ENVIRONMENTAL RESOLUTIONS, INC.

REQUEST FOR CASE CLOSURE

for

Former Exxon Service Station 7-0236
6600 East 14th Street
Oakland, California

ERI Job No. 200903.R03

Prepared for

Exxon Company, U.S.A.
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by

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6600 East 14th Street
Oakland, California

For Exxon Company, U.S.A.

1.0 INTRODUCTION

At the request of Exxon Company, U.S.A. (Exxon), Environmental Resolutions, Inc. (ERI) performs environmental assessment activities at the subject site. ERI is submitting this request for case closure for the subject site. The request for case closure incorporates the results of on-site and off-site investigations, an evaluation of bioattentuation, plume modeling, a risk-based corrective action (RBCA) evaluation, and the results of previous investigations. The purpose of the off-site investigation was to evaluate hydrocarbon concentrations including methyl tertiary butyl ether (MTBE) in groundwater downgradient of the site. The work included recording bioremediation parameters in groundwater monitoring wells, installing oxygen releasing compound (ORC) socks in groundwater monitoring well MW2, drilling one on-site and two off-site soil borings, collecting grab groundwater samples from the borings, and collecting groundwater samples from on-site groundwater monitoring well MW2. ERI performed the work in response to a letter from the Alameda County Health Care Services Agency - Environmental Health Services (the County), dated January 7, 1999 (Appendix A).

1.1 Setting

The site is located on the southwest corner of 66th Avenue and East 14th Street in Oakland, California, as shown on the Site Vicinity Map (Plate 1). The locations of the former underground storage tanks (USTs), former dispenser islands, and other selected site features are shown on the Generalized Site Plan (Plate 2).

The site operated as an Exxon Service Station until 1996, at which time the USTs and above ground site constructions were removed.

2.0 SITE DESCRIPTION

2.1 Summary of Site Activities

A summary of site activities including remedial efforts at the site follows. Cited reports are listed in Section 10, References.

- April 1991 – Exxon submitted a *Preliminary Site Investigation Report.*
- March 1991 – Exxon installed three groundwater monitoring wells MW1 through MW3.
- May 1992 – Exxon installed four groundwater monitoring wells MW4 through MW7 and initiated quarterly groundwater monitoring and sampling.
- June 1992 – Exxon submitted a *Final Site Investigation Report.*
- March 1993 – Exxon performed a record search and site investigation to investigate potential sources within the vicinity.
- October 1993 – Exxon submitted a *Work Plan for Supplemental Environmental Investigation.*
- November 1993 – Exxon installed three soil vapor extraction (SVE) wells VE1 through VE3.
- December 1993 – Exxon performed a SVE feasibility test and a groundwater extraction feasibility test. SVE and groundwater extraction were determined not to be feasible remedial alternatives for the site.
- February 1994 – Exxon submitted a *Supplemental Environmental Investigation Report.*
- May 1994 – Exxon submitted a *Remedial Action Plan* (RAP) to the California Regional Water Quality Control Board, San Francisco Bay Region (Regional Board) recommending remediation by excavation of hydrocarbon-impacted soil and continued groundwater monitoring.
- February 1996 - Exxon submitted a *Corrective Action Plan* (CAP) to the Regional Board and the County. The CAP recommended passive bioremediation as a remedial alternative at the site. This recommendation was based on fate and transport analysis of soil and groundwater conditions and hydrocarbon concentrations, subsurface lithology, and a letter from the Regional Board, dated March

7, 1994, which agreed with the recommendations of the 1994 RAP.

- September 1996 – Exxon installed ORC socks in groundwater monitoring wells MW1, MW2, MW3, and MW6.
- December 1996 - Exxon destroyed the station building and removed three fuel USTs, one used-oil UST, associated product lines and dispensers, and two hoists. Soil samples were collected by ERI during field activities. Analytical laboratory results of soil samples indicated residual petroleum hydrocarbons as diesel and gasoline were present in soil.
- January 1997 – Exxon destroyed two groundwater monitoring wells (MW1 and MW7), and three SVE wells (VE1 through VE3). Exxon installed one groundwater monitoring well (MW8).
- February 1997 – Exxon performed a geophysical investigation to search for additional USTs. Three areas were discovered with magnetic anomalies possibly associated with small USTs.
- May 1997 – Exxon excavated the three areas with magnetic anomalies. Additional USTs were not discovered.
- December 1997 – Exxon excavated approximately 197 tons of soil from the former dispenser area.
- January 1998 – Exxon drilled two soil borings SB1 and SB2 and collected soil samples.
- March 1998 – Exxon removed ORC from MW2 because it was deteriorating.
- April 1998 – Exxon excavated approximately 151 tons of soil in the area between the former dispensers and SB1 and SB2.
- April 1999 – Exxon performed a sensitive receptor survey and an underground utility survey.
- February 1999 – Exxon submitted a *Work Plan for Utility Survey, Sensitive Receptor Survey, and Baseline Risk Assessment for Case Closure* to the County.
- June 1999 - Exxon submitted an *Addendum to the Work Plan for Off-Site Investigation.*
- October 1999 – Exxon installed ORC socks into groundwater monitoring well MW2.
- October 1999 – Exxon performed an off-site investigation including drilling SB1 through SB3.

Currently there are six groundwater monitoring wells (MW2 through MW6, and MW8) on and in the vicinity of the site as shown on Plate 2.

Laboratory analysis of groundwater samples collected from the wells indicate the presence of total extractable petroleum hydrocarbons as diesel (TEPHd), total purgeable petroleum hydrocarbons as

gasoline (TPPHg), benzene, toluene, ethylbenzene, and total xylenes (BTEX), and MTBE. Cumulative groundwater monitoring and sampling data are summarized in Table 1. Cumulative soil boring sample results are presented on Table 2.

2.2 Regional Setting

The site is located along the western portion of an alluvial fan, northeast of the San Leandro Bay, approximately 1.5 miles east of the Oakland Airport Channel.

2.3 Site Geology and Hydrogeology

Based on previous investigations, ERI has identified one sediment for the ongoing investigation at the site. From the ground surface to 20 feet below ground surface (bgs) there exists a single "upper" aquifer composed of low permeability clay, silty clay, and gravelly silt. Geologic cross sections depicting site stratigraphy are presented as Plates 3, 4, and 5.

Based on quarterly groundwater monitoring data, the depth to groundwater across the site has fluctuated from approximately 4 to 15 feet bgs. Groundwater flows persistently towards the south-southwest with a hydraulic gradient ranging from 0.018 to 0.0387. A rose diagram depicting groundwater flow directions is shown on Plate 6.

2.4 Current Site Conditions

2.4.1 Soil Conditions

Residual hydrocarbons are present in subsurface soil. TPPHg, TEPHd, and BTEX were detected in soil samples collected during the removal of the USTs, hoists, dispensers and associated piping. Analysis of soil samples collected from the gasoline UST cavity at 9 feet bgs detected TPPHg at up to 16 mg/kg and TEPHd at up to 7.8 mg/kg. Analysis of soil samples collected from the used-oil UST cavity at 8 feet bgs detected TEPHd at up to 52 mg/kg and total recoverable petroleum hydrocarbons (TRPH) at up to 220 mg/kg. Analysis of soil samples collected from the bottom of the hoist cavity at 10 feet bgs (the soil/water interface) detected TPPHg at up to 16 mg/kg and TRPH at up to 590 mg/kg. Analysis of

soil samples collected from beneath the former dispensers at 2.5 to 3.5 feet bgs detected TPPHg at up to 350 mg/kg and TEPHd at up to 56 mg/kg. Approximately 197 tons of soil was removed from beneath the former dispenser area (D2 and D6) and adjacent to monitoring well MW8. Soil was excavated to a depth of approximately 10 feet below ground surface (soil/water interface).

2.4.2 Groundwater Conditions

During 1999 (four quarters of monitoring), groundwater monitoring well MW2, downgradient of the former dispensers had the maximum concentrations of hydrocarbons at the site; TEPHd at 2,480 µg/l, TPPHg at 2,900 µg/l, benzene at 100 µg/l and MTBE at 2,200 µg/l.

3.0 OFF-SITE INVESTIGATION

The work was performed in accordance with ERI's *Work Plan Addendum for Off-Site Investigation* (Work Plan), dated June 23, 1999. Prior to performing fieldwork, ERI obtained an encroachment permit from the State of California Department of Transportation (Caltrans) (Appendix B).

3.1 Field Activities

On October 15, 1999, ERI drilled three soil borings (SB1 through SB3) to approximately 2 feet below first-encountered groundwater using a 3-inch hand auger. Groundwater was allowed to enter the open boreholes and grab groundwater samples were collected using disposable bailers. The borings were backfilled to approximately 1 foot bgs using grout. The surface was replaced with concrete and finished to match surrounding grade. The locations of the soil borings are shown on Plate 2. A groundwater sample was also collected from on-site groundwater monitoring well MW2 during the off-site investigation.

3.2 Analytical Methods

Groundwater samples were submitted to Southern Petroleum Laboratories, Inc. (SPL) a California state- certified laboratory, under Chain of Custody protocol. The samples were analyzed for BTEX,

MTBE, and TPPHg, using the methods listed in the notes in Table 3. The laboratory analysis report and Chain of Custody record are attached (Appendix C).

Soil cuttings from the drilling of SB1 through SB3 were stockpiled onsite and covered with plastic sheeting pending disposal. Soil stockpile sample results are presented in Table 4. On November 23, 1999, Dillard Trucking of Byron, California transported approximately 1 cubic yard of soil to Redwood Landfill in Novato, California for disposal. Disposal documentation is attached (Appendix D).

3.3 Analytical Results

Analytical results of groundwater samples collected during the off-site investigation are presented in Table 3. Laboratory analysis of the water samples collected from off-site borings SB2 and SB3 did not detect the requested analytes at or above the laboratory method detection limits. Laboratory analysis of the water sample collected from on-site boring SB1 detected TPPHg, BTEX, and MTBE. Based on the results of these samples, ERI concludes that the MTBE plume is delineated in the downgradient direction from the site.

4.0 PLUME EVALUATION

According to Arulanantham et al (1998), the following criteria must be met to demonstrate a stable MTBE plume in groundwater:

- The release mechanism has been identified and corrective action has been performed, or the primary source has been removed;
- The plume has been defined, in terms of concentration (mass), and extent (not necessarily to non-detectable concentrations), and;
- Groundwater elevation and constituent monitoring data are available for at least two consecutive years.

4.1 Source Identification

Based on the results of ERI's report of *Removal of Hoists, Underground Storage Tanks, Product Lines, and Dispensers* (ERI, 1997) and ERI's report of *Environmental Activities* (ERI, 1998), the known sources of petroleum hydrocarbons at the site have been removed:

- Two hydraulic car hoists - removed,
- Three 10,000-gallon fiberglass gasoline USTs - removed,
- One 550-gallon fiberglass used-oil UST - removed,
- Six multi-product dispensers – removed and impacted soil excavated,
- Associated product piping - removed.

Approximately 348 tons of soil were removed from the area of the former dispenser islands. Laboratory analysis of soil samples collected from the lateral limits of the excavation detected TPPHg up to 13 mg/kg and TEPHd up to 25 mg/kg. Based on the results of the *Geophysical Investigation* (ERI 1997) additional sources of petroleum hydrocarbons have been sufficiently investigated and no additional sources were identified.

4.2 Plume Delineation

The MTBE plume originating from this site has been delineated in the downgradient and crossgradient directions. To date, MTBE has not been detected in samples collected from wells MW1, MW4 MW5, and MW7. MTBE was also not detected in grab groundwater samples collected from soil borings SB2 and SB3.

4.3 Groundwater Monitoring Data

Groundwater monitoring data have been collected from the subject site since March 1991; MTBE concentration data have been collected since September 1993. Plots of MTBE and benzene concentrations, and groundwater elevation versus time for each groundwater monitoring well are included as Graphs 1 through 6. Graph 7 presents MTBE concentrations in groundwater monitoring

wells versus the approximate distance from the former source area. An MTBE isoconcentration map based on 4th Quarter 1999 quarterly monitoring (QM) results is presented as Plate 7. MTBE concentrations appear to be decreasing over time in on-site wells MW2, MW3, and MW6. The concentration versus distance plot shows that MTBE concentration decreases in the downgradient direction (i.e. between wells MW2 and MW5).

5.0 BIOATTENUATION

Bioattenuation is the process of aerobic and anaerobic microorganisms naturally degrading petroleum hydrocarbons. As microorganisms consume hydrocarbons, concentrations of particular molecules are either decreased or increased in groundwater. Dissolved oxygen (DO) levels generally decrease as the rate of aerobic biodegradation of hydrocarbons increases. Aerobic biodegradation, utilizing DO, is the most energetically preferred degradation pathway. As the amount of DO decreases, a corresponding increase in the amount of dissolved carbon dioxide is observed because carbon dioxide is a metabolic by-product of aerobic biodegradation. As the level of DO decreases, the rate of anaerobic biodegradation increases. At this point nitrates are consumed by anaerobic biodegradation, thereby decreasing the amount of nitrates in the groundwater. The increased rate of anaerobic biodegradation leads to an increase in the dissolved metabolic by-products of anaerobic biodegradation: dissolved ferrous iron, dissolved hydrogen sulfide, and dissolved methane. Monitoring for these constituents can provide a description of the activity and state of microorganisms in the groundwater (U.S. Environmental Protection Agency, 1996).

5.1 Parameters

During the third quarter 1999, samples were collected from groundwater monitoring wells MW2, MW3, and MW5, and analyzed for the following constituents: nitrate as NO_3, ferrous iron, sulfate as SO_4, and alkalinity. DO field measurements were collected in wells MW2, MW3, and MW5. Bioattenuation parameter results are presented in Table 5 and Graphs 8 through 12.

5.2 Results

- The DO values measured in well MW2 (within the plume) are lower than the DO values measured in MW3 and MW5 (outside the plume), as shown on Graph 8. This indicates that aerobic biodegradation is occurring within the plume.

- Ferrous iron (Fe^{2+}) concentrations are a product of bacterial iron reduction. The ferrous iron levels in well MW2 (inside the plume) are higher than the levels in MW3 and MW5 (outside the plume), as shown in Graph 9. This indicates that the production of ferric iron (Fe^{3+}) is taking place within the plume.

- Alkalinity generally increases with the biodegradation of organic compounds. The alkalinity level in MW2 (inside the plume) is higher than the alkalinity levels in MW3 and MW5 (outside the plume) as shown in Graph 10.

- Nitrate concentrations are expected to be lower inside the plume. The nitrate level in MW2 (inside the plume) is lower than the nitrate level in MW3 (outside the plume) as shown in Graph 11. This indicates that bacteria are utilizing nitrates as an energy source. Nitrogen is an essential nutrient of microbial growth and biodegradation.

- As sulfate concentrations decrease, the activity of methanogenic bacteria increases. This difference may be due to the result of one or more mechanisms of natural attenuation, possibly sulfate reduction. The sulfate level in MW2 (inside the plume) is higher than the levels in MW3 and MW5 (outside the plume) as shown in Graph 12. This indicates that sulfate-reducing bacteria may be at work inside the plume.

5.3 Interpretation

Based on the bioattenuation parameters, ERI concludes that natural biodegradation of petroleum hydrocarbons is occurring at this site. This conclusion is supported by the decline in hydrocarbon concentrations detected in groundwater over time.

6.0 RISK-BASED CORRECTIVE ACTION

In November 1999, ERI performed a RBCA analysis for the subject site for BTEX constituents. The results are presented in Appendix E. A RBCA analysis was not performed for MTBE because there are no applicable exposure pathways, permissible exposure limits (PELs), or maximum constituent levels (MCLs). Based on the results of the *Sensitive Receptor Survey/Underground Utility Survey* (ERI,

1999), there are no groundwater receptors within 1,000 feet of the site. The RBCA was performed to evaluate residential exposure standards based on the estimated future use of the property.

6.1 Pathways Analyzed

ERI evaluated the following exposure pathways in the Tier II assessment:

- Surface soil direct ingestion and dermal contact (residential receptor) N/A
- Surface soil volatilization to indoor air (inhalation: residential receptor) N/A
- Subsurface soil volatilization to indoor air (inhalation: residential receptor) ✓
- Groundwater volatilization to indoor air (inhalation: residential receptor) ✓
- Surface soil volatilization to outdoor air (inhalation: residential receptor) N/A
- Subsurface soil volatilization to outdoor air (inhalation: residential receptor) ✓
- Groundwater volatilization to outdoor air (inhalation: residential receptor) ✓

6.2 Results

The maximum soil and groundwater concentrations do not exceed the regulatory site-specific target levels (SSTLs) for any of the evaluated exposure pathways for BTEX based on the PEL. Surface soil (less than 3 feet bgs) exposure pathway analyses are not valid because the analytical data for surface soils are not available. Representative subsurface soil concentrations do not exceed SSTLs for surface soil. The RBCA Tier II Analysis output files are provided in Appendix E.

7.0 SUMMARY

Based on the following criteria, it is ERI's opinion that soil and groundwater conditions at this site do not warrant additional assessment or monitoring, and that case closure for this site is warranted.

- The sources of petroleum hydrocarbons at this site have been identified and removed
- The MTBE plume is delineated and stable.

- Benzene and MTBE concentrations in groundwater samples show a decreasing trend.
- Biodegradation of petroleum hydrocarbons is occurring.
- SSTLs are not exceeded in the RBCA analysis.

ERI recommends that case closure be granted and that all groundwater monitoring wells associated with this investigation be destroyed.

8.0 LIMITATIONS

This report was prepared in accordance with generally accepted standards of environmental practice in California at the time this investigation was performed. This report has been prepared for Exxon Company, U.S.A., and any reliance on this report by third parties shall be at such party's sole risk.

9.0 REFERENCES

Alton Geoscience. April 29, 1991. Preliminary Site Investigation Report for Exxon Service Station 7-0236, 6630 East 14th Street, Oakland, California.

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U.S. Environmental Protection Agency. August, 1996. BIOSCREEN Natural Attenuation Decision Support System User's Manual Version 1.3.

United States Geological Survey. (Photorevised 1980). 7.5 Minute East Oakland Quadrangle.

