above mean sea level
- MW5 Groundwater Monitoring Well (Destroyed)
- RW7 Recovery Monitoring Well
- AS6 Air Sparging/Vapor Extraction Well

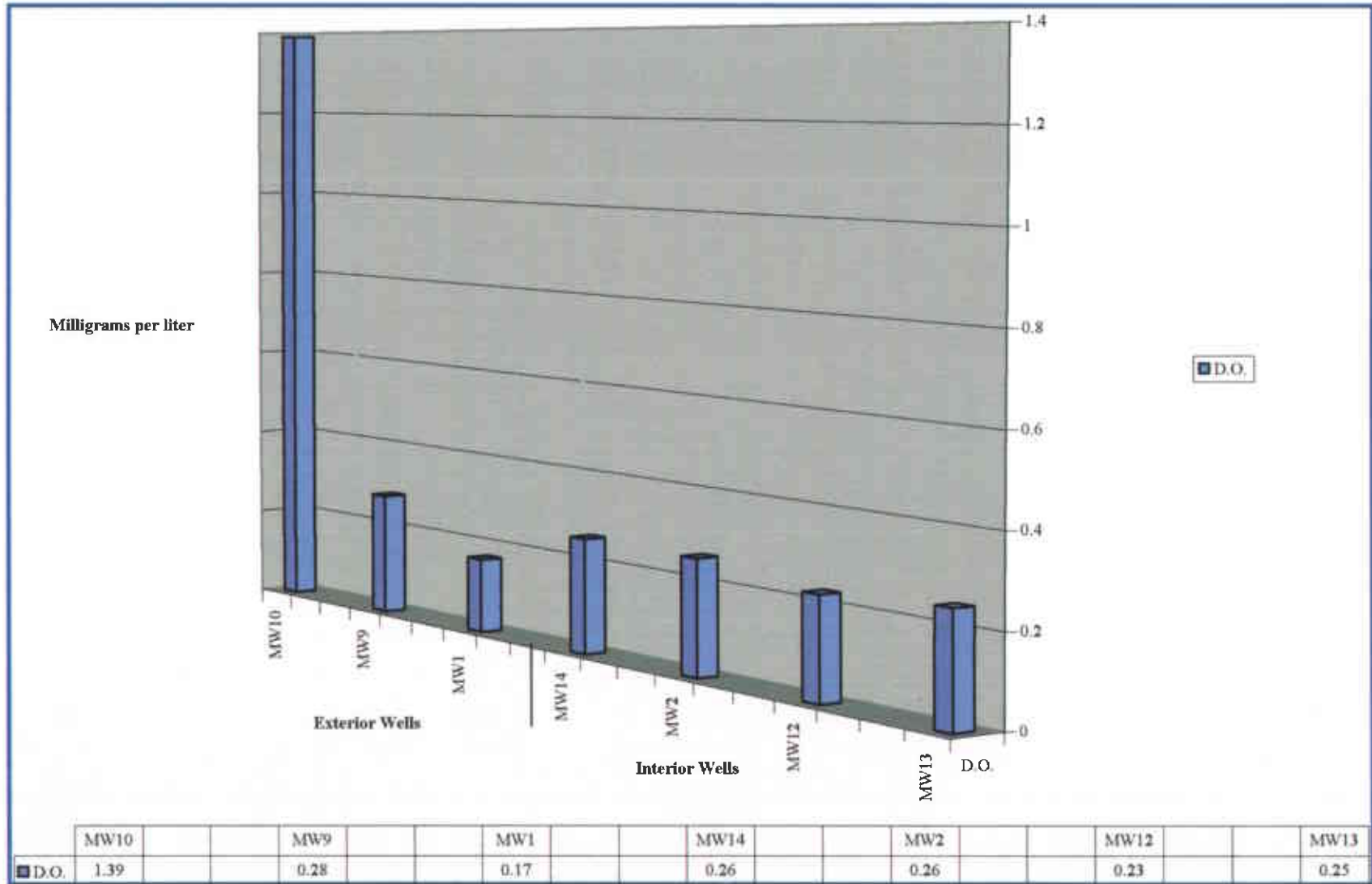
4.7 = 4.7 parts per million dissolved methane



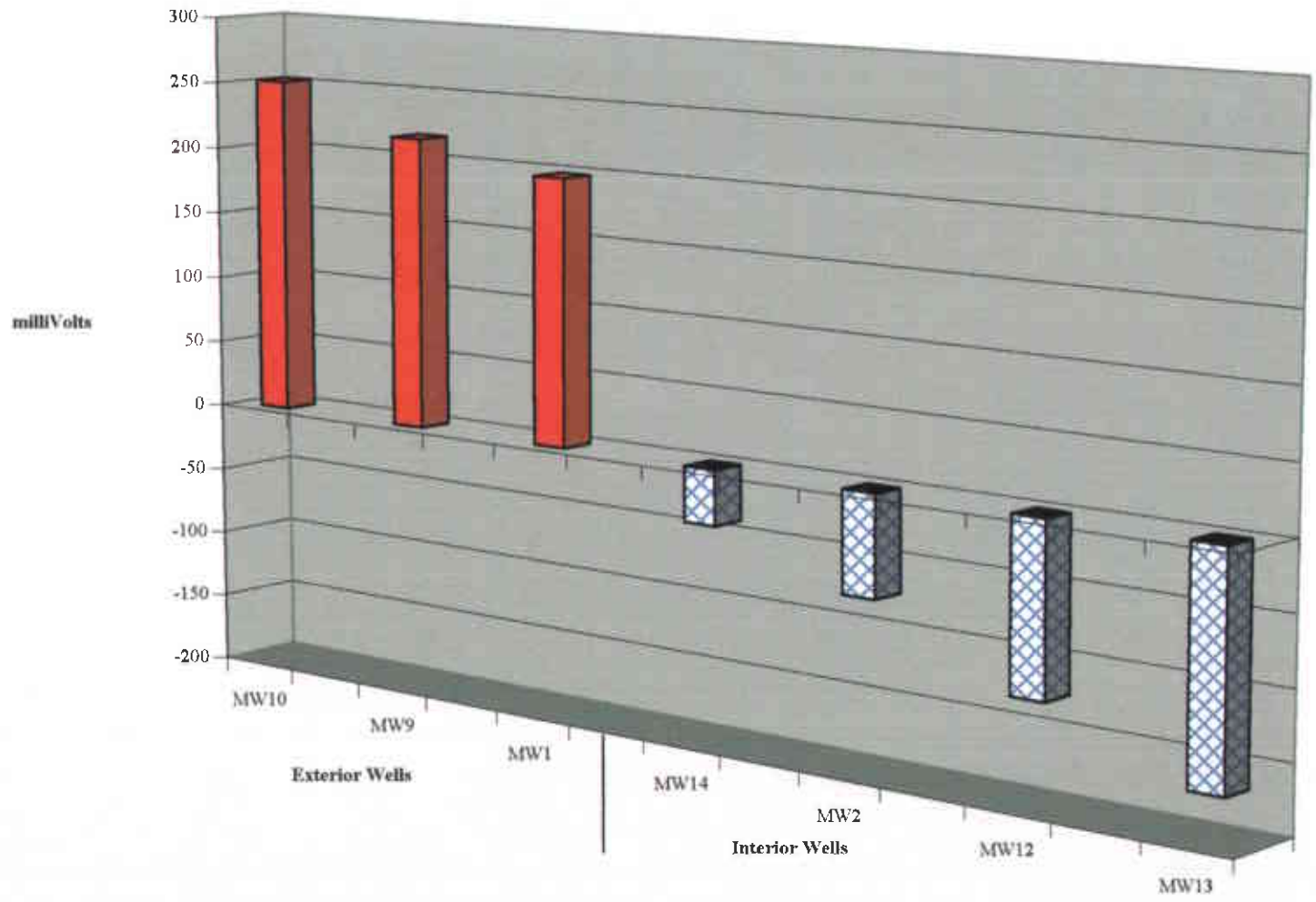
**DISSOLVED METHANE
ISOCONCENTRATION MAP**
FORMER EXXON SERVICE STATION 7-3006
720 High Street
Oakland, California