TABLE 1
CUMULATIVE GROUNDWATER MONITORING AND SAMPLING DATA
Former Exxon Service Station 7-0236
6600 East 14th Street
Oakland, California

Well ID #	Sampling	SUBJ	DTW	Elev.	TEPHd	TPPHg	MTBE	B	T	E	X	DO	Ferrous Iron	Alkalinity	Nitrate	Sulfate
(TOC)	Date	feet						ug/L						mg/L		
MW1	3/15/91	NR	7.44	12.76	---	<50	---	<0.3	0.5	0.3	1.3	---	---	---	---	---
(20.20)	1/15/92 (H,T)	NR	10.60	9.60	< 300	<50	---	<0.5	0.7	<0.5	0.9	---	---	---	---	---
	3/23/92 (H,T)	NR	6.38	13.82	<50	<50	---	<0.5	<0.5	<0.5	< 0.5	---	---	---	---	---
	4/6/92	NR	7.55	12.65	---	---	---	---	---	---	---	---	---	---	---	---
	7/8/92 (H,T)	NR	9.85	10.35	<50	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---	---	---
	10/13/92 (H,T)	NR	12.95	7.25	<50	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---	---	---
	3/9/93	NLPH	7.38	12.82	<50	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---	---	---
	6/4/93	NLPH	8.55	11.65	<50	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---	---	---
	9/2/93	NLPH	10.85	9.35	<50	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---	---	---
	11/16/93	NLPH	12.43	7.77	<50	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---	---	---
	2/4/94	NLPH	9.10	11.10	<50	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---	---	---
	4/29/94	NLPH	8.45	11.75	<50	<50	---	<0.5	< 0.5	<0.5	<0.5	---	---	---	---	---
	9/20/94	NLPH	10.73	9.47	<50	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---	---	---
	12/14/94	NLPH	7.35	12.85	<50	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---	---	---
	3/27/95	NLPH	7.06	13.14	<50	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---	---	---
	5/18/95	NLPH	7.32	12.88	<50	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---	---	---
	8/8/95	NLPH	9.24	10.96	<50	<50	< 2.5	<0.5	<0.5	<0.5	< 0.5	---	---	---	---	---
	11/7/95	NLPH	10.74	9.46	<50	<50	< 2.5	<0.5	<0.5	<0.5	< 0.5	---	---	---	---	---
	2/29/96	NLPH	6.80	13.40	53	<50	< 2.5	<0.5	<0.5	<0.5	<0.5	---	---	---	---	---
	5/10/96	NLPH	8.13	12.07	150	<50	< 2.5	<0.5	<0.5	<0.5	<0.5	---	---	---	---	---
	8/20/96	NLPH	9.58	10.62	<50	<50	< 2.5	<0.5	<0.5	<0.5	< 0.5	---	---	---	---	---
	10/17/96	---	---	---	---	---	---	---	---	---	---	9.50	---	---	---	---
	11/27/96	---	---	---		---	---	---	---	---	---	11.54	---	---	---	---
	12/6/96	NLPH	8.10	12.10	---	---	---	---	---	---	---	10.05	---	---	---	---
	1/19/97	abandoned											---	---	---	---
MW2	3/15/91 (H,T)	NR	9.05	10.10	120	1,700	---	190	2.6	12	64	---	---	---	---	---
(19.15)	1/15/92 (H,T)	NR	11.60	7.55	1,000	6,800	---	81	<10	320	170	---	---	---	---	---
	3/23/92 (H,T)	NR	9.42	9.73	3,000	7,100	---	740	30	810	490	---	---	---	---	---
	4/6/92	NR	9.09	10.06	---	---	---	---	---	---	---	---	---	---	---	---
	7/8/92	NR	10.08	9.07	2,100	7,000	---	250	14	300	160	---	---	---	---	---
	10/13/92	NR	12.06	7.09	1,900	3,200	---	97	2.6	97	53	---	---	---	---	---
	3/9/93	sheen	9.71	9.44	---	---	---	---	---	---	---	---	---	---	---	---
	6/4/93	sheen	9.40	9.75	---	---	---	---	---	---	---	---	---	---	---	---
	9/2/93	sheen	10.46	8.69	3,700	11,000	2,500	210	18	260	59	---	---	---	---	---
	11/16/93 (M*)	NLPH	11.44	7.71	3,300	8,500	---	75	27	51	32	---	---	---	---	---
	2/4/94	NLPH	10.41	8.74	2,700	4,400	---	120	16	22	7.7	---	---	---	---	---
	4/29/94	NLPH	9.51	9.64	2,000	380	---	5.9	0.6	1.6	<0.5	---	---	---	---	---
	9/20/94	NLPH	10.57	8.58	1,800**	19,000	---	190	29***	110	27***	---	---	---	---	---
	12/14/94	sheen	8.90	10.25	---	---	---	---	---	---	---	---	---	---	---	---
	3/27/95	NLPH	7.72	11.43	1,700	6,300	---	210	15	250	43	---	---	---	---	---
	5/18/95	sheen	8.65	10.50	2,000#	6,000	--	180	9.9	220	55	---	---	---	---	---
	8/8/95	NLPH	9.67	9.48	2,700	5,300	36,000	110	<20	120	<20	---	---	---	---	---
	11/7/95	NLPH	10.49	8.66	1,800	6,400	24,000	120	11	95	38	---	---	---	---	---
						Additional Analyses for general minerals and properties < *										
	2/29/96	NLPH	8.45	10.70	2,500	<5,000	25,000	120	<50	120	<50	---	---	---	---	---

TABLE 1
CUMULATIVE GROUNDWATER MONITORING AND SAMPLING DATA
Former Exxon Service Station 7-0236
6600 East 14th Street
Oakland, California

Well ID # (TOC)	Sampling Date	SUBJ feet	DTW	Elev	TEPHd	TPPHg	MTBE	B	T	E	X	DO	Ferrous Iron	Alkalinity	Nitrate	Sulfate
			>		<			ug/L				> <		mg/L		>
MW2 (cont)	5/10/96	NLPH	9.02	10.13	2,300	11,000	26,000	210	120	210	140	---	---	---	---	---
(19.15)	8/20/96	NLPH	10.08	9 07	---	---	---	---	---	---	---	---	---	---	---	---
	10/17/96	---	---	---	---	---	---	---	---	---	---	7.75	---	---	---	---
	11/27/96	---	---	---	---	---	---	---	---	---	---	6.28	---	---	---	---
	12/6/96	NLPH	10.21	8 94	1,700	5,800	< 125	170	<25	38	<25	5.21	---	---	---	---
	1/17/97	NLPH	---	---	---	---	---	---	---	---	---	3.67	---	---	---	---
(22 19)	2/25/97	NLPH	8 15	14 04	1,500	5,900	4,400	110	14	310	52	2.71	---	---	---	---
	3/13/97	---	---	---	---	---	---	---	---	---	---	2.46	---	---	---	---
	4/16/97	---	---	---	---	---	---	---	---	---	---	1 00	---	---	---	---
	5/21/97	NLPH	10 50	11.69	1,600	5,700	1,800	71	11	240	59	0.85	---	---	---	---
	6/5/97	---	---	---	---	---	---	---	---	---	---	2 18	---	---	---	---
	7/11/97	---	---	---	---	---	---	---	---	---	---	1 87	---	---	---	---
	8/6/97	NLPH	10 80	11.39	1,600	4,100	(1,900)	40	5.2	49	17	1.51	---	---	---	---
	9/23/97	---	---	---	---	---	---	---	---	---	---	2 36	---	---	---	---
	10/7/97	NLPH	11.08	11.11	1,200	280	230	1.2	2 4	< 0.5	1.1	1 56	---	---	---	---
	12/24/97	---	---	---	---	---	---	---	---	---	---	1.23	---	---	---	---
	1/16/98	NLPH	7.29	14.90	1,200	3,500	3,000	190	14	110	31	1.18	---	---	---	---
	2/20/98	---	---	---	---	---	---	---	---	---	---	1.30	---	---	---	---
	3/26/98	---	---	---	---	---	---	---	---	---	---	1 20	---	---	---	---
	4/17/98	NLPH	8 61	13.58	970	3,200	2,600	150	6.9	37	5 7	1.38	---	---	---	---
	5/13/98	---	---	---	---	---	---	---	---	---	---	0.45	---	---	---	---
	6/22/98	---	---	---	---	---	---	---	---	---	---	1.09	---	---	---	---
	7/17/98	NLPH	9.38	12 81	1,300	1,700	1,500	63	< 5 0	<5.0	<5.0	0 86	---	---	---	---
	10/16/98	NLPH	10.41	11 78	1,500	2,000	1,400	22	< 2 0	< 2.0	2.4	---	---	---	---	---
	1/15/99	NLPH	10.01	12.18	900	2,300	2,200	< 5 0	6.0	<5.0	6 5	---	---	---	---	---
	4/23/99	NLPH	7.61	14.58	967	2,140	937	42 3	<1 0	22.3	<1 0	---	---	---	---	---
	7/30/99	NLPH	9.82	12.37	1,620	2,480	1,470/1,360*	100	<10.0	<10 0	<10.0	---	---	---	---	---
	8/12/99	NLPH	10.00	12 19	---	---	---	---	---	---	---	---	0 710	750	6.0	7 2
	9/3/99	NLPH	---	---	---	---	---	---	---	---	---	1 02	---	---	---	---
	10/11/99	**NLPH**	**10.46**	**11.73**	**1,700**	**2,900**	**1,300/1,400***	**<1.0**	**2.5**	**<1.0**	**<1.0**	**---**	**0.200**	**927**	**14.8**	**27.6**
	10/14/99	**NLPH**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**19.71**	**---**	**---**	**---**	**---**
MW3	3/15/91 (H,T)	NR	7.84	11 75	160	3,100	---	2 2	1 9	100	84	---	---	---	---	---
(19.59)	1/15/92 (H,T)	NR	10.30	9 29	< 300	250	---	0.7	6 8	1.5	1 5	---	---	---	---	---
	3/23/92 (H,T)	NR	6.84	12.75	440	640	---	<0 5	12	25	6 5	---	---	---	---	---
	4/6/92	NR	7.84	11 75	---	---	---	---	---	---	---	---	---	---	---	---
	7/8/92 (H,T)	NR	8.63	10.96	960	2,900	---	<0 5	2 6	12	63 7	---	---	---	---	---
	10/13/92 (H)	NR	12.10	7.49	400	1,100	---	5 5	<0 5	4 6	1 1	---	---	---	---	---
	3/9/93	sheen	9.05	10.54	---	---	---	---	---	---	---	---	---	---	---	---
	6/4/93	sheen	8.43	11.16	---	---	---	---	---	---	---	---	---	---	---	---
	9/2/93	NLPH	10.22	9.37	690	840	---	2 7	3.6	5 4	2 9	---	---	---	---	---
	11/16/93	NLPH	11.44	8 15	310	650	---	<0 5	11	7.7	2 4	---	---	---	---	---
	2/4/94	NLPH	9.27	10 32	340	870	---	0.6	14	1.2	0.8	---	---	---	---	---
	4/29/94	NLPH	8.10	11 49	290	790	---	<0 5	<0 5	0.8	1	---	---	---	---	---
	9/20/94	NLPH	10 10	9.49	91**	1,900	---	<0 5	<0.5	11	4 4	---	---	---	---	---
	12/14/94	NLPH	8 00	11 59	190	1,700	---	17	22	<0 5	<0 5	---	---	---	---	---
	3/27/95	NLPH	7 23	12.36	1,100	1,500	---	5 0	3.1	6 3	3.6	---	---	---	---	---

TABLE 1
CUMULATIVE GROUNDWATER MONITORING AND SAMPLING DATA
Former Exxon Service Station 7-0236
6600 East 14th Street
Oakland, California

Well ID # (TOC)	Sampling Date	SUBJ	DTW	Elev.	TEPHd	TPPHg	MTBE	B	T	E	X	DO	Ferrous Iron	Alkalinity	Nitrate	Sulfate
		feet						ug/L						mg/L		
MW3 (cont.)	5/18/95	NLPH	7 73	11.86	470#	1,000	---	<0 5	<0 5	4.1	0 94	---	---	---	---	---
(19 59)	8/8/95	NLPH	8.81	10 78	580	1,600	12	12	<0.5	2 4	0 63	---	---	---	---	---
	11/7/95	NLPH	9 96	9.63	540	1,500	26	<2 5	2.9	<2.5	<2 5	---	---	---	---	---
	2/29/96	NLPH	8 47	11.12	680	1,000	<25	<5 0	<5 0	<5.0	<5 0	---	---	---	---	---
	5/10/96	NLPH	7 93	11.66	560	480	6 8	<1 0	<1.0	<1.0	<1 0	---	---	---	---	---
	8/20/96	NLPH	10.13	9 46	---	---	---	---	---	---	---	---	---	---	---	---
	10/17/96	---	---	---	---	---	---	---	---	---	---	7.65	---	---	---	---
	11/27/96	---	---	---	---	---	---	---	---	---	---	8 76	---	---	---	---
	12/6/96	NLPH	9.21	10 38	450	970	19	<1 0	<1.0	<1 0	1.8	10.14	---	---	---	---
	1/17/97	---	---	---	---	---	---	---	---	---	---	14.02	---	---	---	---
(22.62)	2/25/97	NLPH	8 34	14.28	410	990	47	10	0.85	0.86	1 5	10 69	---	---	---	---
	3/13/97	---	---	---	---	---	---	---	---	---	---	8 68	---	---	---	---
	4/16/97	---	---	---	---	---	---	---	---	---	---	18.73	---	---	---	---
	5/21/97	NLPH	9.99	12.63	270	<50	<2.5	<0 5	<0.5	<0.5	<0 5	6.76	---	---	---	---
	6/5/97	---	---	---	---	---	---	---	---	---	---	6 70	---	---	---	---
	7/11/97	---	---	---	---	---	---	---	---	---	---	4.10	---	---	---	---
	8/6/97	NLPH	10.29	12.33	310	650	<5 0	4.0	<1 0	<1 0	<1 0	10.59	---	---	---	---
	9/23/97	---	---	---	---	---	---	---	---	---	---	8.62	---	---	---	---
	10/7/97	NLPH	10.86	11.76	500	1,600	12	24	10	<2 0	3.5	11.81	---	---	---	---
	12/24/97	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	1/16/98	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	2/20/98	---	---	---	---	---	---	---	---	---	---	11 22	---	---	---	---
	3/26/98	---	---	---	---	---	---	---	---	---	---	10.55	---	---	---	---
	4/17/98	NLPH	7 56	15.06	220	710	21	<0.5	0.76	<0.5	<0 5	9 40	---	---	---	---
	5/13/98	---	---	---	---	---	---	---	---	---	---	0.22	---	---	---	---
	6/22/98	---	---	---	---	---	---	---	---	---	---	0.96	---	---	---	---
	7/17/98	NLPH	8.23	14.39	180	450	8 9	9 5	<1.0	<1 0	<1 0	0.94	---	---	---	---
	10/16/98	NLPH	9.75	12.87	320	520	5 1	<0.5	11	<0 5	0.93	---	---	---	---	---
	1/15/99	NLPH	8.83	13.79	600	190	12	<0 5	0 91	<0 5	0 7	---	---	---	---	---
	4/23/99	NLPH	7.11	15.51	194	406	2.71	<0 5	<0.5	<0 5	<0 5	---	---	---	---	---
	7/30/99	NLPH	8.98	13.64	72.5	193	<2 50	<0.5	<0 5	<0 5	<0 5	---	---	---	---	---
	8/12/99	NLPH	9.40	13.22	---	---	---	---	---	---	---	---	0 0440	330	48 1	47 4
	9/3/99	NLPH	---	---	---	---	---	---	---	---	---	2 56	---	---	---	---
	10/11/99	**NLPH**	**9.91**	**12.71**	**100**	**130**	**<1.0**	**<1.0**	**<1.0**	**<1.0**	**<1.0**	**---**	**0.0490**	**317**	**50.1**	**48.2**
	10/14/99	**NLPH**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**1.41**	**---**	**---**	**---**	**---**
MW4	4/6/92	NR	7.76	11 70	<50	<50	---	<0.5	<0 5	<0.5	<0 5	---	---	---	---	---
(19 46)	7/8/92	NR	9.56	9 90	<50	<50	---	<0.5	<0.5	<0 5	<0.5	---	---	---	---	---
	10/13/92	NR	12.09	7 37	<80	<50	---	<0.5	<0.5	<0 5	<0.5	---	---	---	---	---
	3/9/93	NLPH	7.53	11 93	<50	<50	---	<0.5	<0 5	<0 5	<0.5	---	---	---	---	---
	6/4/93	NLPH	8.50	10.96	<50	<50	---	<0.5	<0.5	<0.5	<0 5	---	---	---	---	---
	9/2/93	NLPH	10.30	9.16	<50	<50	---	<0.5	<0 5	<0 5	<0 5	---	---	---	---	---
	11/16/93*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	2/4/94	NLPH	8.82	10.64	<50	<50	---	<0 5	<0 5	<0.5	<0 5	---	---	---	---	---
	4/29/94 (D)	NLPH	8 55	10.91	100	<50	---	<0 5	<0 5	<0.5	<0 5	---	---	---	---	---
	9/20/94	NLPH	10 21	9.25	<50	<50	---	<0 5	<0 5	<0.5	<0.5	---	---	---	---	---
	12/14/94	NLPH	7.04	12 42	<50	<50	---	<0 5	<0 5	<0.5	<0 5	---	---	---	---	---

TABLE 1
CUMULATIVE GROUNDWATER MONITORING AND SAMPLING DATA
Former Exxon Service Station 7-0236
6600 East 14th Street
Oakland, California

Well ID # (TOC)	Sampling Date	SUBJ feet	DTW	Elev.	TEPHd	TPPHg	MTBE	B	T	E	X	DO	Ferrous Iron	Alkalinity	Nitrate	Sulfate
					<			ug/L				>	<	mg/L		>
MW4 (cont.)	3/27/95	NLPH	6.38	13 08	140	<50	---	<0 5	<0.5	<0 5	<0 5	---	---	---	---	---
(19 46)	5/18/95	NLPH	7 56	11.90	<50	<50	---	<0 5	<0 5	<0.5	<0.5	---	---	---	---	---
	8/8/95	NLPH	8.92	10.54	<50	<50	<2.5	<0 5	<0.5	<0 5	<0 5	---	---	---	---	---
	11/7/95	NLPH	10 30	9.16	<50	<50	<2 5	<0 5	<0 5	<0 5	<0.5	---	---	---	---	---
	2/29/96	NLPH	6.44	13.02	<50	<50	<2 5	<0 5	<0 5	<0 5	<0.5	---	---	---	---	---
	5/10/96	NLPH	8.15	11.31	<50	<50	<2.5	<0 5	0.84	<0.5	2 3	---	---	---	---	---
	8/20/96	NLPH	9.27	10 19	<50	<50	<2.5	<0 5	<0.5	<0.5	<0 5	---	---	---	---	---
	10/17/96	---	---	---	---	---	---	---	---	---	---	1 63	---	---	---	---
	11/27/96	---	---	---	---	---	---	---	---	---	---	1.54	---	---	---	---
	12/6/96	NLPH	7.76	11.70	---	---	---	---	---	---	---	2 33	---	---	---	---
	1/17/97	---	---	---	---	---	---	---	---	---	---	0 91	---	---	---	---
(22.58)	2/25/97	NLPH	7.98	14 60	<50	<50	<2 5	<0 5	0 89	<0 5	1.8	1 03	---	---	---	---
	3/13/97	---	---	---	---	---	---	---	---	---	---	1 06	---	---	---	---
	4/16/97	---	---	---	---	---	---	---	---	---	---	4.03	---	---	---	---
	5/21/97	NLPH	9.03	13.55	---	---	---	---	---	---	---	0 90	---	---	---	---
	6/5/97	---	---	---	---	---	---	---	---	---	---	1.46	---	---	---	---
	7/11/97	---	---	---	---	---	---	---	---	---	---	1 31	---	---	---	---
	8/6/97	NLPH	9.74	12.84	<50	<50	<2.5	<0.5	<0.5	<0.5	<0 5	1 46	---	---	---	---
	9/23/97	---	---	---	---	---	---	---	---	---	---	1 50	---	---	---	---
	10/7/97	NLPH	10 06	12.52	---	---	---	---	---	---	---	1 65	---	---	---	---
	12/24/97	---	---	---	---	---	---	---	---	---	---	1 96	---	---	---	---
	1/16/98	NLPH	5.01	17.57	<50	<50	<2 5	<0 5	<0.5	<0 5	<0 5	1 68	---	---	---	---
	2/20/98	---	---	---	---	---	---	---	---	---	---	3 33	---	---	---	---
	3/26/98	---	---	---	---	---	---	---	---	---	---	1.65	---	---	---	---
	4/17/98	NLPH	7.21	15.37	---	---	---	---	---	---	---	3.10	---	---	---	---
	5/13/98	---	---	---	---	---	---	---	---	---	---	0 40	---	---	---	---
	6/22/98	---	---	---	---	---	---	---	---	---	---	1.20	---	---	---	---
	7/17/98	NLPH	8.46	14 12	<50	<50	<2.5	<0 5	<0 5	<0.5	<0.5	1 84	---	---	---	---
	10/16/98	NLPH	9.84	12 74	---	---	---	---	---	---	---	---	---	---	---	---
	1/15/99	NLPH	11.33	11 25	<50	<50	<2.5	<0 5	<0 5	<0 5	<0 5	---	---	---	---	---
	4/23/99	NLPH	7.63	14 95	---	---	---	---	---	---	---	---	---	---	---	---
	7/30/99	NLPH	9.17	13.41	<50	<50	<2.5	<0 5	<0.5	<0 5	<0 5	---	---	---	---	---
	9/3/99	NLPH	---	---	---	---	---	---	---	---	---	2.94	---	---	---	---
	10/11/99	**NLPH**	**9.98**	**12.60**	---	---	---	---	---	---	---	---	---	---	---	---
	10/14/99	**NLPH**	---	---	---	---	---	---	---	---	---	**1.36**	---	---	---	---
MW5	4/6/92	NR	10.66	6.29	<50	<50	---	<0 5	<0.5	<0 5	<0 5	---	---	---	---	---
(16 95)	7/8/92 *	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10/13/92	NR	15.02	1 93	<50	69	---	<0 5	<0.5	<0 5	<0.5	---	---	---	---	---
	3/9/93	NLPH	10.27	6.68	<50	<50	---	<0.5	<0 5	<0.5	<0 5	---	---	---	---	---
	6/4/93	NLPH	11.35	5.60	<50	<50	---	<0.5	<0 5	<0.5	<0 5	---	---	---	---	---
	9/2/93	NLPH	13.15	3.80	<50	<50	---	<0 5	<0.5	<0 5	<0 5	---	---	---	---	---
	11/16/93	NLPH	14.35	2.60	<50	<50	---	<0.5	<0 5	<0.5	<0 5	---	---	---	---	---
	2/4/94	NLPH	11 83	5.12	60	<50	---	<0.5	<0.5	<0 5	<0 5	---	---	---	---	---
	4/29/94	NLPH	11.15	5 80	<50	<50	---	<0 5	<0.5	<0 5	<0 5	---	---	---	---	---
	9/20/94	NLPH	12.79	4 16	<50	<50	---	<0 5	<0.5	<0 5	<0.5	---	---	---	---	---
	12/14/94	NLPH	9 95	7 00	<50	<50	---	<0.5	<0.5	<0.5	<0 5	---	---	---	---	---

TABLE 1
CUMULATIVE GROUNDWATER MONITORING AND SAMPLING DATA
Former Exxon Service Station 7-0236
6600 East 14th Street
Oakland, California

Well ID # (TOC)	Sampling Date	SUBJ	DTW	Elev	TEPHd	TPPHg	MTBE	B	T	E	X	DO	Ferrous Iron	Alkalinity	Nitrate	Sulfate
		feet						ug/L						mg/L		
MW5 (cont.)	3/27/95	NLPH	9.09	7.86	<50	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---	---	---
(16.95)	5/18/95	NLPH	10.29	6.66	<50	<50	---	<0.5	4.6	0.65	2.8	---	---	---	---	---
	8/8/95	NLPH	11.13	5.82	51	<50	<2.5	<0.5	<0.5	<0.5	<0.5	---	---	---	---	---
	11/7/95	NLPH	12.12	4.83	<50	<50	<2.5	<0.5	<0.5	<0.5	<0.5	---	---	---	---	---
	Additional Analyses for general minerals and properties <**											---	---	---	---	---
	2/29/96	NLPH	9.24	7.71	60	<50	<2.5	<0.5	<0.5	<0.5	<0.5	---	---	---	---	---
	5/10/96	NLPH	10.71	6.24	<50	<50	<2.5	<0.5	<0.5	<0.5	1.6	---	---	---	---	---
	8/20/96	NLPH	11.45	5.50	---	---	---	---	---	---	---	---	---	---	---	---
	10/17/96	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	11/27/96	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	12/6/96	NLPH	10.70	6.25	90	62	<2.5	1.2	6.5	1.7	11	---	---	---	---	---
	1/17/97	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	2/25/97	NLPH	10.49	6.46	90	<50	<2.5	1.4	2.4	0.95	7.4	---	---	---	---	---
(19.98)	3/13/97	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	4/16/97	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	5/21/97	NLPH	11.31	8.67	<50	<50	<2.5	<0.5	<0.5	<0.5	<0.5	---	---	---	---	---
	6/5/97	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	7/11/97	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	8/6/97	NLPH	11.78	8.20	<50	<50	<2.5	<0.5	<0.5	<0.5	<0.5	---	---	---	---	---
	9/23/97	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	10/7/97	NLPH	12.26	7.72	<50	<50	<2.5	<0.5	<0.5	<0.5	<0.5	---	---	---	---	---
	12/24/97	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	1/16/98	NLPH	8.87	11.11	<50	<50	<2.5	<0.5	<0.5	<0.5	0.64	---	---	---	---	---
	2/20/98	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	3/26/98	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	4/17/98	NLPH	9.97	10.01	<50	<50	<2.5	0.9	2.2	0.81	3.6	---	---	---	---	---
	5/13/98	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	6/22/98	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	7/17/98	NLPH	11.00	8.98	<50	<50	<2.5	<0.5	<0.5	<0.5	<0.5	---	---	---	---	---
	10/16/98	NLPH	11.92	8.06	51	<50	<2.5	<0.5	<0.5	<0.5	<0.5	---	---	---	---	---
	1/15/99	NLPH	9.01	10.97	<50	<50	<2.5	<0.5	<0.5	<0.5	<0.5	---	---	---	---	---
	4/23/99	NLPH	6.31	13.67	<50	<50	<2.0	<0.5	<0.5	<0.5	<0.5	---	---	---	---	---
	7/30/99	NLPH	11.16	8.82	<50	<50	<2.5	<0.5	<0.5	<0.5	<0.5	---	---	---	---	---
	8/12/99	NLPH	11.48	8.50	---	---	---	---	---	---	---	---	0.110	510	<1.0	17.7
	9/3/99	NLPH	---	---	---	---	---	---	---	---	---	2.11	---	---	---	---
	10/11/99	**NLPH**	**12.01**	**7.97**	**<50**	**<50**	**<1.0**	**<1.0**	**<1.0**	**<1.0**	**<1.0**	**---**	**4.00**	**457**	**5.39**	**27.2**
	10/14/99	**NLPH**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**1.58**	**---**	**---**	**---**	**---**
MW6	4/6/92 (H)	NR	8.29	10.50	<50	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---	---	---
(18.79)	7/8/92 (H,T)	NR	9.22	9.57	<50	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---	---	---
	10/13/92	NR	11.51	7.28	<50	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---	---	---
	3/9/93	NLPH	8.26	10.53	<50	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---	---	---
	6/4/93	NLPH	8.90	9.89	<50	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---	---	---
	9/2/93	NLPH	9.92	8.87	60	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---	---	---
	11/16/93	NLPH	10.65	8.14	<50	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---	---	---
	2/4/94	NLPH	9.26	9.53	80	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---	---	---
	4/29/94	NLPH	8.33	10.46	110	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---	---	---

TABLE 1
CUMULATIVE GROUNDWATER MONITORING AND SAMPLING DATA
Former Exxon Service Station 7-0236
6600 East 14th Street
Oakland, California

Well ID #	Sampling	SUBJ	DTW	Elev	TEPHd	TPPHg	MTBE	B	T	E	X	DO	Ferrous Iron	Alkalinity	Nitrate	Sulfate
(TOC)	Date	feet			<			ug/L			> <			mg/L		>
MW6 (cont.)	9/20/94	NLPH	9 23	9.56	<50	<50	---	<0 5	<0 5	<0.5	<0 5	---	---	---	---	---
(18 79)	12/14/94	sheen	7.87	10.92	---	---	---	---	---	---	---	---	---	---	---	---
	3/27/95	NLPH	7.63	11.16	54	56	---	<0 5	<0 5	<0.5	<0 5	---	---	---	---	---
	5/18/95	NLPH	8.00	10.79	71	56	---	<0 5	<0.5	<0.5	<0 5	---	---	---	---	---
	8/8/95	NLPH	8 92	9.87	60	<50	<2 5	<0 5	<0.5	<0.5	<0.5	---	---	---	---	---
	11/7/95	NLPH	9 77	9.02	<50	<50	4 7	<0 5	<0 5	<0.5	<0.5	---	---	---	---	---
	2/29/96	NLPH	7.67	11.12	64	<50	<2 5	<0 5	<0 5	<0.5	<0.5	---	---	---	---	---
	5/10/96	NLPH	8.33	10.46	110	<50	5 4	<0 5	<0.5	<0 5	<0.5	---	---	---	---	---
	8/20/96	NLPH	9 16	9.63	---	---	---	---	---	---	---	---	---	---	---	---
	10/17/96	---	---	---	---	---	---	---	---	---	---	10 58	---	---	---	---
	11/27/96	---	---	---	---	---	---	---	---	---	---	14 17	---	---	---	---
	12/6/96	NLPH	8 55	10.24	68	<50	3.9	<0 5	<0.5	<0 5	<0 5	10 33	---	---	---	---
	1/17/97	---	---	---	---	---	---	---	---	---	---	11 71	---	---	---	---
(21.84)	2/25/97	NLPH	8.42	13.42	67	<50	6 8	<0.5	<0.5	<0.5	<0.5	10.94	---	---	---	---
	3/13/97	---	---	---	---	---	---	---	---	---	---	8.88	---	---	---	---
	4/16/97	---	---	---	---	---	---	---	---	---	---	15.20	---	---	---	---
	5/21/97	NLPH	9 16	12.68	82	<50	3 4	<0 5	<0 5	<0 5	<0 5	12.38	---	---	---	---
	6/5/97	---	---	---	---	---	---	---	---	---	---	10 99	---	---	---	---
	7/11/97	---	---	---	---	---	---	---	---	---	---	10 13	---	---	---	---
	8/6/97	NLPH	9.82	12.02	<50	<50	<2 5	<0 5	<0 5	<0 5	<0 5	9.05	---	---	---	---
	9/23/97	---	---	---	---	---	---	---	---	---	---	6.22	---	---	---	---
	10/7/97	NLPH	9.85	11.99	89	<50	4 1	<0 5	<0 5	<0 5	<0.5	9 68	---	---	---	---
	12/24/97	---	---	---	---	---	---	---	---	---	---	2 78	---	---	---	---
	1/16/98	NLPH	5.50	16.34	93	<50	<2 5	<0 5	<0 5	<0 5	<0 5	2.73	---	---	---	---
	2/20/98	---	---	---	---	---	---	---	---	---	---	3 55	---	---	---	---
	3/26/98	---	---	---	---	---	---	---	---	---	---	3 90	---	---	---	---
	4/17/98	NLPH	8 12	13.72	59	<50	<2.5	<0 5	<0.5	<0.5	<0.5	5.08	---	---	---	---
	5/13/98	---	---	---	---	---	---	---	---	---	---	6.90	---	---	---	---
	6/22/98	---	---	---	---	---	---	---	---	---	---	8.96	---	---	---	---
	7/17/98	NLPH	8.81	13 03	63	<50	3 3	<0 5	<0.5	<0 5	<0.5	10 69	---	---	---	---
	10/16/98	NLPH	9.84	12.00	60	<50	<2 5	<0 5	<0 5	<0 5	<0 5	---	---	---	---	---
	1/15/99	NLPH	9.55	12.29	<50	<50	3 7	<0 5	<0.5	<0 5	<0.5	---	---	---	---	---
	4/23/99	NLPH	8.72	13.12	106	<50	14.4	<0 5	<0.5	<0 5	<0.5	---	---	---	---	---
	7/30/99	NLPH	9.32	12.52	<50	<50	<2.50/2.50*	<0 5	<0.5	<0.5	<0 5	---	---	---	---	---
	9/3/99	NLPH	---	---	---	---	---	---	---	---	---	6.20	---	---	---	---
	10/11/99	**NLPH**	**9.54**	**12.30**	**<50**	**<50**	**3.4/5***	**<1.0**	**<1.0**	**<1.0**	**<1.0**	---	---	---	---	---
	10/14/99	**NLPH**	---	---	---	---	---	---	---	---	---	**9.09**	---	---	---	---
MW7	4/6/92	NR	8 34	10.89	<50	<50	---	<0 5	<0 5	<0 5	<0 5	---	---	---	---	---
(19.23)	7/8/92 *	NR	10.30	8.93	<50	<50	---	<0.5	<0 5	<0.5	<0 5	---	---	---	---	---
	10/13/92	NR	12.91	6 32	94	670	---	0 8	<0 5	<0.5	2.5	---	---	---	---	---
	3/9/93	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	6/4/93	NLPH	8 68	10.55	<50	<50	---	<0 5	<0 5	<0 5	<0.5	---	---	---	---	---
	9/2/93	NLPH	10.80	8.43	<50	<50	---	<0 5	<0 5	<0.5	<0 5	---	---	---	---	---
	11/16/93	NLPH	12.38	6.85	<50	<50	---	<0 5	<0.5	<0 5	<0.5	---	---	---	---	---
	2/4/94	NLPH	9.28	9.95	<50	<50	---	<0.5	<0.5	<0 5	<0 5	---	---	---	---	---
	4/29/94	NLPH	9.19	10.04	<50	<50	---	<0 5	<0.5	<0.5	<0.5	---	---	---	---	---

TABLE 1
CUMULATIVE GROUNDWATER MONITORING AND SAMPLING DATA
Former Exxon Service Station 7-0236
6600 East 14th Street
Oakland, California