PROJECT NO.	2010
PLATE	12
	October 4, 1999

GRAPH 1
Dissolved Oxygen Field Measurements
 Former Exxon Service Station 7-3006
 720 High Street
 Oakland, California

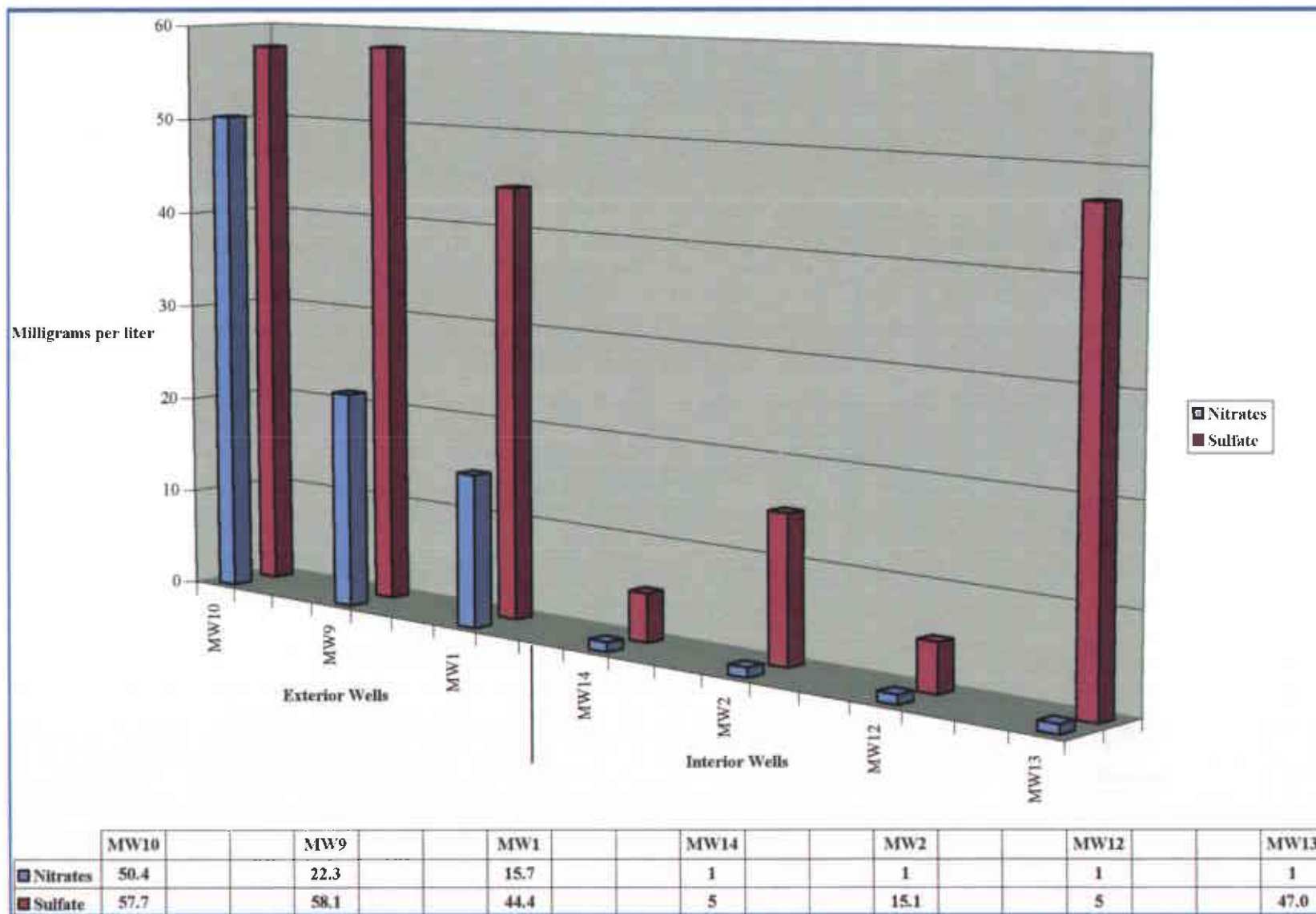


GRAPH 2
Redox Potential Field Measurements
 Former Exxon Service Station 7-3006
 720 High Street
 Oakland, California



	MW10		MW9		MW1		MW14		MW2		MW12		MW13
Redox	252		217		197.5		-40.3		-74.5		-125.1		-166.7

GRAPH 3
Natural Attenuation Reactants
 Former Exxon Service Station 7-3006
 720 High Street
 Oakland, California



ATTACHMENT A

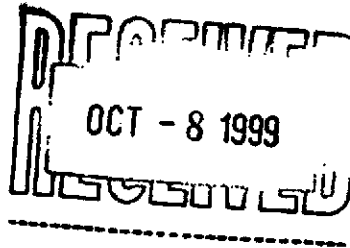
**LABORATORY ANALYSIS REPORTS
AND CHAIN OF CUSTODY RECORDS**



Sequoia Analytical

885 Jarvis Drive
Morgan Hill, CA 95037
(408) 776-9600
FAX (408) 782-6308

October 5, 1999



Peter Petro
Environmental Resolutions (Exxon)
73 Digital Drive, Suite 100
Novato, CA 94949

RE: Exxon 7-3006/M909665

Dear Peter Petro

Enclosed are the results of analyses for sample(s) received by the laboratory on September 21, 1999. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Ron Chew
Project Manager