Well ID # (TOC)	Sampling Date	SUBJ feet	DTW	Elev	TEPHd	TPPHg	MTBE	B	T	E	X	DO	Ferrous Iron	Alkalinity	Nitrate	Sulfate
								ug/L				mg/L				
MW7 (cont)	9/20/94	NLPH	10 85	8.38	<50	<50	---	<0 5	<0 5	<0.5	<0 5	---	---	---	---	---
(19.23)	12/14/94	NLPH	8.44	10 79	<50	<50	---	<0.5	<0 5	<0 5	<0 5	---	---	---	---	---
	3/27/95	NLPH	7.54	11.69	280	<50	---	<0.5	<0 5	<0 5	<0 5	---	---	---	---	---
	5/18/95	NLPH	8 11	11.12	<50	<50	---	<0.5	<0.5	<0.5	<0.5	---	---	---	---	---
	8/8/95	NLPH	9.48	9 75	52	<50	<2.5	<0.5	<0 5	<0.5	<0 5	---	---	---	---	---
	11/7/95	NLPH	10.83	8.40	<50	<50	<2 5	<0 5	<0.5	<0.5	<0 5	---	---	---	---	---
	2/29/96	NLPH	7.70	11 53	<50	<50	<2 5	<0.5	<0 5	<0.5	<0 5	---	---	---	---	---
	5/10/96	NLPH	8.76	10 47	<50	<50	<2 5	<0.5	<0.5	<0.5	2.1	---	---	---	---	---
	8/20/96	NLPH	9.91	9 32	<50	<50	<2.5	<0.5	<0 5	<0.5	<0 5	---	---	---	---	---
	10/17/96	---	---	---	---	---	---	---	---	---	---	1.48	---	---	---	---
	11/27/96	---	---	---	---	---	---	---	---	---	---	2 71	---	---	---	---
	12/6/96	NLPH	8.90	10.33	---	---	---	---	---	---	---	8.90	---	---	---	---
	1/19/97	abandoned														
MW8	1/17/97	---	---	---	---	---	---	---	---	---	---	1.39	---	---	---	---
(22.60)	2/25/97	NLPH	7.93	14.67	<50	69	30	<0 5	<0.5	<0 5	<0 5	1.82	---	---	---	---
	3/13/97	---	---	---	---	---	---	---	---	---	---	1 58	---	---	---	---
	4/16/97	---	---	---	---	---	---	---	---	---	---	0.81	---	---	---	---
	5/21/97	NLPH	9 04	13 56	<50	<50	3 5	<0 5	<0 5	<0 5	<0 5	0 74	---	---	---	---
	6/5/97	---	---	---	---	---	---	---	---	---	---	0.55	---	---	---	---
	7/11/97	---	---	---	---	---	---	---	---	---	---	0 85	---	---	---	---
	8/6/97	NLPH	9.90	12.70	<50	<50	<2 5	<0 5	<0 5	<0 5	<0.5	0.77	---	---	---	---
	9/23/97	---	---	---	---	---	---	---	---	---	---	0 75	---	---	---	---
	10/7/97	NLPH	10.23	12.37	<50	100	4 9	1 1	<0 5	<0.5	<0 5	0.82	---	---	---	---
	12/24/97	---	---	---	---	---	---	---	---	---	---	0 86	---	---	---	---
	1/16/98	NLPH	4.39	18.21	81	180	9 6	2.8	<0 5	<0 5	0 92	0 94	---	---	---	---
	2/20/98	---	---	---	---	---	---	---	---	---	---	0.61	---	---	---	---
	3/26/98	---	---	---	---	---	---	---	---	---	---	0.53	---	---	---	---
	4/17/98	NLPH	---	---	74	370	27	<0 5	0.94	<0.5	0 79	2.65	---	---	---	---
	5/13/98	---	---	---	---	---	---	---	---	---	---	0.25	---	---	---	---
	6/22/98	---	---	---	---	---	---	---	---	---	---	1 38	---	---	---	---
	7/17/98	NLPH	8 02	14.58	<50	<50	3.3	<0 5	<0 5	<0 5	<0 5	2 09	---	---	---	---
	10/16/98	NLPH	9.78	12.82	<50	<50	<2 5	<0 5	<0.5	<0.5	<0.5	---	---	---	---	---
	1/15/99	NLPH	8.40	14.20	<50	<50	<2.5	<0.5	0 97	<0.5	<0 5	---	---	---	---	---
	4/23/99	NLPH	7.35	15.25	70.1	111	3.45	<0.5	<0 5	<0.5	<0 5	---	---	---	---	---
	7/30/99	NLPH	8.86	13.74	<50	89.4	<2.5	<0.5	2 7	<0 5	<0.5	---	---	---	---	---
	9/3/99	NLPH	---	---	---	---	---	---	---	---	---	2.45	---	---	---	---
	10/11/99	NLPH	10.04	12.56	<50	<50	<1.0	<1.0	<1.0	<1.0	<1.0	---	---	---	---	---
	10/14/99	NLPH	---	---	---	---	---	---	---	---	---	0.69	---	---	---	---

TABLE 1
CUMULATIVE GROUNDWATER MONITORING AND SAMPLING DATA
Former Exxon Service Station 7-0236
6600 East 14th Street
Oakland, California

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)].
TEPHd	=	Total extractable petroleum hydrocarbons as diesel analyzed using EPA method 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
*	=	Methyl tertiary butyl ether analyzed using EPA method 8260.
BTEX	=	Benzene, toluene, ethylbenzene, and total xylenes analyzed using EPA method 5030/8020.
Nitrate	=	Nitrate as NO_3 analyzed using EPA Method 300.
Sulfate	=	Sulfate as SO_4 analyzed using EPA Method 300.
Ferrous Iron	=	Ferrous Iron analyzed using EPA Method 6000/7000.
Alkalinity	=	Total alkalinity analyzed using APHA/EPA methods.
---	=	Not measured/not analyzed.
<	=	Less than the indicated detection limit shown by the laboratory.
DO	=	Dissolved Oxygen
**	=	Lighter hydrocarbons contribute to diesel range quantitation.
***	=	Results obtained past technical holding time (10/08/94) due to dilution requirements
C	=	High boiling point hydrocarbons are present in sample.
D	=	Sample pattern does not match diesel standard pattern.
H	=	EPA Method 8010 compounds not detected at or above their respective laboratory detection limits Exceptions: MW2, 03/15/91, Methylene Chloride detected at 1 ppb. MW3, 03/15/91, Methylene Chloride detected at 21 ppb
M*	=	A compound suspected to be methyl tertiary butyl ether was present
T	=	Total Oil and Grease (TOG) using Standard Method 5520 not detected at or above the laboratory detection limit of 5,000 ppb
<*	=	Less than stated laboratory detection limits except 490 ppm bicarbonate, 37 ppm calcium, 31 ppm chloride, 390 ppm hardness, 790 ppb iron, 60 ppm magnesium, 4,700 ppb manganese, 1.1 ppm sodium, 61 ppm sulfate, 540 ppm TDS, 730 umhos/cm conductivity, pH=6.9,
<**	=	Less than the stated laboratory detection limits except 200 ppm bicarbonate, 23 ppm calcium, 21 ppm chloride, 78 ppb copper, 190 ppm hardness, 49,000 ppb iron, 44 ppm magnesium, 4,200 ppb manganese, 3.9 ppm potassium, 52 ppm sodium, 60 ppm sulfate, 390 ppm TDS.
ug/L	=	micrograms per liter.
ppm	=	parts per million
mg/L	=	Milligrams per liter

TABLE 2
CUMULATIVE SOIL BORING SAMPLE RESULTS
Former Exxon Service Station 7-0236
6600 East 14th Street
Oakland, California

Date Collected	Sample ID	Boring/ Designation	Depth	TEPHd	TPPHg	B	T	E	X	MTBE
						mg/Kg				
March 1991		MW1	6	---	<1.0	<0.003	<0.003	<0.003	<0.003	---
		MW1	11	---	<1.0	<0.003	<0.003	<0.003	<0.003	---
		MW1	16	---	<1.0	<0.003	<0.003	<0.003	<0.003	---
March 1991		MW2	6	---	2.0	0.01	0.018	<0.003	0.025	---
		MW2	11	---	98.0	0.07	0.12	0.24	0.19	---
		MW2	16	---	<1.0	0.05	0.003	0.018	0.009	---
March 1991		MW3	6	---	<1.0	0.009	<0.003	<0.003	0.1	---
		MW3	11	---	<1.0	<0.003	<0.003	<0.003	0.018	---
		MW3	16	---	<1.0	<0.003	<0.003	<0.003	0.004	---
March 1992		MW4	5	<5.0	<1.0	<0.005	<0.005	<0.005	<0.005	---
		MW4	15	<5.0	<1.0	<0.005	<0.005	<0.005	<0.005	---
March 1992		MW5	5	<5.0	<1.0	<0.005	<0.005	<0.005	<0.005	---
		MW5	15	<5.0	<1.0	<0.005	<0.005	<0.005	<0.005	---
March 1992		MW6	5	<5.0	<1.0	<0.005	<0.005	<0.005	<0.005	---
		MW6	15	<5.0	<1.0	<0.005	<0.005	<0.005	<0.005	---
March 1992		MW7	5	<5.0	<1.0	<0.005	<0.005	<0.005	<0.005	---
		MW7	15	23	18	<0.005	<0.005	<0.005	<0.005	---
11/29/93	S6.2B-1	B-1	6.2	<5.0	<1.0	<0.005	<0.005	<0.005	<0.005	---
	S11.5B-1	B-1	11.5	<5.0	<1.0	<0.005	<0.005	<0.005	<0.005	---
11/23/93	S8.0B-2	B-2	8	<5.0	<1.0	<0.005	<0.005	<0.005	<0.005	---
	S11.0B-2	B-2	11	<5.0	4.6	<0.005	<0.005	<0.005	<0.005	---

TABLE 2
CUMULATIVE SOIL BORING SAMPLE RESULTS
Former Exxon Service Station 7-0236
6600 East 14th Street
Oakland, California

Date Collected	Sample ID	Boring/ Designation	Depth	TEPHd	TPPHg	B	T	E	X	MTBE
			mg/Kg							
11/29/93	S8.0VE-1	VE-1	8	8.5	4.8	0.024	0.014	0.057	0.023	---
	S11.3VE-1	VE-1	11.3	47	200	<0.005	<0.005	<0.005	2.5	---
11/23/93	S6.0VE-2	VE-2	6	7.2	<1.0	<0.005	<0.005	<0 005	<0.005	---
	S11.2VE-2	VE-2	11.2	<5.0	<1.0	<0.005	<0.005	<0.005	<0.005	---
11/23/93	S6.0VE-3	VE-3	6	<5.0	<1 0	<0.005	<0.005	<0.005	<0.005	---
	S11.3VE-3	VE-3	11.3	150	1.7	<0.005	<0.005	<0.005	<0.005	---
1/10/97	S-10-MW8	MW8	10	14	22	0.26	0.13	0.067	0.19	<0.025
1/26/98	S-6-B1	B1	6	<1.0	<1.0	<0.005	<0.005	<0.005	<0.005	---
1/26/98	S-6-B2	B2	6	1.0	<1.0	<0.005	<0.005	<0.005	<0.005	---

Notes:

SP1-(1-4)	=	Soil sample - depth - boring number.
TPPHg	=	Total purgeable petroleum hydrocarbons as gasoline analyzed using EPA method 8015 (modified).
TEPHd	=	Total extractable petroleum hydrocarbons as diesel analyzed using EPA method 8015 (modified).
BTEX	=	Benzene, toluene, ethylbenzene, and total xylenes analyzed using EPA method 8020.
MTBE	=	Methyl tertiary butyl ether analyzed using EPA method 8020.
<1	=	Not detected at or above the stated laboratory method detection limits.
mg/Kg	=	Milligrams per kilogram.
---	=	Not analyzed.

TABLE 3
GROUNDWATER SAMPLE RESULTS
Former Exxon Service Station 7-0236
6600 East 14th Street
Oakland, California

Sample	Sampling Date	DTW	TEPHd	TPPHg	MTBE	B	T	E	X	DO
			<			ug/L				<..mg/l..>
W-11-SB1	10/13/99	11	---	18,000	1,900	46	<25	1,200	32	---
W-13-SB2	10/13/99	13	---	<50	<5	<1	<1	<1	<1	---
W-16-SB3	10/13/99	16	---	<50	<5	<1	<1	<1	<1	---
W-21-MW2	10/13/99	21	590	1,800	1,300	8.6	<5	<5	<5	8.71

Notes:

W-11-SB1	=	Water sample collected from soil boring one at 11 feet below grade surface.
DTW	=	Depth to water.
TEPHd	=	Total extractable petroleum hydrocarbons as diesel analyzed using EPA method 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 8260.
BTEX	=	Benzene, toluene, ethylbenzene, and total xylenes analyzed using EPA method 8021.
DO	=	Dissolved oxygen reading collected after well purging using a YSI model 55 meter.
---	=	Not measured/not analyzed.
<	=	Less than the indicated detection limit shown by the laboratory.
ug/L	=	Micrograms per liter.
mg/L	=	Millgrams per liter

TABLE 4
SOIL STOCKPILE SAMPLE RESULTS
Former Exxon Service Station 7-0236
6600 East 14th Street
Oakland, Ca

Date Collected	Sample ID	TEPHd	TPPHg	B	T	E	X	Total Lead	VOC's
		<.....mg/Kg..... ... .>							
10/13/99	SP1 (1-4)	2.10	<1	<0.001	<0.001	0.0011	<0.001	4.12	<0.005*

Notes:

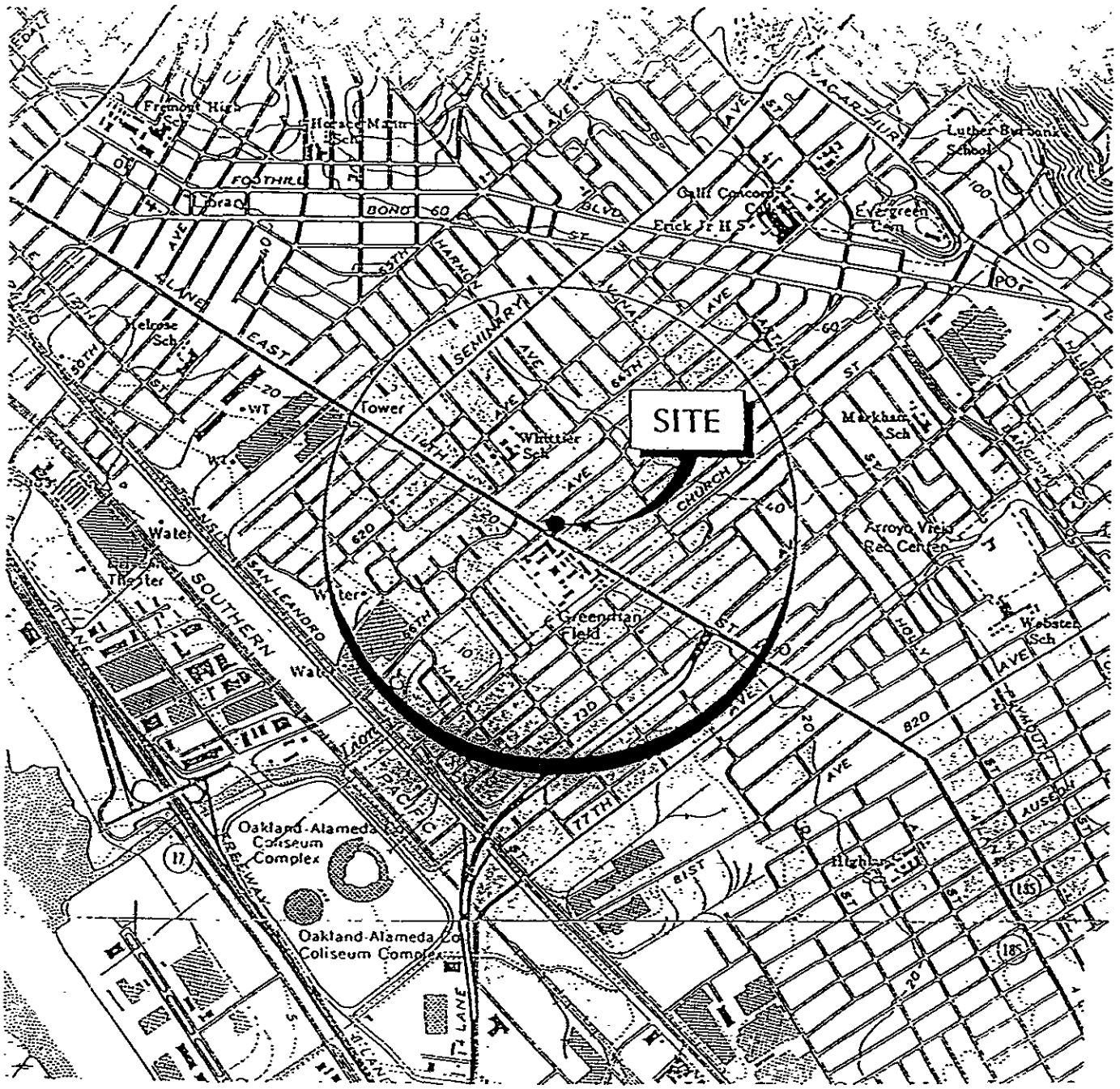
SP1-(1-4)	=	Soil sample - depth - boring number.
TPPHg	=	Total purgeable petroleum hydrocarbons as gasoline analyzed using EPA method 8015 (modified).
TEPHd	=	Total extractable petroleum hydrocarbons as diesel analyzed using EPA method 8015 (modified).
BTEX	=	Benzene, toluene, ethylbenzene, and total xylenes analyzed using EPA method 8020.
Total Lead	=	Total lead analyzed using EPA method 6010B
VOC's	=	Volatile organic compounds analyzed using EPA method 8021
<1	=	Not detected at or above the stated laboratory method detection limits.
mg/Kg	=	Milligrams per kilogram.
---	=	Not analyzed.
*	=	Volatile organic compounds were not detected in the sample.

TABLE 5
BIOREMEDIATION PARAMETER RESULTS
Third Quarter 1999
Former Exxon Service Station 7-0236
6600 East 14th Street
Oakland, California
(Page 1 of 1)

Well ID #	Sampling Date	DO	Ferrous Iron	Alkalinity	Nitrate	Sulfate
	Date	<.....mg/l.....>				
MW2	8/12 and 9/3/99	1.02	0.710	750	6.0	7.2
MW3	8/12 and 9/3/99	2.56	0.0440	330	48.1	47.4
MW5	8/12 and 9/3/99	2.11	0.110	510	<1.0	17.7

Notes:

DO	=	Dissolved Oxygen.
Nitrate	=	Nitrate as NO_3 analyzed using EPA Method 300.
Sulfate	=	Sulfate as SO_4 analyzed using EPA Method 300.
Ferrous Iron	=	Ferrous Iron analyzed using EPA Method 6000/7000.
Alkalinity	=	*Total alkalinity analyzed using APHA/EPA methods.*
---	=	Not measured/not analyzed.
<	=	Less than the indicated detection limit shown by the laboratory.
mg/L	=	Millgrams per liter



20090001

N

APPROXIMATE SCALE

0 1/2 1

MILE

Source: U.S.G.S. 7.5 minute topographic quadrangle map Oakland East and San Leandro, Calif. 1980

ERI ENVIRONMENTAL RESOLUTIONS, INC.