CA ELAP Certificate Number 1210





Environmental Resolutions (Exxon) 73 Digital Drive, Suite 100 Novato, CA 94949	Project: Exxon Project Number: 73006 Project Manager: Peter Petro	Sampled: 9/21/99 Received: 9/21/99 Reported: 10/5/99
--	---	--

ANALYTICAL REPORT FOR M909665

Sample Description	Laboratory Sample Number	Sample Matrix	Date Sampled
W-8-MW-1	M909665-01	Water	9/21/99
W-7-MW-10	M909665-02	Water	9/21/99
W-8-MW-9	M909665-03	Water	9/21/99
W-9-MW-14	M909665-04	Water	9/21/99
W-7-MW-2	M909665-05	Water	9/21/99
W-8-MW-13	M909665-06	Water	9/21/99
W-7-MW-12	M909665-07	Water	9/21/99





Environmental Resolutions (Exxon) 73 Digital Drive, Suite 100 Novato, CA 94949	Project: Exxon Project Number: 73006 Project Manager: Peter Petro	Sampled: 9/21/99 Received: 9/21/99 Reported: 10/5/99
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**Total Metals by EPA 6000/7000 Series Methods
Sequoia Analytical - Morgan Hill**

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
<u>W-8-MW-1</u> Ferrous Iron	9090885	9/29/99	9/29/99	<u>M909665-01</u> EPA 6010A	0.0100	0.0170	Water mg/l	
<u>W-7-MW-10</u> Ferrous Iron	9090885	9/29/99	9/29/99	<u>M909665-02</u> EPA 6010A	0.0100	ND	Water mg/l	
<u>W-8-MW-9</u> Ferrous Iron	9090885	9/29/99	9/29/99	<u>M909665-03</u> EPA 6010A	0.0100	ND	Water mg/l	
<u>W-9-MW-14</u> Ferrous Iron	9090885	9/29/99	9/29/99	<u>M909665-04</u> EPA 6010A	0.0100	0.0770	Water mg/l	
<u>W-7-MW-2</u> Ferrous Iron	9090885	9/29/99	9/29/99	<u>M909665-05</u> EPA 6010A	0.0100	0.0770	Water mg/l	
<u>W-8-MW-13</u> Ferrous Iron	9090885	9/29/99	9/29/99	<u>M909665-06</u> EPA 6010A	0.0100	1.20	Water mg/l	
<u>W-7-MW-12</u> Ferrous Iron	9090885	9/29/99	9/29/99	<u>M909665-07</u> EPA 6010A	0.0100	6.10	Water mg/l	





Environmental Resolutions (Exxon) 73 Digital Drive, Suite 100 Novato, CA 94949	Project: Exxon Project Number: 73006 Project Manager: Peter Petro	Sampled: 9/21/99 Received: 9/21/99 Reported: 10/5/99
--	---	--

**Conventional Chemistry Parameters by APHA/EPA Methods
Sequoia Analytical - Morgan Hill**

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
<u>W-8-MW-1</u> Hydrogen Sulfide (H2S)	9090868	9/22/99	9/22/99	<u>M909665-01</u> SM 4500-S2-	1.00	ND	<u>Water</u> mg/l	
<u>W-7-MW-10</u> Hydrogen Sulfide (H2S)	9090868	9/22/99	9/22/99	<u>M909665-02</u> SM 4500-S2-	1.00	ND	<u>Water</u> mg/l	
<u>W-8-MW-9</u> Hydrogen Sulfide (H2S)	9090868	9/22/99	9/22/99	<u>M909665-03</u> SM 4500-S2-	1.00	ND	<u>Water</u> mg/l	
<u>W-9-MW-14</u> Hydrogen Sulfide (H2S)	9090868	9/22/99	9/22/99	<u>M909665-04</u> SM 4500-S2-	1.00	ND	<u>Water</u> mg/l	
<u>W-7-MW-2</u> Hydrogen Sulfide (H2S)	9090868	9/22/99	9/22/99	<u>M909665-05</u> SM 4500-S2-	1.00	ND	<u>Water</u> mg/l	
<u>W-8-MW-13</u> Hydrogen Sulfide (H2S)	9090868	9/22/99	9/22/99	<u>M909665-06</u> SM 4500-S2-	1.00	ND	<u>Water</u> mg/l	
<u>W-7-MW-12</u> Hydrogen Sulfide (H2S)	9090868	9/22/99	9/22/99	<u>M909665-07</u> SM 4500-S2-	1.00	ND	<u>Water</u> mg/l	





Environmental Resolutions (Exxon) 73 Digital Drive, Suite 100 Novato, CA 94949	Project: Exxon Project Number: 73006 Project Manager: Peter Petro	Sampled: 9/21/99 Received: 9/21/99 Reported: 10/5/99
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**Anions by EPA Method 300.0
Sequoia Analytical - Morgan Hill**

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
<u>W-8-MW-1</u>								
<u>M909665-01</u>								<u>Water</u>
Nitrate as NO3	9090834	9/22/99	9/22/99	EPA 300.0	1.00	15.7	mg/l	
Sulfate as SO4	"	"	"	EPA 300.0	5.00	44.4	"	2
<u>W-7-MW-10</u>								
<u>M909665-02</u>								<u>Water</u>
Nitrate as NO3	9090834	9/22/99	9/22/99	EPA 300.0	1.00	50.4	mg/l	
Sulfate as SO4	9090837	9/23/99	9/23/99	EPA 300.0	5.00	57.7	"	2
<u>W-8-MW-9</u>								
<u>M909665-03</u>								<u>Water</u>
Nitrate as NO3	9090834	9/22/99	9/22/99	EPA 300.0	1.00	22.3	mg/l	
Sulfate as SO4	9090837	9/23/99	9/23/99	EPA 300.0	5.00	58.1	"	2
<u>W-9-MW-14</u>								
<u>M909665-04</u>								<u>Water</u>
Nitrate as NO3	9090834	9/22/99	9/22/99	EPA 300.0	1.00	ND	mg/l	
Sulfate as SO4	9090837	9/23/99	9/23/99	EPA 300.0	5.00	ND	"	2
<u>W-7-MW-2</u>								
<u>M909665-05</u>								<u>Water</u>
Nitrate as NO3	9090834	9/22/99	9/22/99	EPA 300.0	1.00	ND	mg/l	
Sulfate as SO4	9090837	9/23/99	9/23/99	EPA 300.0	5.00	15.1	"	2
<u>W-8-MW-13</u>								
<u>M909665-06</u>								<u>Water</u>
Nitrate as NO3	9090834	9/22/99	9/22/99	EPA 300.0	1.00	ND	mg/l	
Sulfate as SO4	9090837	9/23/99	9/23/99	EPA 300.0	5.00	47.0	"	2
<u>W-7-MW-12</u>								
<u>M909665-07</u>								<u>Water</u>
Nitrate as NO3	9090834	9/22/99	9/22/99	EPA 300.0	1.00	ND	mg/l	
Sulfate as SO4	9090837	9/23/99	9/23/99	EPA 300.0	5.00	ND	"	2