PROJECT ERI 2009

SITE VICINITY MAP

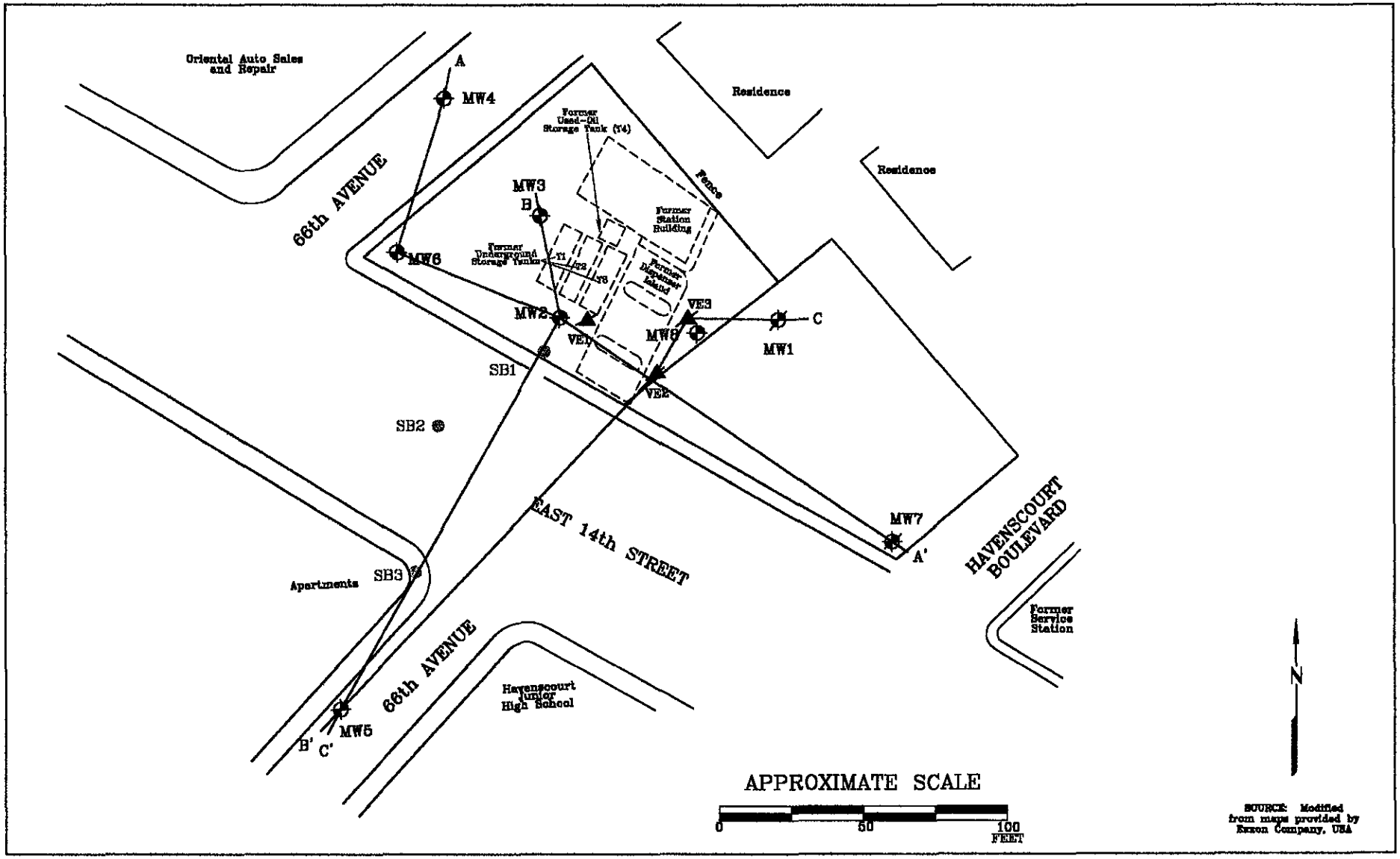
FORMER EXXON SERVICE STATION 7-0236

6600 East 14th Street

Oakland, California

PLATE

1



FN 2009003A

ERI ENVIRONMENTAL RESOLUTIONS, INC.

GENERALIZED SITE PLAN

FORMER
EXXON SERVICE STATION 7-0236
6600 East 14th Street
Oakland, California

EXPLANATION

MW8 Groundwater Monitoring Well

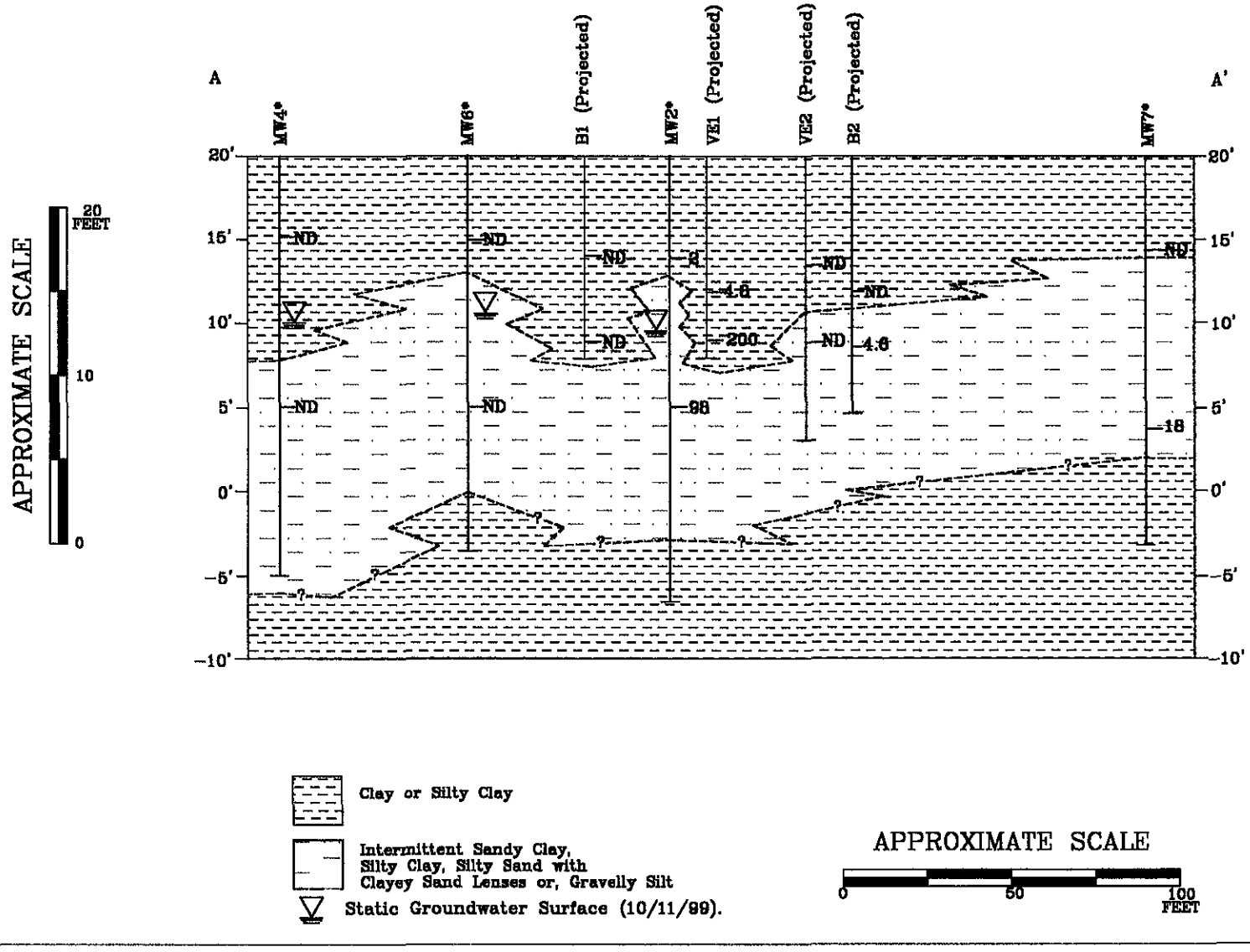
MW7 Groundwater Monitoring Well (Destroyed)

Soil Boring

VE3 Vapor Extraction Well (Destroyed)

PROJECT NO. 2009

PLATE 2



FN 2009XSAA

ERI ENVIRONMENTAL RESOURCES, INC.

CROSS SECTION A - A'

FORMER
EXXON SERVICE STATION 7-0236
6600 East 14th Street
Oakland, California

EXPLANATION

* Boring logs not available; data acquired from Alton Geoscience cross section (5/92)

200 Concentration of total purgeable petroleum hydrocarbons as gasoline in parts per million (ppm).

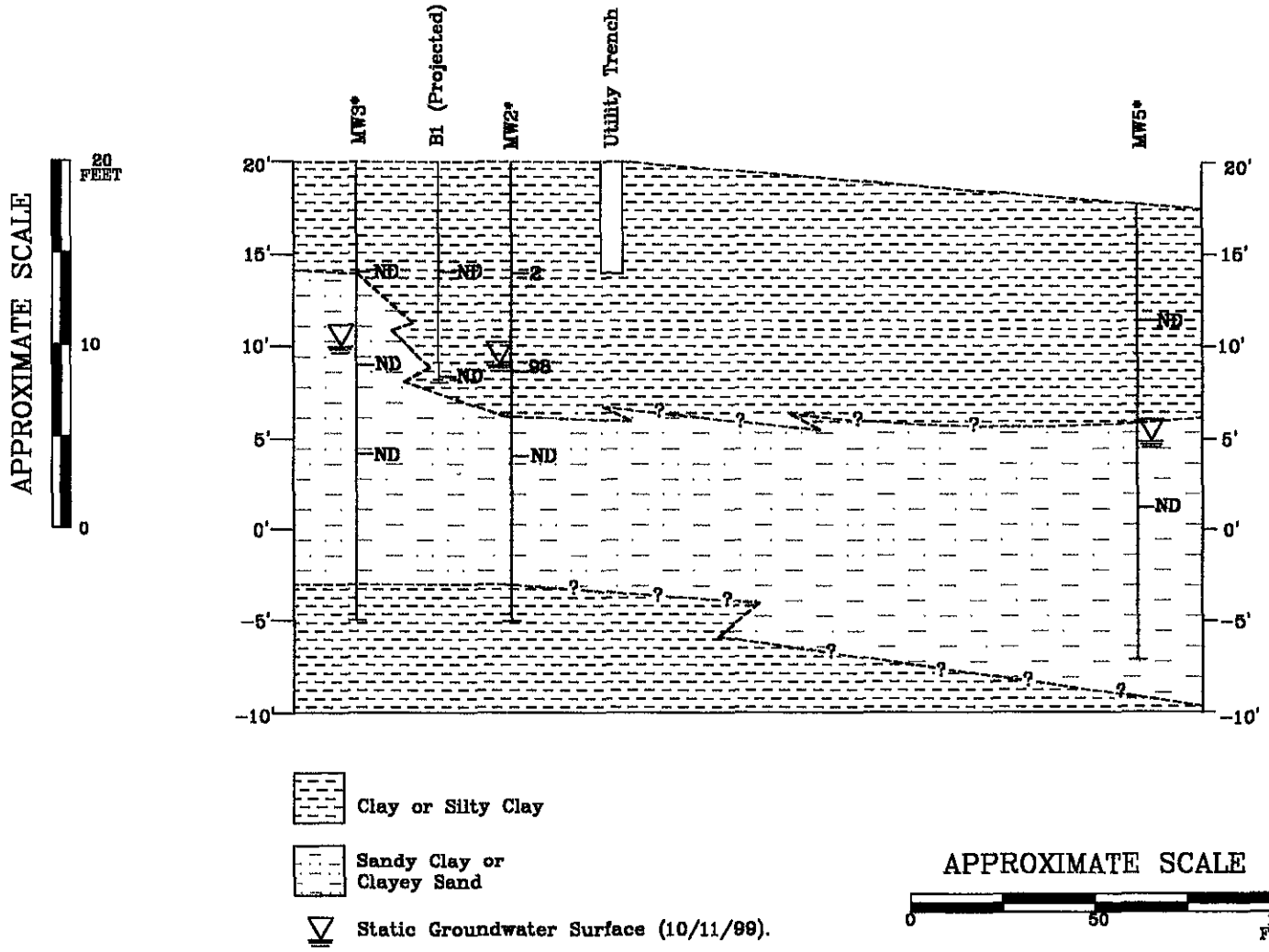
ND Not Detected

MW4 Monitoring Well
B2 Soil Boring
VE1 Vapor Extraction Well

PROJECT NO.
2009

PLATE
3

DATE: 12/15/99



FN 2009XSBB

ERI ENVIRONMENTAL RESOLUTIONS, INC.

CROSS-SECTION B - B'

FORMER
EXXON SERVICE STATION 7-0236
6600 East 14th Street
Oakland, California

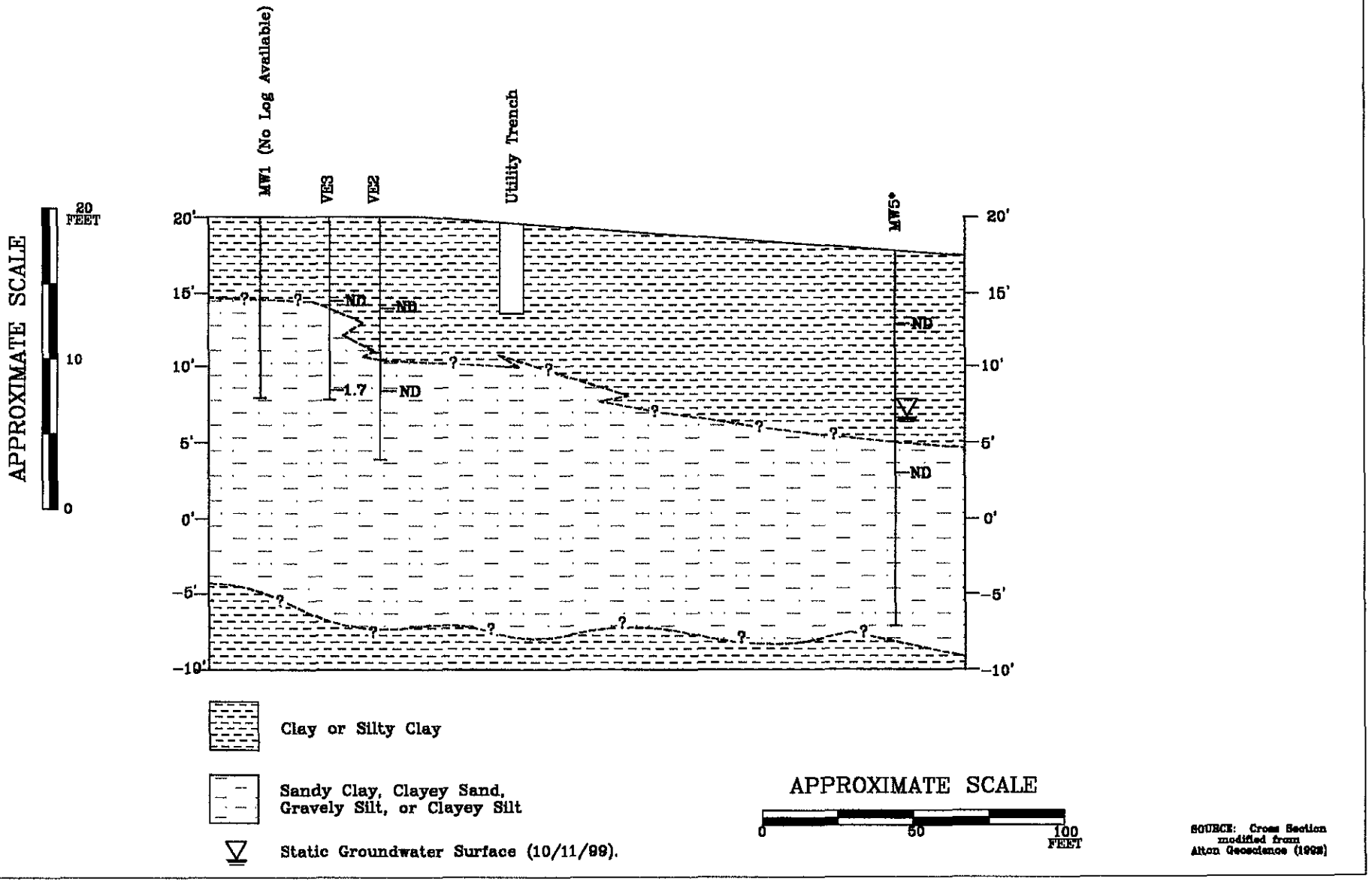
EXPLANATION

* Boring logs not available; data acquired from Alton Geoscience cross section (1992)
98 Concentration of total purgeable petroleum hydrocarbons as gasoline in parts per million (ppm).
ND Not Detected
MW6 Monitoring Well
B1 Soil Boring

PROJECT NO. 2009

PLATE 4

DATE: 12/15/95



FN 2009XSCC

ENVIRONMENTAL RESOLUTIONS, INC.