Environmental Resolutions (Exxon) 73 Digital Drive, Suite 100 Novato, CA 94949	Project: Exxon Project Number: 73006 Project Manager: Peter Petro	Sampled: 9/21/99 Received: 9/21/99 Reported: 10/5/99
--	---	--

**Miscellaneous Physical/Conventional Chemistry Parameters
Sequoia Analytical - Walnut Creek**

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
<u>W-8-MW-1</u> Methane	9J01003	10/1/99	10/1/99	<u>M909665-01</u> N/A	0.50	ND	<u>Water</u> mg/l	
<u>W-7-MW-10</u> Methane	9J01003	10/1/99	10/1/99	<u>M909665-02</u> N/A	0.50	ND	<u>Water</u> mg/l	
<u>W-8-MW-9</u> Methane	9J01003	10/1/99	10/1/99	<u>M909665-03</u> N/A	0.50	ND	<u>Water</u> mg/l	
<u>W-9-MW-14</u> Methane	9J01003	10/1/99	10/1/99	<u>M909665-04</u> N/A	0.50	0.70	<u>Water</u> mg/l	
<u>W-7-MW-2</u> Methane	9J01003	10/1/99	10/1/99	<u>M909665-05</u> N/A	0.50	0.81	<u>Water</u> mg/l	
<u>W-8-MW-13</u> Methane	9J01003	10/1/99	10/1/99	<u>M909665-06</u> N/A	0.50	0.83	<u>Water</u> mg/l	
<u>W-7-MW-12</u> Methane	9J01003	10/1/99	10/1/99	<u>M909665-07</u> N/A	0.50	4.7	<u>Water</u> mg/l	





Environmental Resolutions (Exxon) 73 Digital Drive, Suite 100 Novato, CA 94949	Project: Exxon Project Number: 73006 Project Manager: Peter Petro	Sampled: 9/21/99 Received: 9/21/99 Reported: 10/5/99
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**TOTAL METALS by EPA 6000/7000 SPS& Method/Quality Control
Sequoia Analytical - Morgan Hill**

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 9090885	Date Prepared: 9/29/99			Extraction Method: EPA 3005A						
Blank	9090885-BLK1									
Ferrous Iron	9/29/99			ND	mg/l	0.0100				
LCS	9090885-BS1									
Ferrous Iron	9/29/99	1.00		1.10	mg/l	80.0-120	110			
Matrix Spike	9090885-MS1		M909869-07							
Ferrous Iron	9/29/99	1.00	0.0170	1.00	mg/l	80.0-120	98.3			
Matrix Spike Dup	9090885-MSD1		M909869-07							
Ferrous Iron	9/29/99	1.00	0.0170	1.00	mg/l	80.0-120	98.3	20.0	0	





Environmental Resolutions (Exxon) 73 Digital Drive, Suite 100 Novato, CA 94949	Project: Exxon Project Number: 73006 Project Manager: Peter Petro	Sampled: 9/21/99 Received: 9/21/99 Reported: 10/5/99
--	---	--

Conventional Chemistry Parameters by APHA/EPA Methods Quality Control
Sequoia Analytical - Morgan Hill

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 9090868	Date Prepared: 9/22/99		Extraction Method: General Preparation							
Blank	9090868-BLK1									
Hydrogen Sulfide (H2S)	9/22/99			ND	mg/l	1.00				





Environmental Resolutions (Exxon)
73 Digital Drive, Suite 100
Novato, CA 94949

Project: Exxon
Project Number: 73006
Project Manager: Peter Petro

Sampled: 9/21/99
Received: 9/21/99
Reported: 10/5/99

Anions by EPA Method 8000 Quality Control
Septon Analytical Morgan Hill

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
---------	---------------	-------------	---------------	-----------	-------	----------------------------------	----------	-----------	-------	--------

Batch: 9090834

Date Prepared: 9/22/99

Extraction Method: General Preparation

Blank

9090834-BLK1

Nitrate as NO3
Sulfate as SO4

9/22/99 ND mg/l 0.100
" ND " 0.500

LCS

9090834-BS1

Nitrate as NO3
Sulfate as SO4

9/22/99 10.0 9.48 mg/l 80.0-120 94.8
" 10.0 9.58 " 80.0-120 95.8

Matrix Spike

9090834-MS1 M909665-01

Nitrate as NO3
Sulfate as SO4

9/22/99 100 15.7 110 mg/l 75.0-125 94.3
" 100 44.3 143 " 75.0-125 98.7

Matrix Spike Dup

9090834-MSD1 M909665-01

Nitrate as NO3
Sulfate as SO4

9/22/99 100 15.7 110 mg/l 75.0-125 94.3 20.0 0
" 100 44.3 142 " 75.0-125 97.7 20.0 1.02

Batch: 9090837

Date Prepared: 9/23/99

Extraction Method: General Preparation

Blank

9090837-BLK1

Sulfate as SO4

9/23/99 ND mg/l 0.500

LCS

9090837-BS1

Sulfate as SO4

9/23/99 10.0 9.90 mg/l 80.0-120 99.0





Environmental Resolutions (Exxon) 73 Digital Drive, Suite 100 Novato, CA 94949	Project: Exxon Project Number: 73006 Project Manager: Peter Petro	Sampled: 9/21/99 Received: 9/21/99 Reported: 10/5/99
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Miscellaneous Physical/Conventional Chemistry Parameters/Quality Control
Sequoia Analytical - Walnut Creek

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 9J01003	Date Prepared: 10/1/99			Extraction Method: General Prep						
Blank	9J01003-BLK1									
Methane	10/1/99			ND	mg/l	0.50				
LCS	9J01003-BS1									
Methane	10/1/99	4.24		3.56	mg/l	50-150	84.0			
LCS Dup	9J01003-BSD1									
Methane	10/1/99	4.24		3.45	mg/l	50-150	81.4	50	3.14	
Duplicate	9J01003-DUP1		M909665-07							
Methane	10/1/99		4.7	5.61	mg/l			50	17.7	





Environmental Resolutions (Exxon)
73 Digital Drive, Suite 100
Novato, CA 94949

Project: Exxon
Project Number: 73006
Project Manager: Peter Petro

Sampled: 9/21/99
Received: 9/21/99
Reported: 10/5/99

Notes and Definitions

#	Note
---	------

2	Dissolved sulfate.
---	--------------------

DET Analyte DETECTED

ND Analyte NOT DETECTED at or above the reporting limit

NR Not Reported

dry Sample results reported on a dry weight basis

Recov. Recovery

RPD Relative Percent Difference





Sequoia Analytical
 680 Chesapeake Dr.
 Redwood City, CA 94063
 (650) 364-9600 • FAX (650) 364-9233

EXXON COMPANY, U.S.A.

P.O. Box 2180, Houston, TX 77002-7426

CHAIN OF CUSTODY

M909665

Consultant's Name: <i>ENVIRONMENTAL Resolution Inc</i>		Page <i>1</i> of <i>2</i>
Address: <i>73 Digital Drive Suite 100 Novato</i>		Site Location: <i>720 High St.</i>
Project #:	Consultant Project #:	Consultant Work Release #: <i>19432503</i>
Project Contact: <i>PETER PEARO</i>	Phone #: <i>415 782 5995</i>	Laboratory Work Release #:
EXXON Contact: <i>Darin Rouse</i>	Phone #: <i>925 246 8768</i>	EXXON RAS #: <i>73006</i>
Sampled by (print): <i>Carl Miklich</i>	Sampler's Signature: <i>[Signature]</i>	<i>Oakland CA</i>
Shipment Method: <i>Carrier</i>	Air Bill #:	

TAT: 24 hr 48 hr 72 hr 96 hr Standard (10 day) *M909665* *ASTM 3116*

Sample Description	Collection Date	Collection Time	Matrix Soil/Water/Air	Prsv	# of Cont.	Sequoia's Sample #	ANALYSIS REQUIRED				Temperature: _____ Inbound Seal: Yes No Outbound Seal: Yes No		
							TPH/Gas BTEX/8015/8020	TPH/Diesel EPA 8015	TRPH S.M. 5520	EPA 200 600 9030			
<i>W-8-MW1a</i>	<i>9/21</i>	<i>10:50</i>	<i>A20</i>	<i>ice</i>	<i>3</i>	<i>01</i>	<i>X</i>						
<i>W-8-MW1</i>		<i>10:55</i>		<i>ice</i>	<i>4</i>					<i>X</i>	<i>X</i>		<i>Nitrates</i>
<i>W-7-MW10</i>		<i>11:15</i>		<i>ice</i>	<i>3</i>	<i>02</i>	<i>X</i>						<i>Dissolved Iron</i>
<i>W-7-MW10</i>		<i>11:15</i>		<i>ice</i>	<i>4</i>					<i>X</i>	<i>X</i>		<i>Dissolved hydrogen sulfide</i>
<i>W-8-MW9</i>		<i>11:35</i>		<i>ice</i>	<i>3</i>	<i>03</i>	<i>X</i>						<i>Dissolved sulfate</i>
<i>W-8-MW9</i>		<i>11:35</i>		<i>ice</i>	<i>4</i>					<i>X</i>	<i>X</i>		
<i>W-9-MW14</i>		<i>11:59</i>		<i>ice</i>	<i>3</i>	<i>04</i>	<i>X</i>						
<i>W-9-MW14</i>		<i>11:59</i>	<i>13M</i>	<i>ice</i>	<i>4</i>					<i>X</i>	<i>X</i>		<i>dissolved methane</i>

RELINQUISHED BY / AFFILIATION	Date	Time	ACCEPTED / AFFILIATION	Date	Time	Additional Comments
<i>[Signature] / EPA</i>	<i>9.21.99</i>	<i>1330</i>	<i>D.S. Ely #300</i>	<i>9/21/99</i>	<i>1:34 pm</i>	
<i>D.S. Ely #300</i>	<i>9/21/99</i>	<i>16:50</i>	<i>[Signature] / EPA</i>	<i>9/21/99</i>	<i>16:50</i>	

Pink - Client

Yellow - Sequoia

White - Exxon



Sequoia Analytical
680 Chesapeake Dr.
Redwood City, CA 94063
(650) 364-9600 • FAX (650) 364-9233

EXXON COMPANY, U.S.A.

P.O. Box 2180, Houston, TX 77002-7425
CHAIN OF CUSTODY

M909665

Consultant's Name: ENVIRONMENTAL RESOLUTIONS INC. Page 2 of 2

Address: 73 DIGITAL DRIVE SUITE 100 HOUSTON 94949 Site Location: 720 HIGH STREET

Project #: _____ Consultant Project #: 201014X Consultant Work Release #: 19432503

Project Contact: PETER A. PETRO Phone #: 1 415 382 9105 Laboratory Work Release #: _____

EXXON Contact: DARIN ROUSE Phone #: 1 925 246 8725 EXXON RAS #: 7-3006

Sampled by (print): CARL MICKLICH Sampler's Signature: [Signature] OAKLAND CA

Shipment Method: _____ Air Bill #: _____

TAT: 24 hr 48 hr 72 hr 96 hr Standard (10 day) M909665 ANALYSIS REQUIRED

Sample Description	Collection Date	Collection Time	Matrix Soil/Water/Air	Prsv	# of Cont.	Sequoia's Sample #	TPH/Gas BTEX/0015/8020	TPH/Diesel EPA 8015	TRPH S.M. 5520	300-300		Temperature: _____	Inbound Seal: Yes No Outbound Seal: Yes No
										6010	9030		
W-7-MW1	9/21	12:05	Water	W/ice	3	05	X						Nitrate ✓ Dissolved sulfate ✓ Dissolved Barrows (Rn) Dissolved sulfide Hydrogen sulfide Dissolved methane
W-7-MW2	/	/	/	W	4				X	X			
W-8-MW3	/	12:55	/	W/ice	3	06	X						
W-8-MW3	/	/	/	ice	4				X	X			
W-7-MW12	9/21	12:45	/	W/ice	3	07	X						
W-7-MW12	/	/	PP	ice	4					X	X		
W- W- W- W-	/	/	/	/	/	/	/	/	/	/	/	/	

RELINQUISHED BY / AFFILIATION	Date	Time	ACCEPTED / AFFILIATION	Date	Time	Additional Comments
<u>[Signature]</u> / ERI	9.21.99	13:30	D.S. Ely #300	9/21/99	11:34 PM	
D.S. Ely #300	9/21/99	16:50	<u>[Signature]</u> / RTH	9/21/99	16:50	

Pink - Client
Yellow - Sequoia
White - Sequoia

ATTACHMENT B
RBCA DATA RESULTS

RBCA TIER 1/TIER 2 EVALUATION

Output Table 1

Site Name: Exxon Station #7-3006 Job Identification: 2010RBCA Software: GSI RBCA Spreadsheet
 Site Location: 720 High Street, Oakland, Ca. Date Completed: 2/9/99 Version: 1.0.1
 Completed By: Steve M. Zigan

NOTE: values which differ from Tier 1 default values are shown in bold italics and underlined.