CROSS-SECTION C - C'

FORMER
EXXON SERVICE STATION 7-0236
6600 East 14th Street
Oakland, California

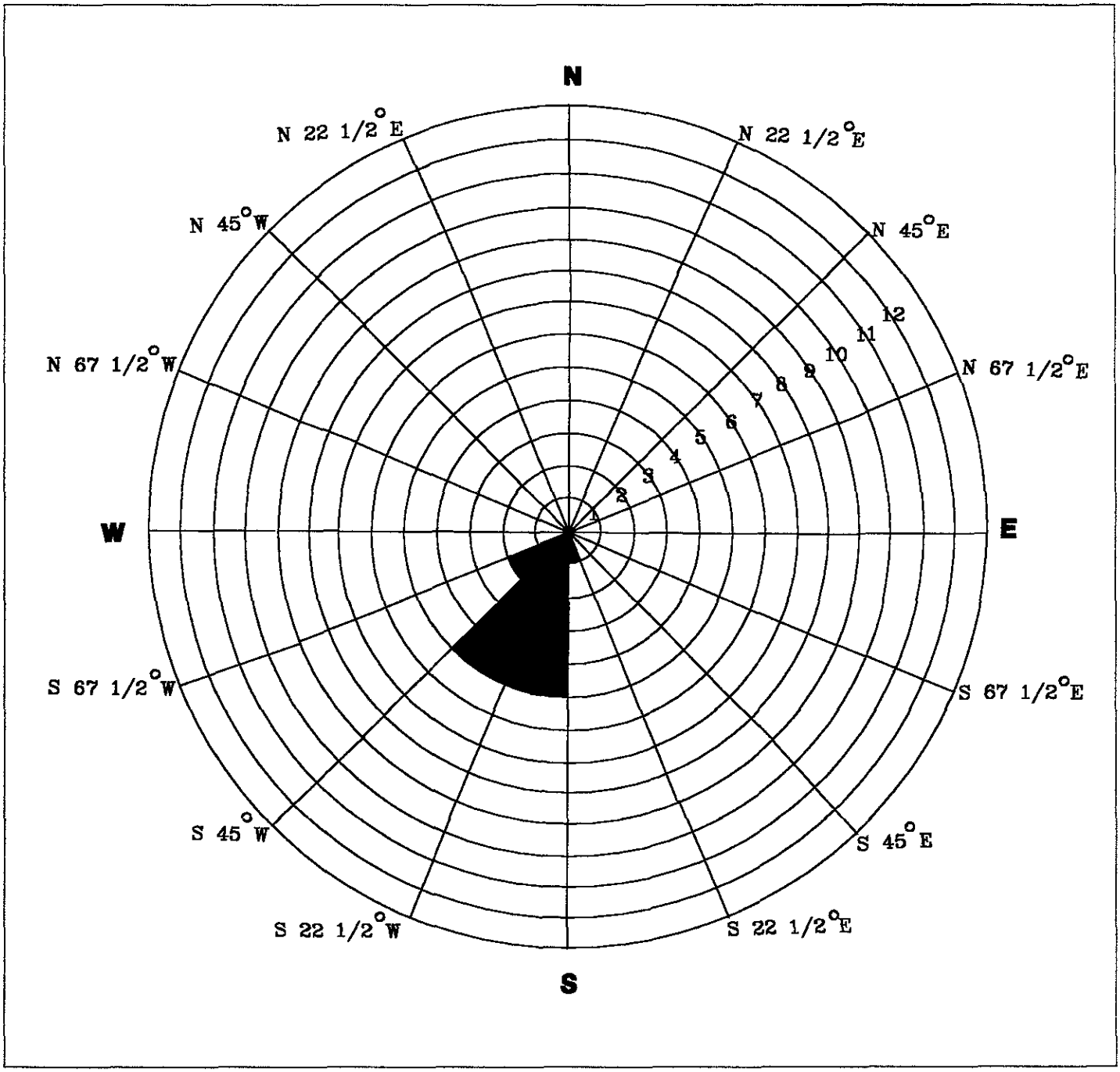
EXPLANATION

*	Boring log not available; data acquired from Alton Geoscience cross section (5/92)
1.7	Concentration of total purgeable petroleum hydrocarbons as gasoline in parts per million (ppm).
ND	Not Detected
MW1	Monitoring Well
VE3	Vapor Extraction Well

PROJECT NO.
2009

PLATE
5

DATE: 12/15/99



FN 20090005

EXPLANATION

N Compass Direction

Thirteen 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, five quarterly groundwater gradient directions plotted between due south and south 22 1/2 degrees west. Therefore, the dominant groundwater gradient direction as depicted by the rose diagram is between due south and south 45 degrees west.

ENVIRONMENTAL RESOLUTIONS, INC.

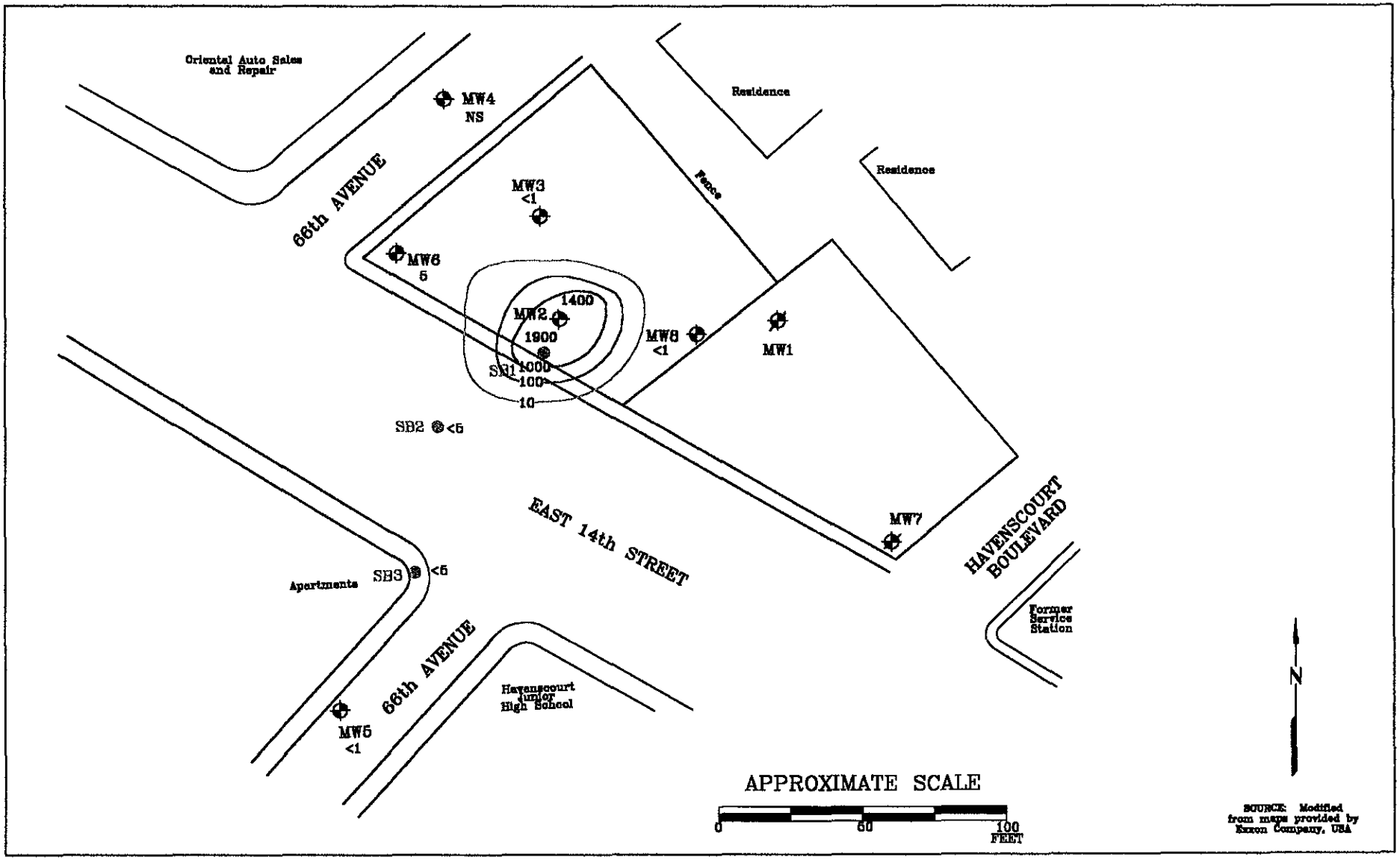
GROUNDWATER FLOW DIRECTION ROSE DIAGRAM

FORMER EXXON SERVICE STATION 7-0236
6600 East 14th Street
Oakland, California

PROJECT NO. 2009

PLATE 6

June 21, 1999



FN 2009003A

ERI ENVIRONMENTAL RESOLUTIONS, INC.

MTBE ISOCONCENTRATION MAP OCTOBER 11, 1999

FORMER
EXXON SERVICE STATION 7-0236
6600 East 14th Street
Oakland, California

EXPLANATION

MW8 Groundwater Monitoring Well

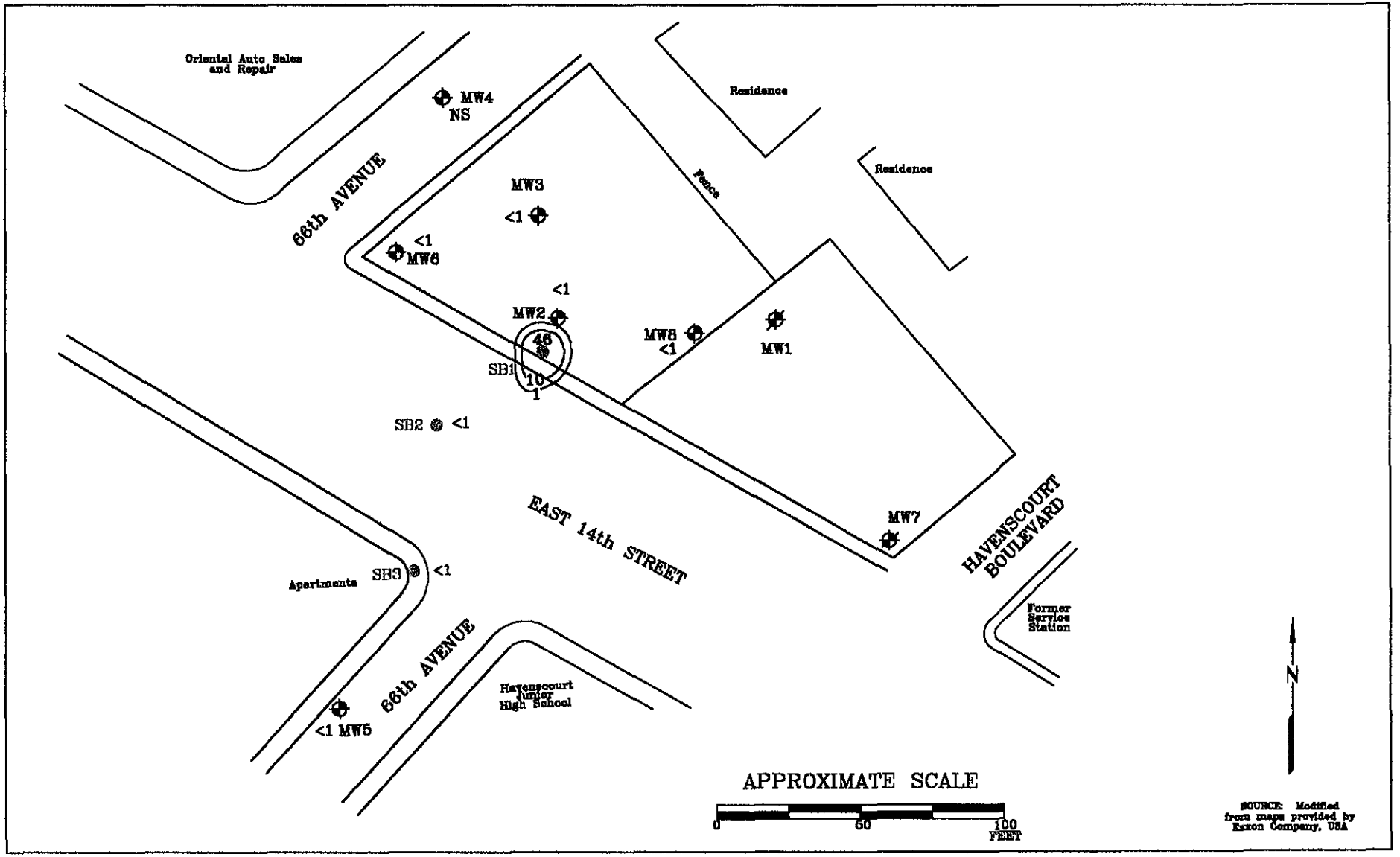
MW7 Groundwater Monitoring Well (Destroyed)

Soil Boring

<1 MTBE Concentration in ug/l

PROJECT NO. 2009

PLATE 7



FN 2009003A

ENVIRONMENTAL RESOLUTIONS, INC.

BENZENE ISOCONCENTRATION MAP OCTOBER 11, 1999

FORMER
EXXON SERVICE STATION 7-0236
6600 East 14th Street
Oakland, California

EXPLANATION

MW8 Groundwater Monitoring Well

MW7 Groundwater Monitoring Well (Destroyed)

Soil Boring

<1 Benzene Concentration in ug/l

PROJECT NO.
2009

PLATE
8

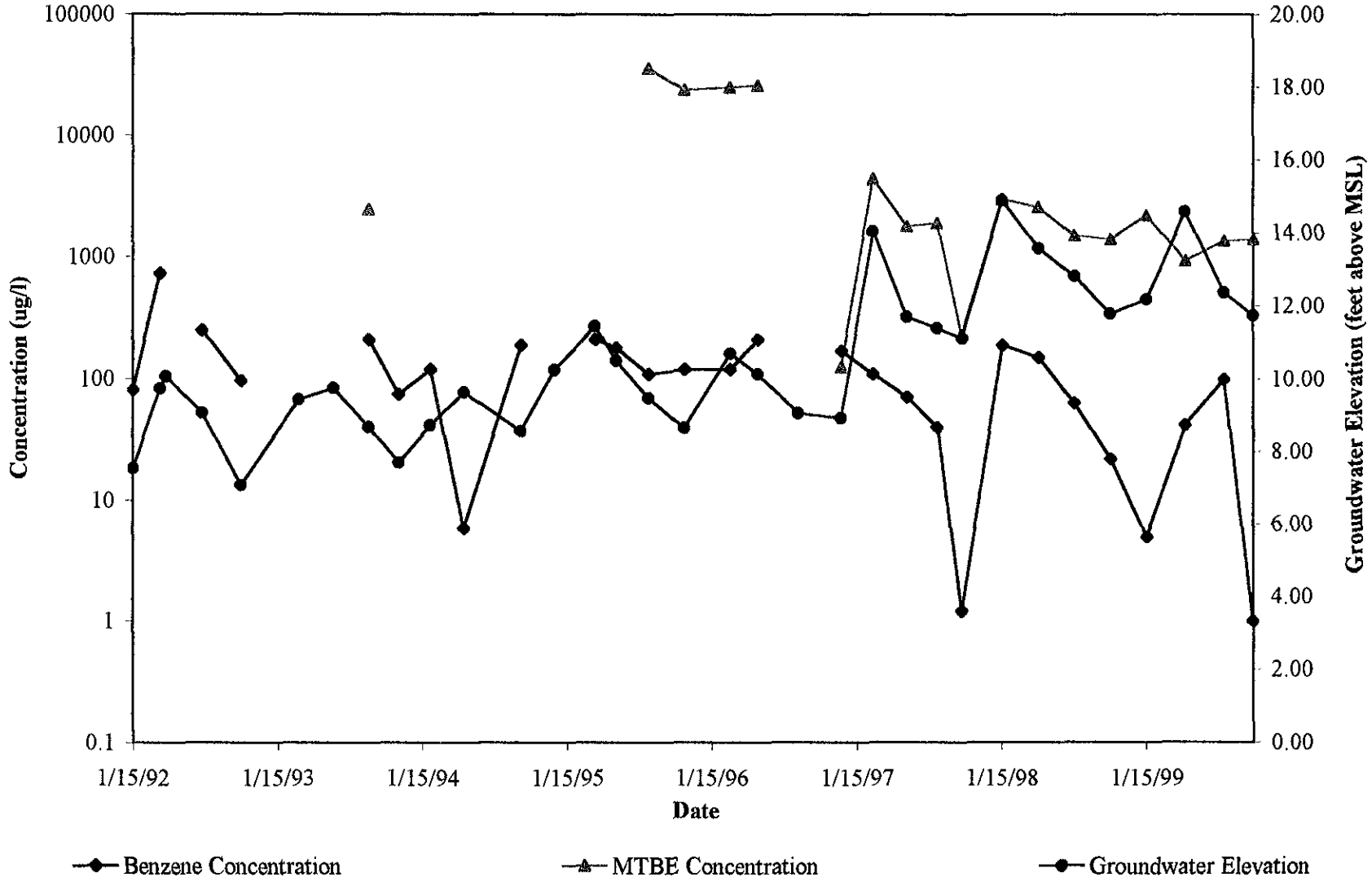
GRAPH 1

Benzene and MTBE Concentrations and Groundwater Elevation Versus Time - MW2

Former Exxon Service Station 7-0236

6600 East 14th Street

Oakland, California



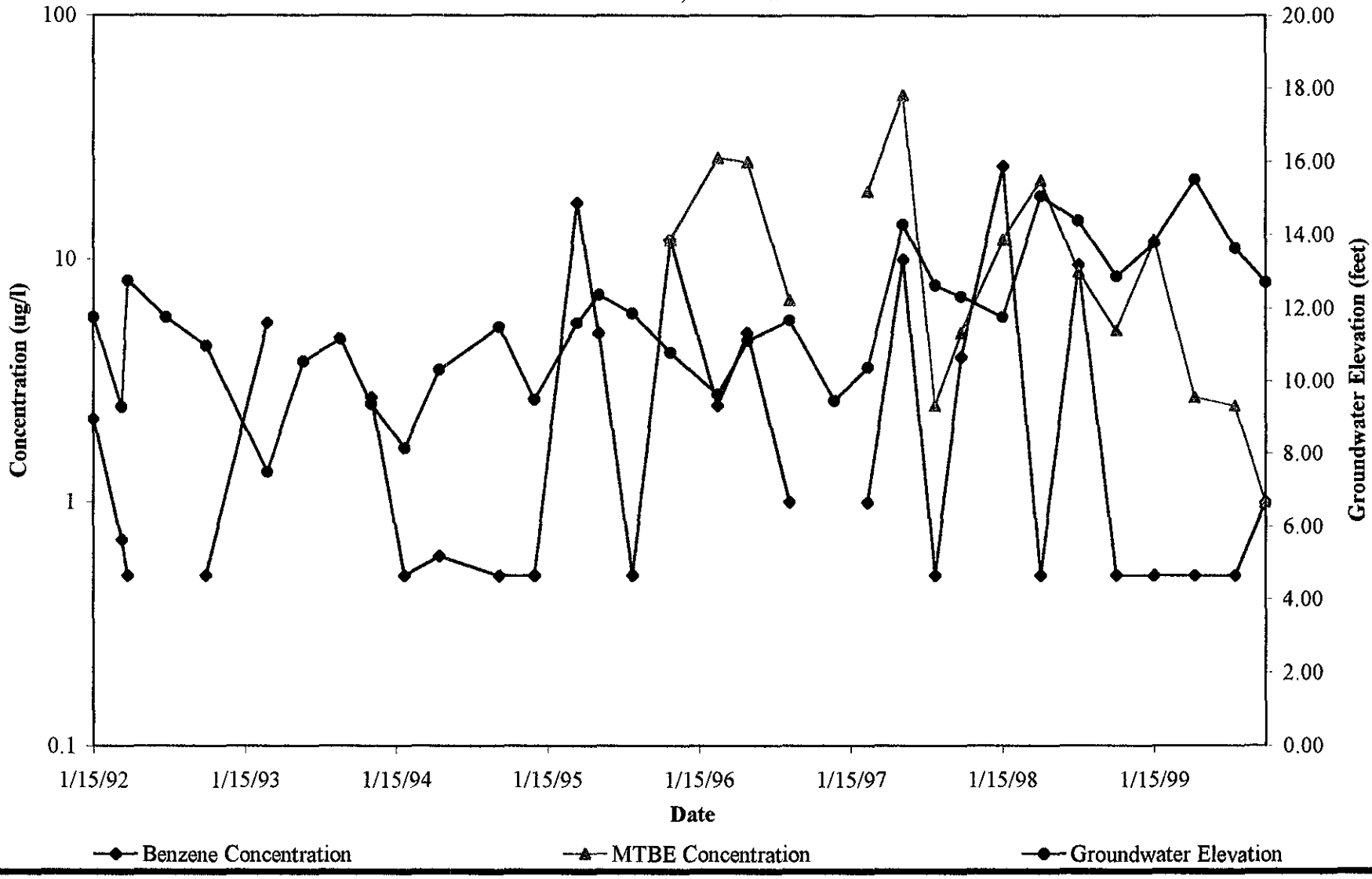
GRAPH 2

Benzene and MTBE Concentrations and Groundwater Elevation Versus Time - MW3

Former Exxon Service Station 7-0236

6600 East 14th Street

Oakland, California



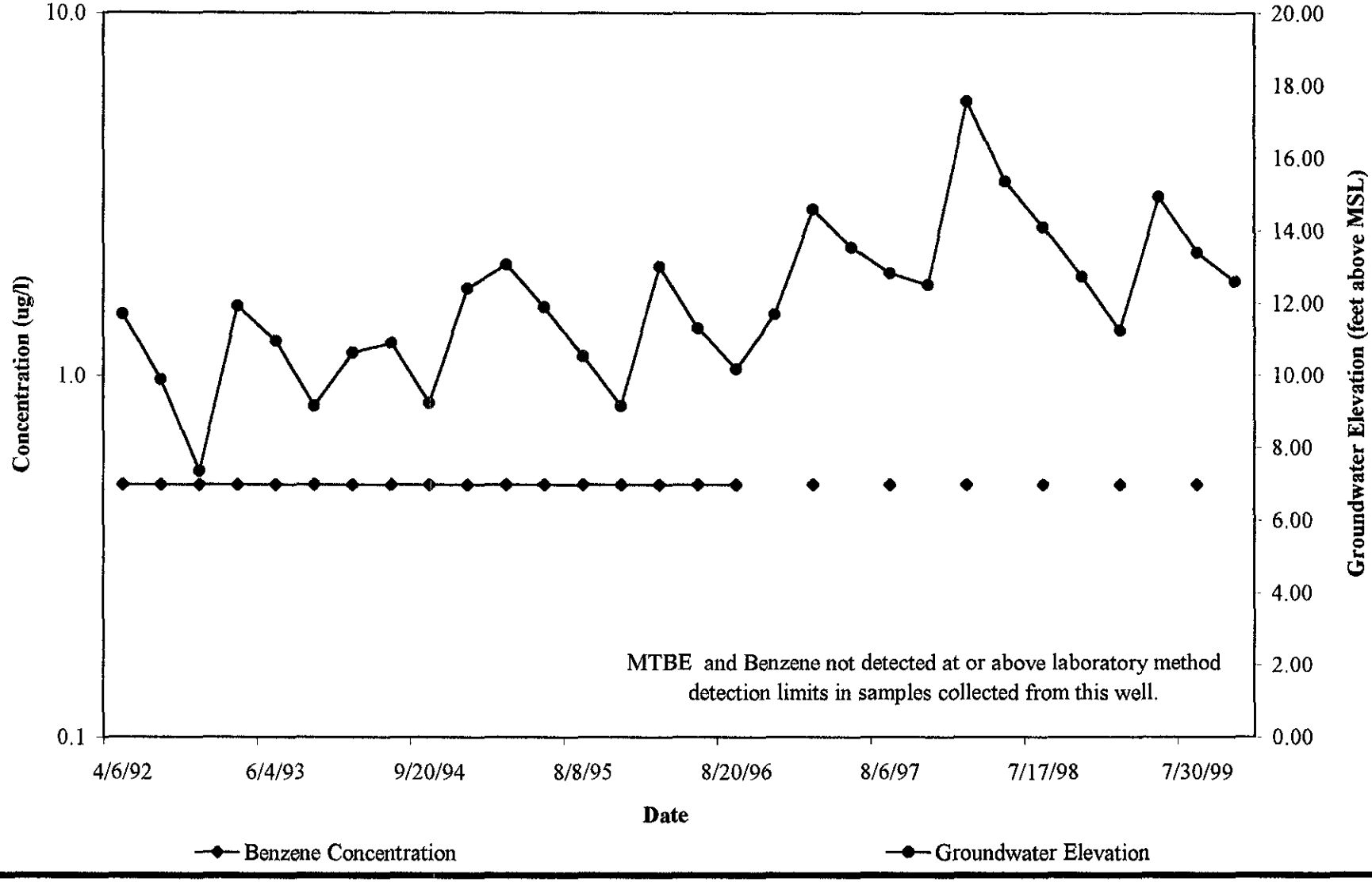
GRAPH 3

Benzene and MTBE Concentrations and Groundwater Elevation Versus Time - MW4

Former Exxon Service Station 7-0236

6600 East 14th Street

Oakland, California



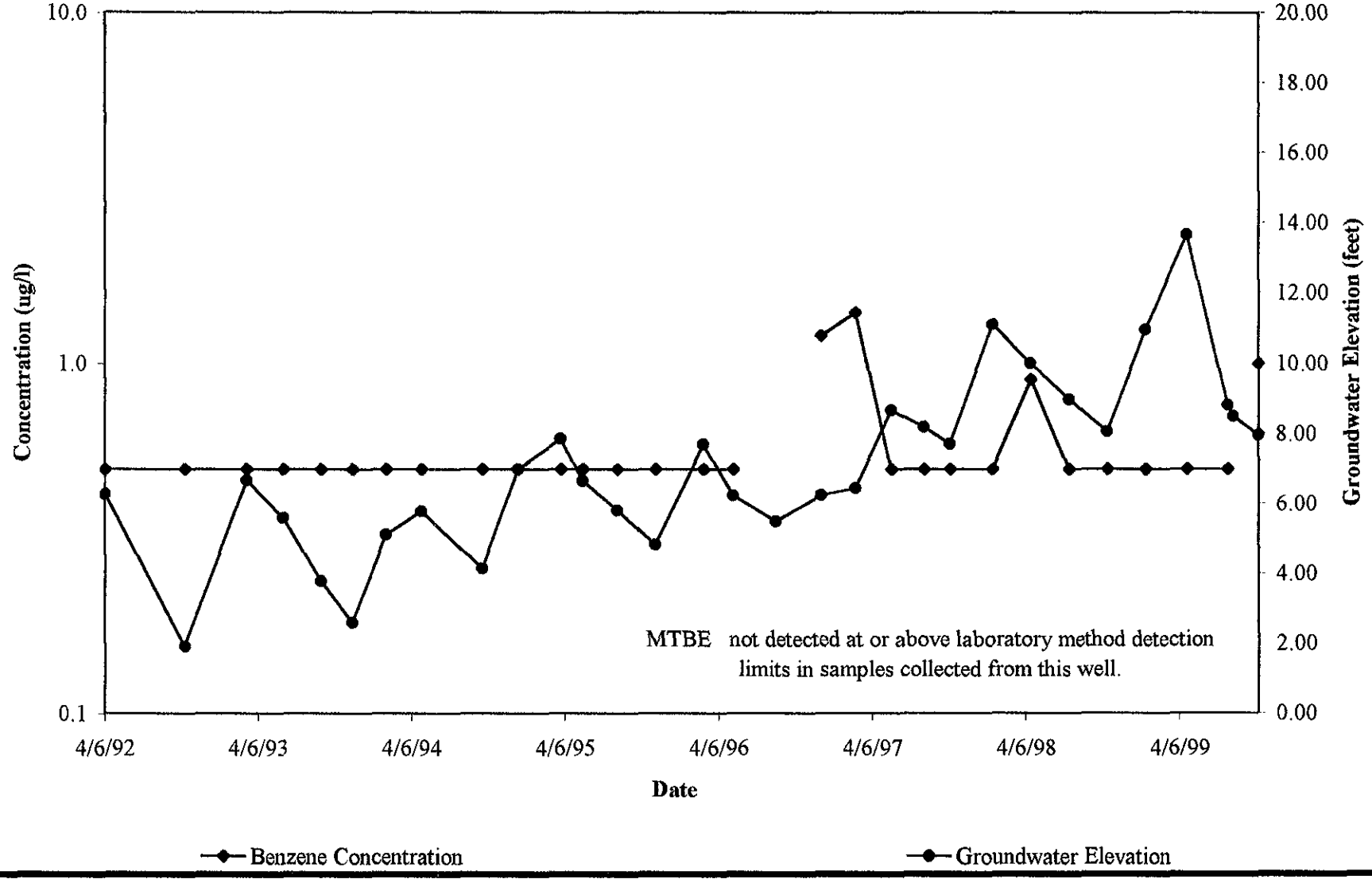
GRAPH 4

Benzene and MTBE Concentrations and Groundwater Elevation Versus Time - MW5

Former Exxon Service Station 7-0236

6600 East 14th Street

Oakland, California



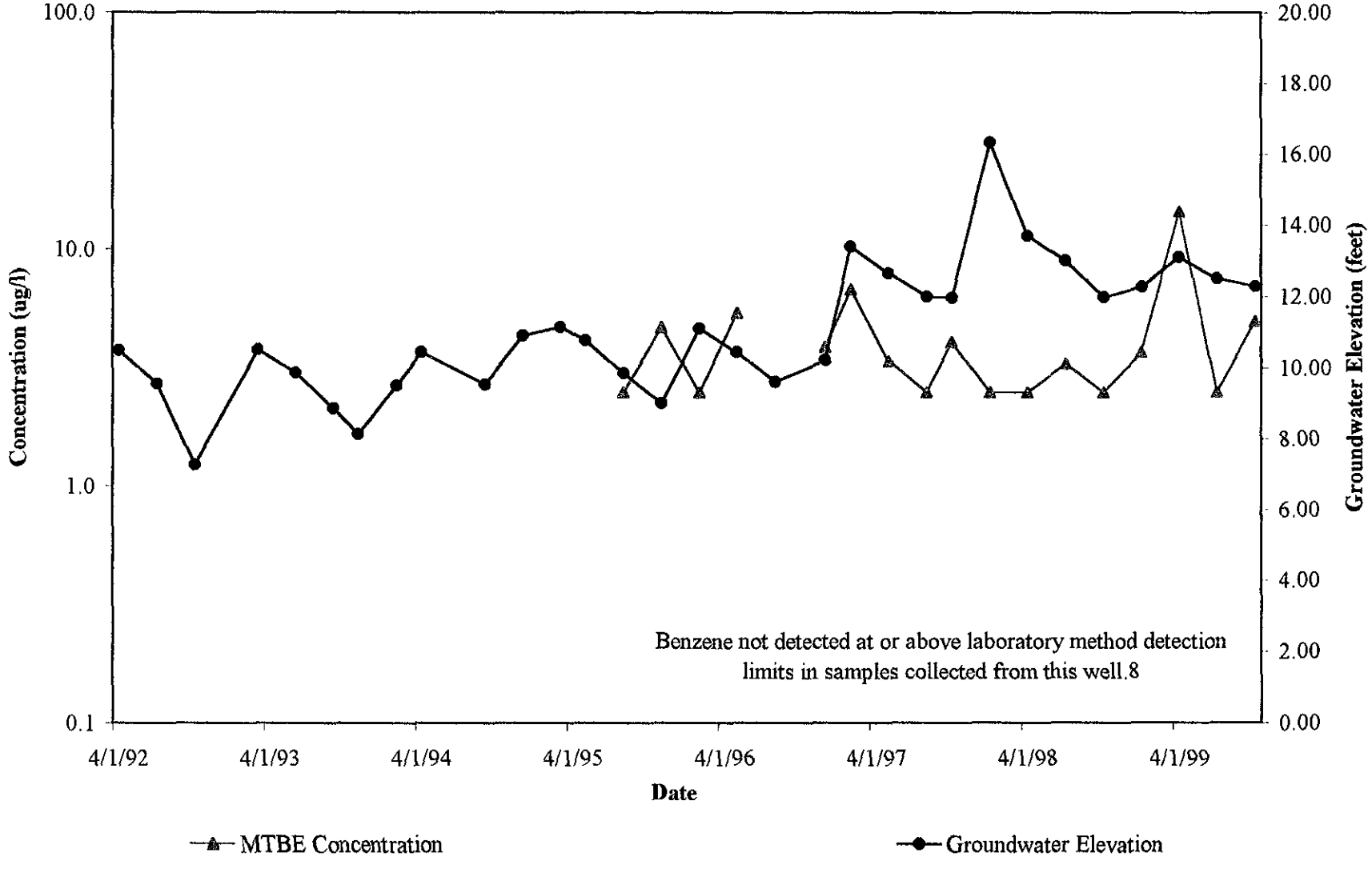
GRAPH 5

Benzene and MTBE Concentrations and Groundwater Elevation Versus Time - MW6

Former Exxon Service Station 7-0236

6600 East 14th Street

Oakland, California



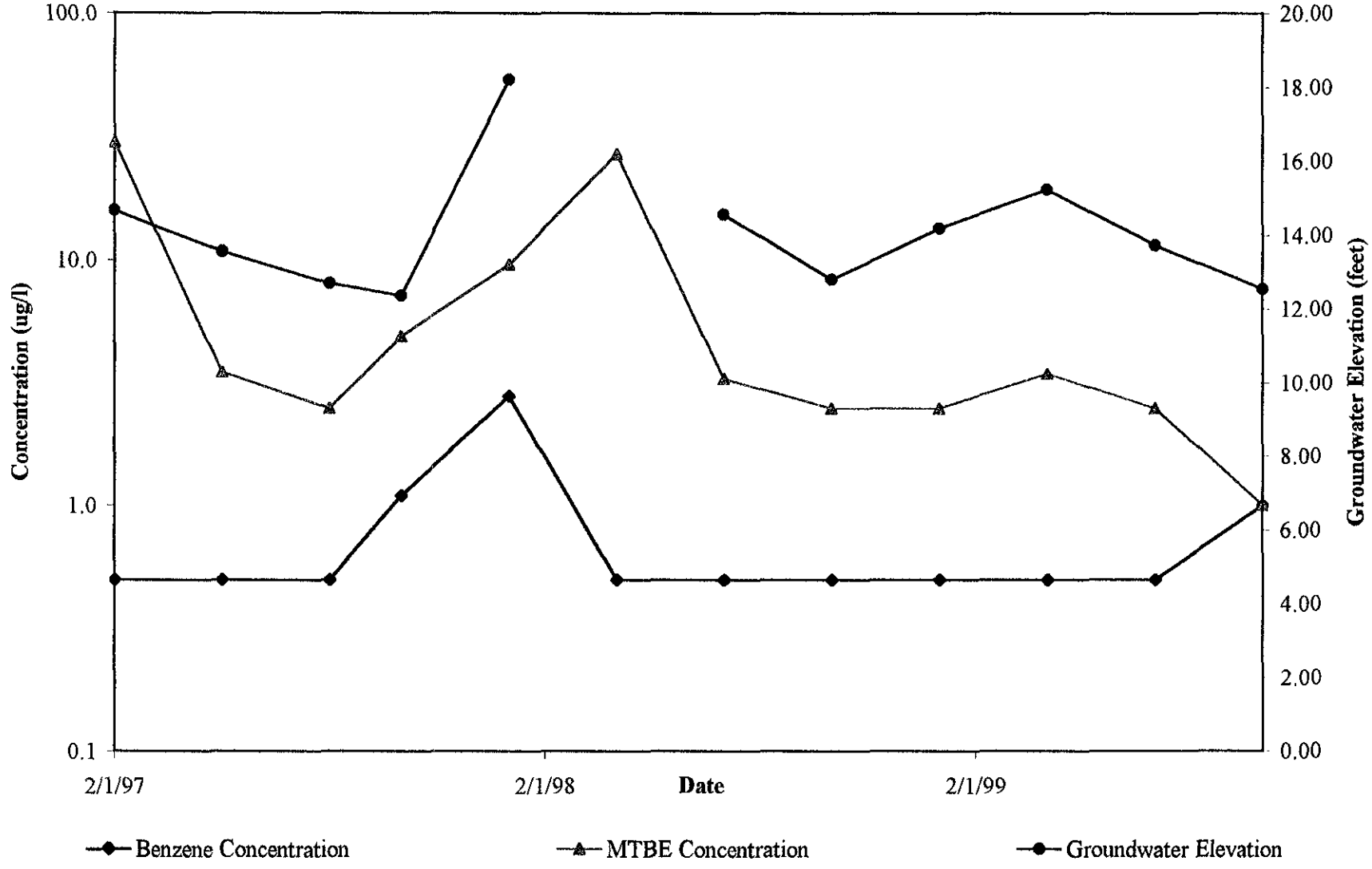
GRAPH 6

Benzene and MTBE Concentrations and Groundwater Elevation Versus Time - MW8

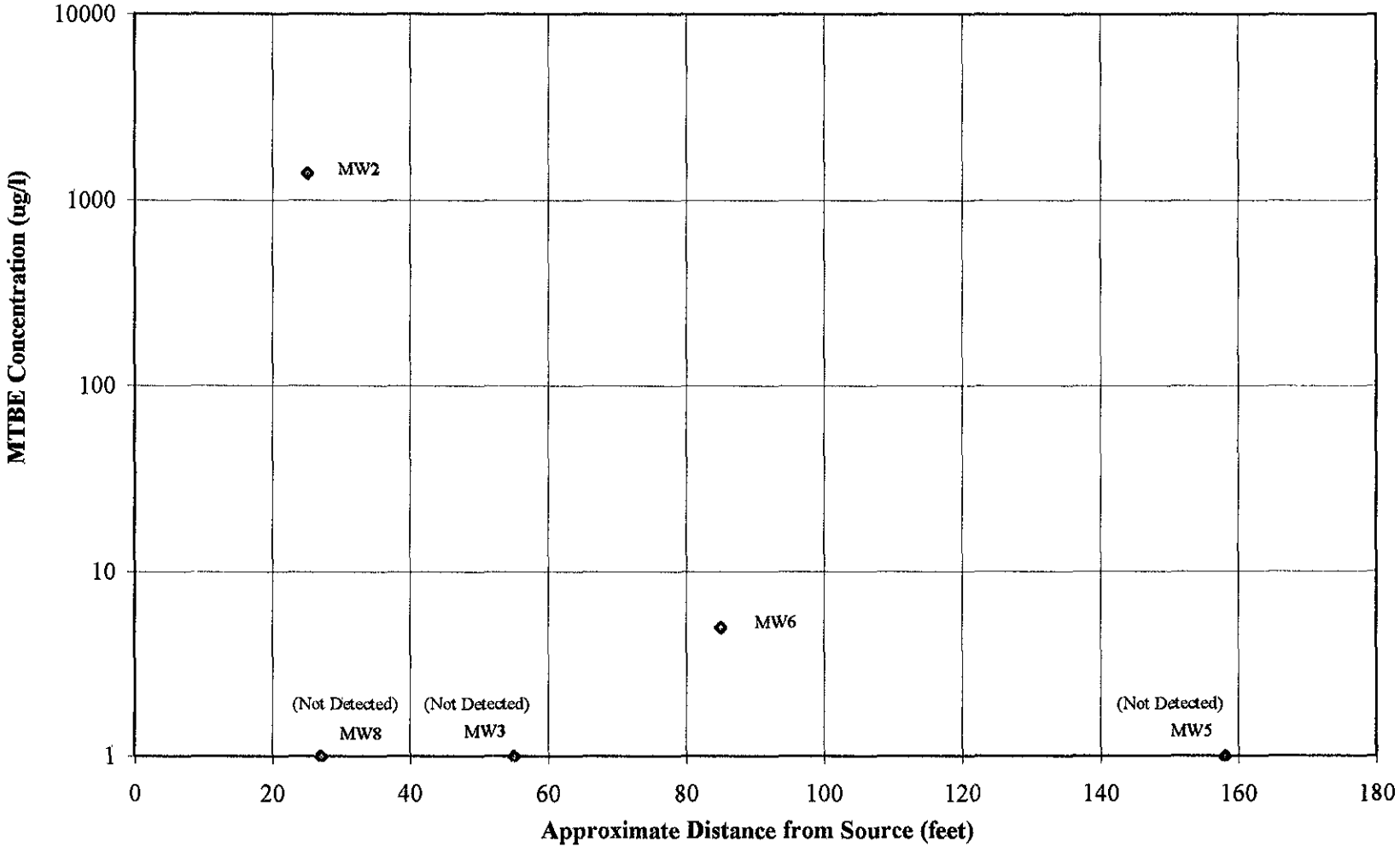
Former Exxon Service Station 7-0236

6600 East 14th Street

Oakland, California



GRAPH 7
MTBE Concentration versus Distance
Exxon Service Station 7-0236
6600 East 14th Street
Oakland, California