Exposure Parameter	Definition (Units)	Residential		Commercial/Industrial		
		Adult	(1-6yrs)	(1-16 yrs)	Chronic	Constructn
ATc	Averaging time for carcinogens (yr)	70				
ATn	Averaging time for non-carcinogens (yr)	30	6	16	25	1
BW	Body Weight (kg)	70	15	35	70	
ED	Exposure Duration (yr)	30	6	16	25	1
I	Averaging time for vapor flux (yr)	30			25	1
EF	Exposure Frequency (days/yr)	350			250	180
EF_Derm	Exposure Frequency for dermal exposure	350			250	
IRgw	Ingestion Rate of Water (L/day)	2			1	
IRs	Ingestion Rate of Soil (mg/day)	100	200		50	100
IRadj	Adjusted soil ing. rate (mg-yr/kg-d)	1.1E+02			9.4E+01	
IRa.in	Inhalation rate indoor (m ³ /day)	15			20	
IRa.out	Inhalation rate outdoor (m ³ /day)	20			20	10
SA	Skin surface area (dermal) (cm ²)	5.8E+03		2.0E+03	5.8E+03	5.8E+03
SAadj	Adjusted dermal area (cm ² -yr/kg)	2.1E+03			1.7E+03	
M	Soil to Skin adherence factor	1				
AAFs	Age adjustment on soil ingestion	FALSE			FALSE	
AAFd	Age adjustment on skin surface area	FALSE			FALSE	
tox	Use EPA tox data for air (or PEL based)?	FALSE				
gwMCL?	Use MCL as exposure limit in groundwater?	FALSE				

Surface Parameters	Definition (Units)	Residential	Constructn
		A	Contaminated soil area (cm ²)
W	Length of affect. soil parallel to wind (cm)	5.4E+03	1.0E+03
W.gw	Length of affect. soil parallel to groundwater (cm)	1.5E+03	
Uair	Ambient air velocity in mixing zone (cm/s)	2.3E+02	
delta	Air mixing zone height (cm)	2.0E+02	
Lss	Thickness of affected surface soils (cm)	3.0E+01	
Pe	Particulate areal emission rate (g/cm ² /s)	6.9E-14	

Groundwater Definition (Units)		Value
delta.gw	Groundwater mixing zone depth (cm)	2.0E+02
I	Groundwater infiltration rate (cm/yr)	3.0E+01
Ugw	Groundwater Darcy velocity (cm/yr)	2.5E+03
Ugw.tr	Groundwater seepage velocity (cm/yr)	6.6E+03
Ks	Saturated hydraulic conductivity (cm/s)	
grad	Groundwater gradient (cm/cm)	
Sw	Width of groundwater source zone (cm)	4.6E+03
Sd	Depth of groundwater source zone (cm)	1.8E+02
phi.eff	Effective porosity in water-bearing unit	3.8E-01
foc.sat	Fraction organic carbon in water-bearing unit	1.0E-03
BIO?	Is bioattenuation considered?	TRUE
BC	Biodegradation Capacity (mg/L)	

Matrix of Exposed Persons to Complete Exposure Pathways	Residential		Commercial/Industrial	
	Chronic	Constructn	Chronic	Constructn
Outdoor Air Pathways:				
SS.v	Volatiles and Particulates from Surface Soils	FALSE	FALSE	TRUE
S.v	Volatilization from Subsurface Soils	TRUE	TRUE	
GW.v	Volatilization from Groundwater	FALSE	TRUE	
Indoor Air Pathways:				
S.b	Vapors from Subsurface Soils	FALSE	TRUE	
GW.b	Vapors from Groundwater	FALSE	TRUE	
Soil Pathways:				
SS.d	Direct Ingestion and Dermal Contact	FALSE	TRUE	TRUE
Groundwater Pathways:				
GW.i	Groundwater Ingestion	FALSE	TRUE	
S.l	Leaching to Groundwater from all Soils	FALSE	TRUE	

Soil	Definition (Units)	Value		
		capillary	vadose	foundation
hc	Capillary zone thickness (cm)	2.8E+01		
hv	Vadose zone thickness (cm)	3.0E+02		
rho	Soil density (g/cm ³)	1.7		
foc	Fraction of organic carbon in vadose zone	0.001		
phi	Soil porosity in vadose zone	0.38		
Lgw	Depth to groundwater (cm)	3.3E+02		
Ls	Depth to top of affected subsurface soil (cm)	3.0E+01		
Lsubs	Thickness of affected subsurface soils (cm)	3.0E+02		
pH	Soil/groundwater pH	6.5		
phi.w	Volumetric water content	0.342	0.12	0.12
phi.a	Volumetric air content	0.038	0.26	0.26

Matrix of Receptor Distance and Location On- or Off-Site	Residential		Commercial/Industrial		
	Distance	On-Site	Distance	On-Site	
GW	Groundwater receptor (cm)	9.1E+04	FALSE	9.1E+04	FALSE
S	Inhalation receptor (cm)	4.6E+04	FALSE		TRUE

Building	Definition (Units)	Residential	Commercial
		Lb	Building volume/area ratio (cm)
ER	Building air exchange rate (s ⁻¹)	1.4E-04	2.3E-04
Lcrk	Foundation crack thickness (cm)	1.5E+01	
eta	Foundation crack fraction	0.0003	

Matrix of Target Risks	Definition	Individual	Cumulative
		TRab	Target Risk (class A&B carcinogens)
TRc	Target Risk (class C carcinogens)	1.0E-05	
THQ	Target Hazard Quotient	1.0E+00	
Opt	Calculation Option (1, 2, or 3)	2	
Tier	RBCA Tier	2	

Transport Parameters	Definition (Units)	Residential	Commercial
		Groundwater	
ax	Longitudinal dispersivity (cm)		1.1E+03
ay	Transverse dispersivity (cm)		1.1E+02
az	Vertical dispersivity (cm)		1.1E+01
Vapor			
dcy	Transverse dispersion coefficient (cm)	4.4E+03	
dcz	Vertical dispersion coefficient (cm)	2.9E+03	

RBCA CHEMICAL DATABASE

Physical Property Data

CAS Number	Constituent	type	Molecular Weight (g/mole)		Diffusion Coefficients			log (Koc) or log(Kd) (@ 20 - 25 C)		Henry's Law Constant (@ 20 - 25 C)			Vapor Pressure (@ 20 - 25 C)		Solubility (@ 20 - 25 C)		acid pKa	base pKb	ref
			MW	ref	Dair (cm2/s)	ref	Dwat (cm2/s)	ref	log(l/kg)	ref	mol (atm-m3)	(unitless)	ref	(mm Hg)	ref	(mg/L)			
71-43-2	Benzene	A	78.1	5	9.30E-02	A	1.10E-05	A	1.58	A	5.29E-03	2.20E-01	A	9.52E+01	4	1.75E+03	A		
100-41-4	Ethylbenzene	A	106.2	5	7.60E-02	A	8.50E-06	A	1.98	A	7.69E-03	3.20E-01	A	1.00E+01	4	1.52E+02	5		
108-88-3	Toluene	A	92.4	5	8.50E-02	A	9.40E-06	A	2.13	A	6.25E-03	2.60E-01	A	3.00E+01	4	5.15E+02	29		
1330-20-7	Xylene (mixed isomers)	A	106.2	5	7.20E-02	A	8.50E-06	A	2.38	A	6.97E-03	2.90E-01	A	7.00E+00	4	1.98E+02	5		

Site Name: Exxon Station #7-3006

Site Location: 720 High Street, Oakland Completed By: Steve M. Zigan

Date Completed: 2/9/1999

Software version: 1.0.1

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RBCA CHEMICAL DATABASE

Toxicity Data

CAS Number	Constituent	Reference Dose (mg/kg/day)			Slope Factors 1/(mg/kg/day)			EPA Weight of Evidence	Is Constituent Carcinogenic ?		
		Oral RfD_oral	ref	Inhalation RfD_inhal	ref	Oral SF_oral	ref			Inhalation SF_inhal	ref
71-43-2	Benzene	-		1.70E-03	R	2.90E-02	A	2.90E-02	A	A	TRUE
100-41-4	Ethylbenzene	1.00E-01	A	2.86E-01	A	-		-		D	FALSE
108-88-3	Toluene	2.00E-01	A,R	1.14E-01	A,R	-		-		D	FALSE
1330-20-7	Xylene (mixed isomers)	2.00E+00	A,R	2.00E+00	A	-		-		D	FALSE

Site Name: Exxon Station #7-3006 Site Location: 720 High Street, Oakl Completed By: Steve M. Zigan Date Completed: 2/9/1999

Software version: 1.0.1

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RBCA CHEMICAL DATABASE

Miscellaneous Chemical Data

CAS Number	Constituent	Maximum Contaminant Level		Permissible Exposure Limit PEL/TLV		Relative Absorption Factors		Detection Limits			Half Life (First-Order Decay)			
		MCL (mg/L)	reference	(mg/m3)	ref	Oral	Dermal	Groundwater (mg/L)	Soil (mg/kg)	ref	Saturated	Unsaturated	ref	
71-43-2	Benzene	5.00E-03	52 FR 25690	3.20E+00	OSHA	1	0.5	0.002	C	0.005	S	720	720	H
100-41-4	Ethylbenzene	7.00E-01	56 FR 3526 (30 Jan 91)	4.34E+02	ACGIH	1	0.5	0.002	C	0.005	S	228	228	H
108-88-3	Toluene	1.00E+00	56 FR 3526 (30 Jan 91)	1.47E+02	ACGIH	1	0.5	0.002	C	0.005	S	28	28	H
1330-20-7	Xylene (mixed isomers)	1.00E+01	56 FR 3526 (30 Jan 91)	4.34E+02	ACGIH	1	0.5	0.005	C	0.005	S	360	360	H

Site Name: Exxon Station #7-3006

Site Location: 720 High Street, Oakland, Ca.

Completed By: Steve M. Zigan

Date Completed: 2/9/1999

Software version: 1.0.1

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GROUNDWATER DAF VALUES

(Enter DAF values in the grey area of the following table)

Dilution Attenuation Factor
(DAF) in Groundwater

CONSTITUENT	Residential	Comm./Ind.
	Receptor	Receptor
Benzene	1.0E+0	5.5E+3
Ethylbenzene	1.0E+0	1.6E+9
Toluene	1.0E+0	7.1E+41
Xylene (mixed isomers)	1.0E+0	4.8E+8

Site Name: Exxon Station #7-3006

Completed By: Steve M. Zigan

Site Location: 720 High Street, Oakland, Ca.

Date Completed: 2/9/1999

CONSTITUENT HALF-LIFE VALUES

(Complete the following table)

CONSTITUENT	Half-Life of Constituent (day)
Benzene	720
Ethylbenzene	228
Toluene	28
Xylene (mixed isomers)	360

Site Name: Exxon Station #7-3006 Completed By: Steve M. Zigan
Site Location: 720 High Street, Oakland, Date Completed: 2/9/1999

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RBCA SITE ASSESSMENT

EXPOSURE LIMITS IN GROUNDWATER AND AIR

CONSTITUENT	Exposure Limits Applied to Receptors	
	Groundwater (MCL) (mg/L)	Air (Comm. only) (PEL/TLV) (mg/m ³)
Benzene		3.2E+0
Ethylbenzene		4.3E+2
Toluene		1.5E+2
Xylene (mixed isomers)		4.3E+2

Site Name: Exxon Station #7-3006
Site Location: 720 High Street, Oakland, Ca.

Completed By: Steve M. Zigan
Date Completed: 2/9/1999

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RBCA SITE ASSESSMENT

Tier 2 Worksheet 9.1

Site Name: Exxon Station #7-3006
 Site Location: 720 High Street, Oakland, Ca.

Completed By: Steve M. Zigan
 Date Completed: 2/9/1999

1 OF 1

**SURFACE SOIL SSTL VALUES
 (< 1 FT BGS)**

Target Risk (Class A & B) 1.0E-6
 Target Risk (Class C) 1.0E-5
 Target Hazard Quotient 1.0E+0

MCL exposure limit?
 PEL exposure limit?

Calculation Option: 2
 Groundwater DAF Option: Domenico - First Order
 (One-directional vert. dispersion)

SSTL Results For Complete Exposure Pathways ("x" if Complete)

CONSTITUENTS OF CONCERN		Representative Concentration (mg/kg)	Soil Leaching to Groundwater			Ingestion and Dermal Contact		Construction Worker	Applicable SSTL (mg/kg)	SSTL Exceeded ? * If yes	Required CRF
			Residential: (on-site)	Commercial: 3000 feet	Regulatory(MCL): 3000 feet	Residential: (on-site)	Commercial: (on-site)(PEL)	Commercial: (on-site) (PEL)			
71-43-2	Benzene	0.0E+0	NA	9.3E+1	NA	NA	3.3E+0	1.1E+2	3.3E+0	<input type="checkbox"/>	<1
100-41-4	Ethylbenzene	0.0E+0	NA	>Res	NA	NA	>Res	>Res	>Res	<input type="checkbox"/>	<1
108-88-3	Toluene	0.0E+0	NA	>Res	NA	NA	>Res	>Res	>Res	<input type="checkbox"/>	<1
1330-20-7	Xylene (mixed isomers)	0.0E+0	NA	>Res	NA	NA	>Res	>Res	>Res	<input type="checkbox"/>	<1

>Res indicates risk-based target concentration greater than constituent residual saturation value

RBCA SITE ASSESSMENT

Tier 2 Worksheet 9.2

Site Name: Exxon Station #7-3006

Completed By: Steve M. Zigan

Site Location: 720 High Street, Oakland, Ca.

Date Completed: 2/9/1999

1 OF 1

**SUBSURFACE SOIL SSTL VALUES
(> 1 FT BGS)**

Target Risk (Class A & B) 1.0E-6

MCL exposure limit?

Calculation Option: 2

Target Risk (Class C) 1.0E-5

PEL exposure limit?

Groundwater DAF Option: Domenico - First Order

Target Hazard Quotient 1.0E+0

(One-directional vert. dispersion)

SSTL Results For Complete Exposure Pathways ("x" If Complete)

CONSTITUENTS OF CONCERN		Representative Concentration (mg/kg)	Soil Leaching to Groundwater			Soil Volatilization to Indoor Air		Soil Volatilization to Outdoor Air		Applicable SSTL (mg/kg)	SSTL Exceeded ? "■" If yes	Required CRF
			Residential: (on-site)	Commercial: 3000 feet	Regulatory(MCL): 3000 feet	Residential: (on-site)	Commercial: (on-site) (PEL)	Residential: 1500 feet	Commercial: (on-site)(PEL)			
71-43-2	Benzene <i>90% full</i>	3.0E+0	NA	9.3E+1	NA	NA	>Res	2.4E+2	>Res	9.3E+1	<input type="checkbox"/>	<1
100-41-4	Ethylbenzene	5.3E+0	NA	>Res	NA	NA	>Res	>Res	>Res	>Res	<input type="checkbox"/>	<1
108-88-3	Toluene	3.9E+0	NA	>Res	NA	NA	>Res	>Res	>Res	>Res	<input type="checkbox"/>	<1
1330-20-7	Xylene (mixed isomers)	2.0E+1	NA	>Res	NA	NA	>Res	>Res	>Res	>Res	<input type="checkbox"/>	<1

>Res Indicates risk-based target concentration greater than constituent residual saturation value

UCL Percentile

90%

Analytical Data (Up to 50 Data Points)

1 2 3 4 5 6 7 8 9 10 11 12

	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Sample Name	SB-21	SB-22	SB-23	SB-24	SB-25		SB-27	SB-28	SB-29	SB-30	B-MW14	
Date Sampled	11/1/90	11/1/90	11/1/90	11/1/90	11/1/90		11/1/90	11/1/90	11/1/90	11/1/90	11/1/90	
	15.5	18.95	1.45	0.353	0.138		4.14	5.5	22.5	14.85	0.37	
	19.25	156	7.61	0.005	0.088		10.35	26.22	66.5	45.5	2	
	2.2	62	1.79	0.138	0.275		1.38	23	95	50.5	0.54	
	56.5	255.5	14.35	0.356	0.379		15.46	76.13	196.5	129.5	11.34	

Handwritten signature/initials

RBCA SITE ASSESSMENT

Tier 2 Worksheet 9.3

Site Name: Exxon Station #7-3006

Completed By: Steve M. Zigan

Site Location: 720 High Street, Oakland, Ca.

Date Completed: 2/9/1999

1 OF 1

GROUNDWATER SSTL VALUES

Target Risk (Class A & B) 1.0E-6

MCL exposure limit?

Calculation Option: 2

Target Risk (Class C) 1.0E-5

PEL exposure limit?

Groundwater DAF Option: Domenico - First Order

Target Hazard Quotient 1.0E+0

(One-directional vert. dispersion)

SSTL Results For Complete Exposure Pathways ("x" if Complete)

CONSTITUENTS OF CONCERN		Representative Concentration (mg/L)	Groundwater Ingestion			Groundwater Volatilization to Indoor Air		Groundwater Volatilization to Outdoor Air		Applicable SSTL (mg/L)	SSTL Exceeded ? * If yes	Required CRF Only if "yes" left
			Residential: (on-site)	Commercial: 3000 feet	Regulatory(MCL): 3000 feet	Residential: (on-site)	Commercial: (on-site) (PEL)	Residential: (on-site)	Commercial: (on-site) (PEL)			
71-43-2	Benzene	3.2E-2	NA	5.4E+1	NA	NA	>Sol	NA	>Sol	5.4E+1	<input type="checkbox"/>	<1
100-41-4	Ethylbenzene	1.2E-2	NA	>Sol	NA	NA	>Sol	NA	>Sol	>Sol	<input type="checkbox"/>	<1
108-88-3	Toluene	2.0E-3	NA	>Sol	NA	NA	>Sol	NA	>Sol	>Sol	<input type="checkbox"/>	<1
1330-20-7	Xylene (mixed isomers)	1.9E-2	NA	>Sol	NA	NA	>Sol	NA	>Sol	>Sol	<input type="checkbox"/>	<1

>Sol indicates risk-based target concentration greater than constituent solubility

UCL Percentile

doesn't account for "hot" areas.

Analytical Data (Up to 50 Data Points)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
MW1	MW1	MW1	MW1	MW2	MW2	MW2	MW2	MW3	MW3	MW3	MW3	MW4	MW4	MW4	MW4	MW6
3/24/98	6/23/98	9/29/98	12/30/98	3/24/98	6/23/98	9/29/98	12/30/98	3/24/98	6/23/98	9/29/98	12/30/98	3/24/98	6/23/98	9/29/98	12/30/98	3/24/98
<0.0005	<0.0005	<0.0005	<0.0005	1.4	0.0032	<0.0005	0.017	5.5	0.053	0.0068	0.074	<0.0005	0.0033	<0.010	0.0038	4.3
<0.0005	<0.0005	<0.0005	<0.0005	0.49	0.00092	0.0015	8.0028	<0.005	<0.001	0.0014	0.01	0.0016	<0.002	<0.01	<0.0025	2.2
0.0056	0.0038	0.0028	0.0041	<0.050	0.0095	0.0093	0.018	0.025	0.0094	<0.005	<0.050	0.038	0.025	<0.050	0.17	<0.250
<0.0005	<0.0005	<0.0005	<0.0005	0.35	0.00055	0.00065	0.00098	<0.005	<0.001	0.0019	<0.010	0.0044	<0.002	<0.010	0.0051	<0.050
<0.0005	<0.0005	<0.0005	<0.0005	1.5	0.0013	0.0015	0.0035	<0.005	<0.0010	0.0023	<0.010	0.0054	<0.002	<0.010	<0.0025	1.5

35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50

(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
MW10	MW10	MW11	MW11	MW11	MW11	MW12	MW12	MW12	MW12	MW14	MW14	MW14	MW14		
9/29/98	12/30/98	3/24/98	6/23/98	9/29/98	12/30/98	3/24/98	6/23/98	9/29/98	12/30/98	3/24/98	6/23/98	9/29/98	12/30/98		
<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.82	1	1.1	1.4	1.7	<0.0005	<0.0005	<0.0005		
<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.42	0.3	0.41	0.4	<0.0010	0.0011	0.0025	<0.0005		
<0.0025	<0.0025	<0.250	0.56	<0.500	<0.500	0.055	0.2	0.13	0.52	0.0057	<0.0025	<0.0025	<0.0025		
<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.006	<0.020	0.012	0.011	<0.0010	0.0015	<0.0005	<0.0005		
<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	0.33	0.3	0.2	0.25	0.0023	0.003	0.0035	0.0028		