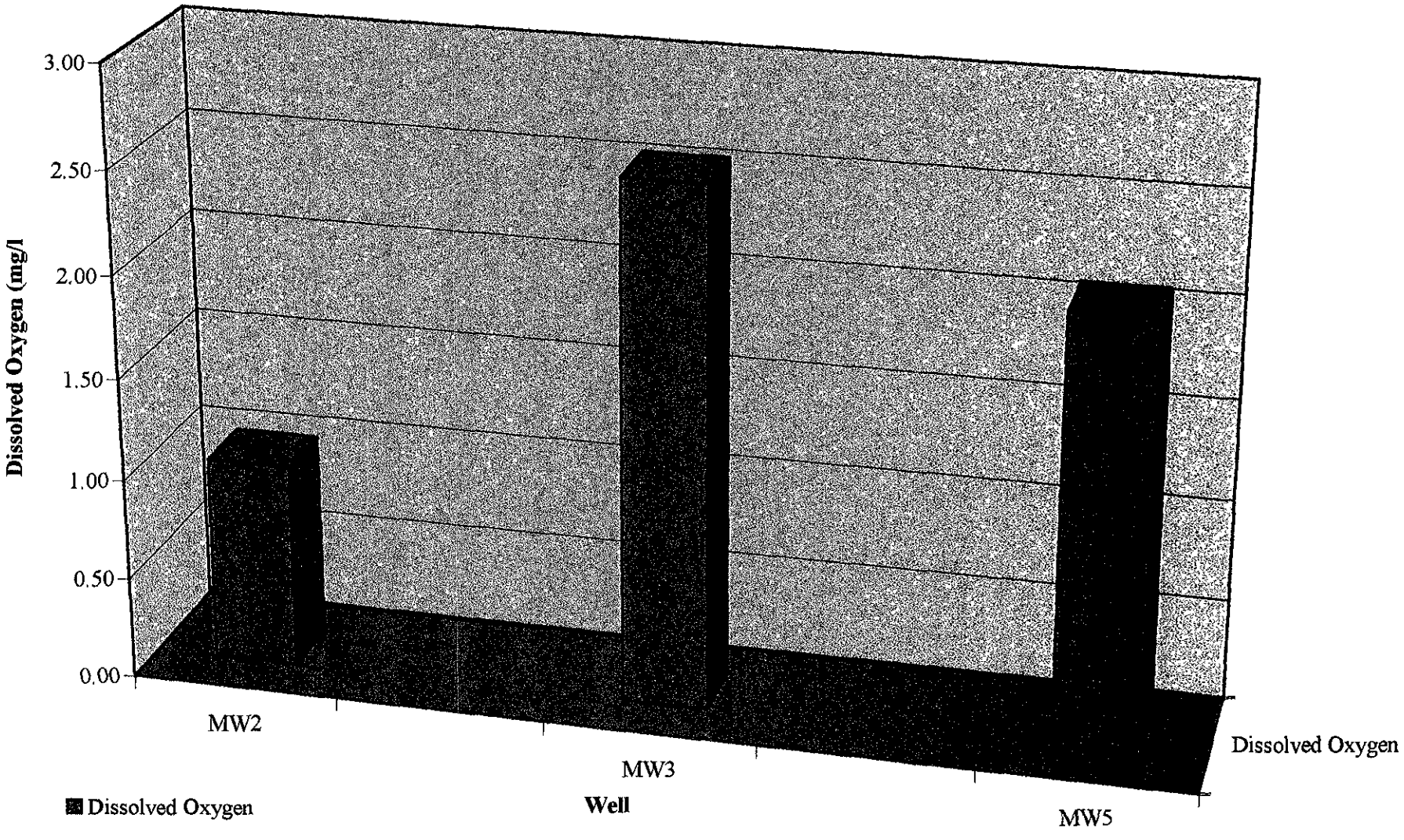


◆ MTBE concentration from 4th Quarter 1999 sampling event.

GRAPH 8

Dissolved Oxygen - Third Quarter 1999

Former Exxon Service Station7-0236
6600 East 14th Street
Oakland, California



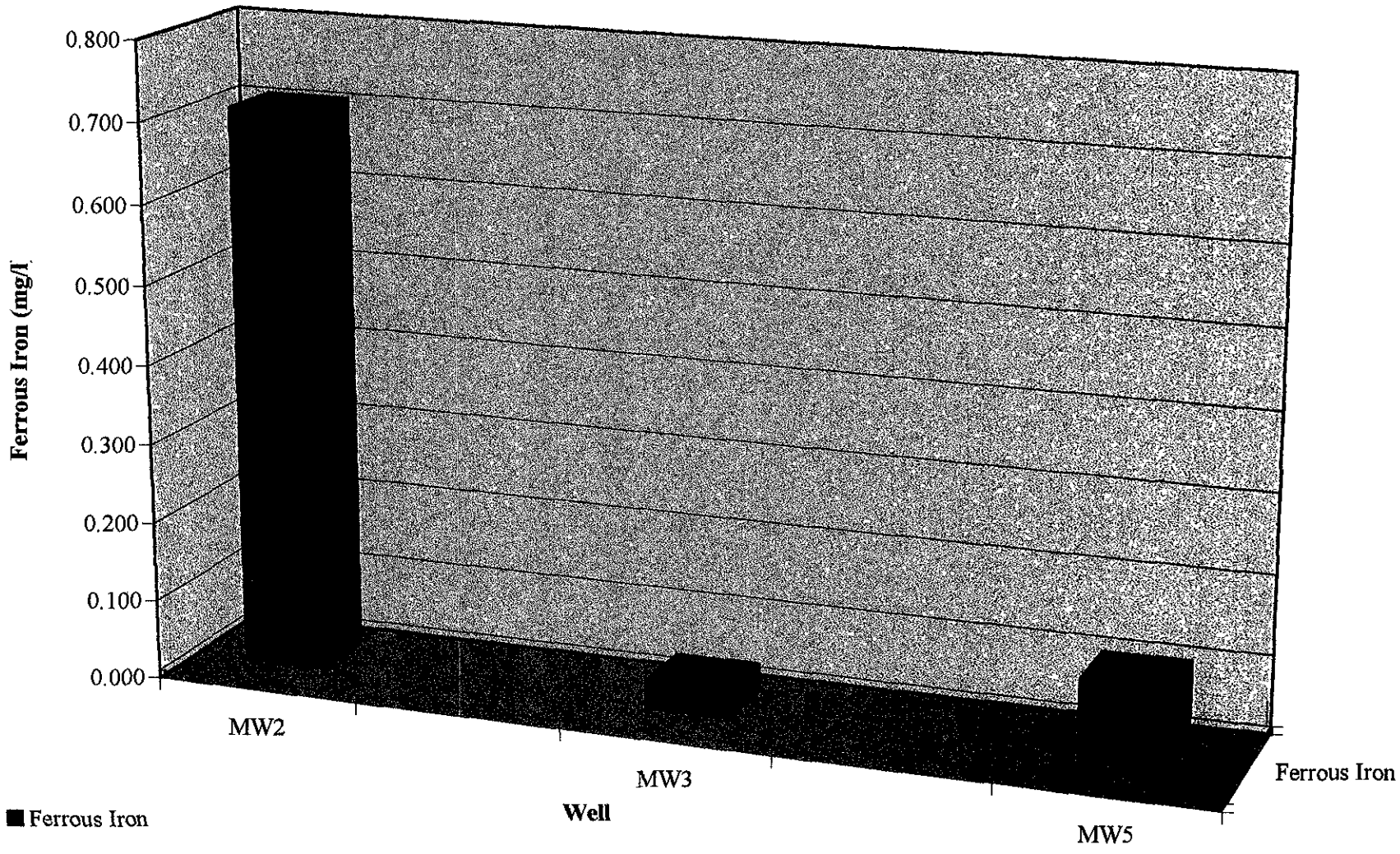
GRAPH 9

Ferrous Iron - Third Quarter 1999

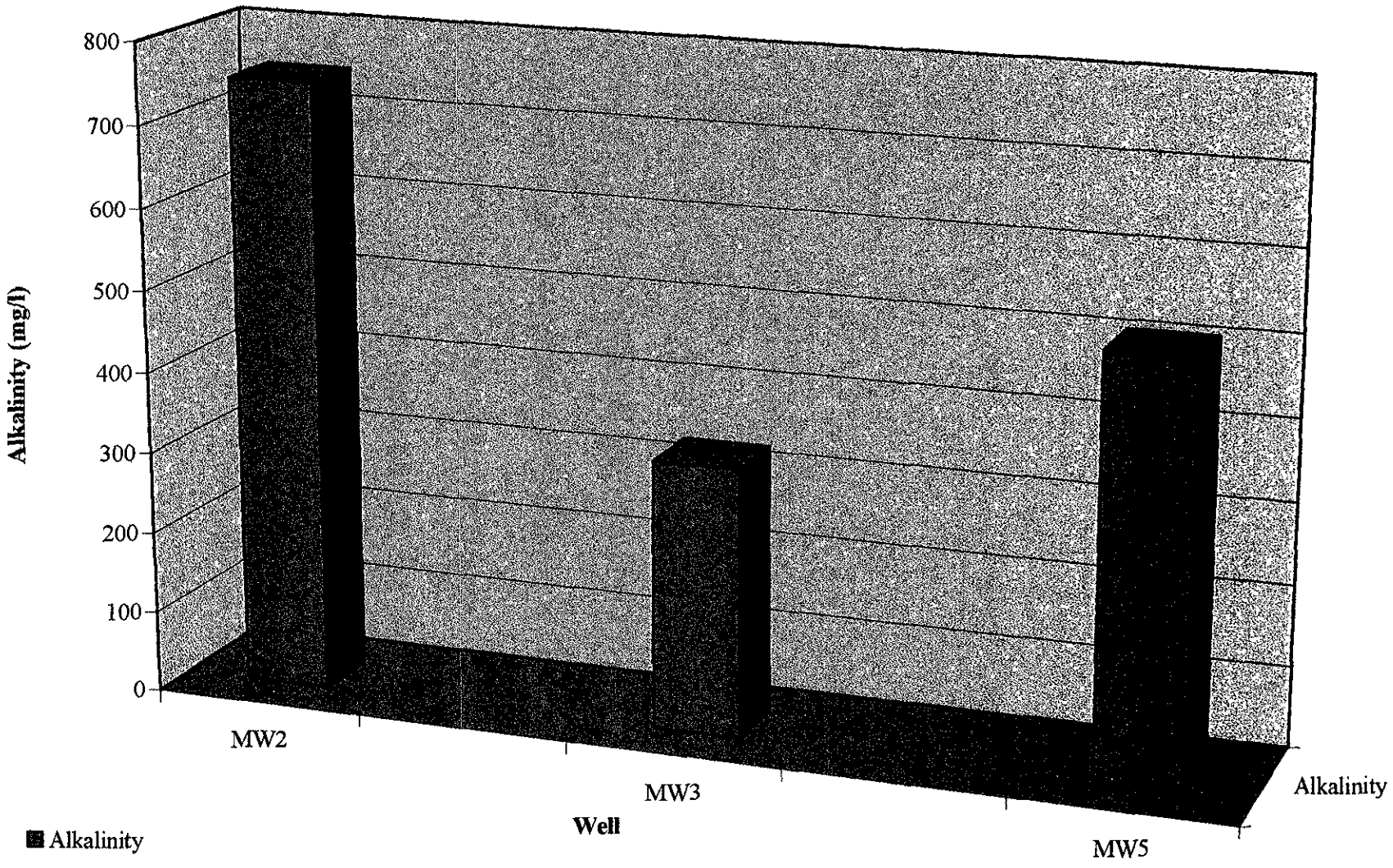
Former Exxon Service Station 7-0236

6600 East 14th Street

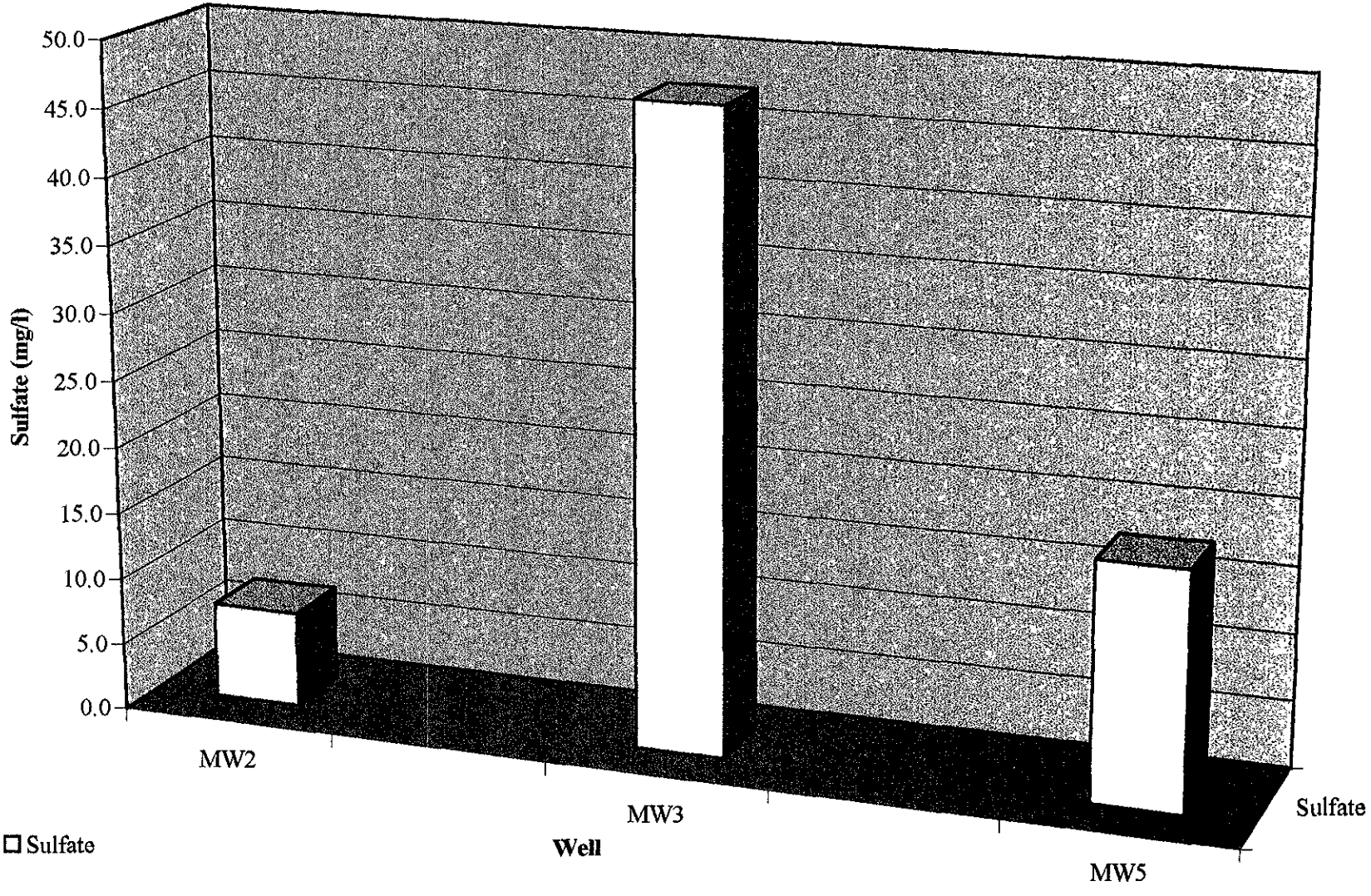
Oakland, California



GRAPH 10
Alkalinity - Third Quarter 1999
Former Exxon Service Station 7-0236
6600 East 14th Street
Oakland, California



GRAPH 12
Sulfate - Third Quarter 1999
Former Exxon Service Station 7-0236
6600 East 14th Street
Oakland, California



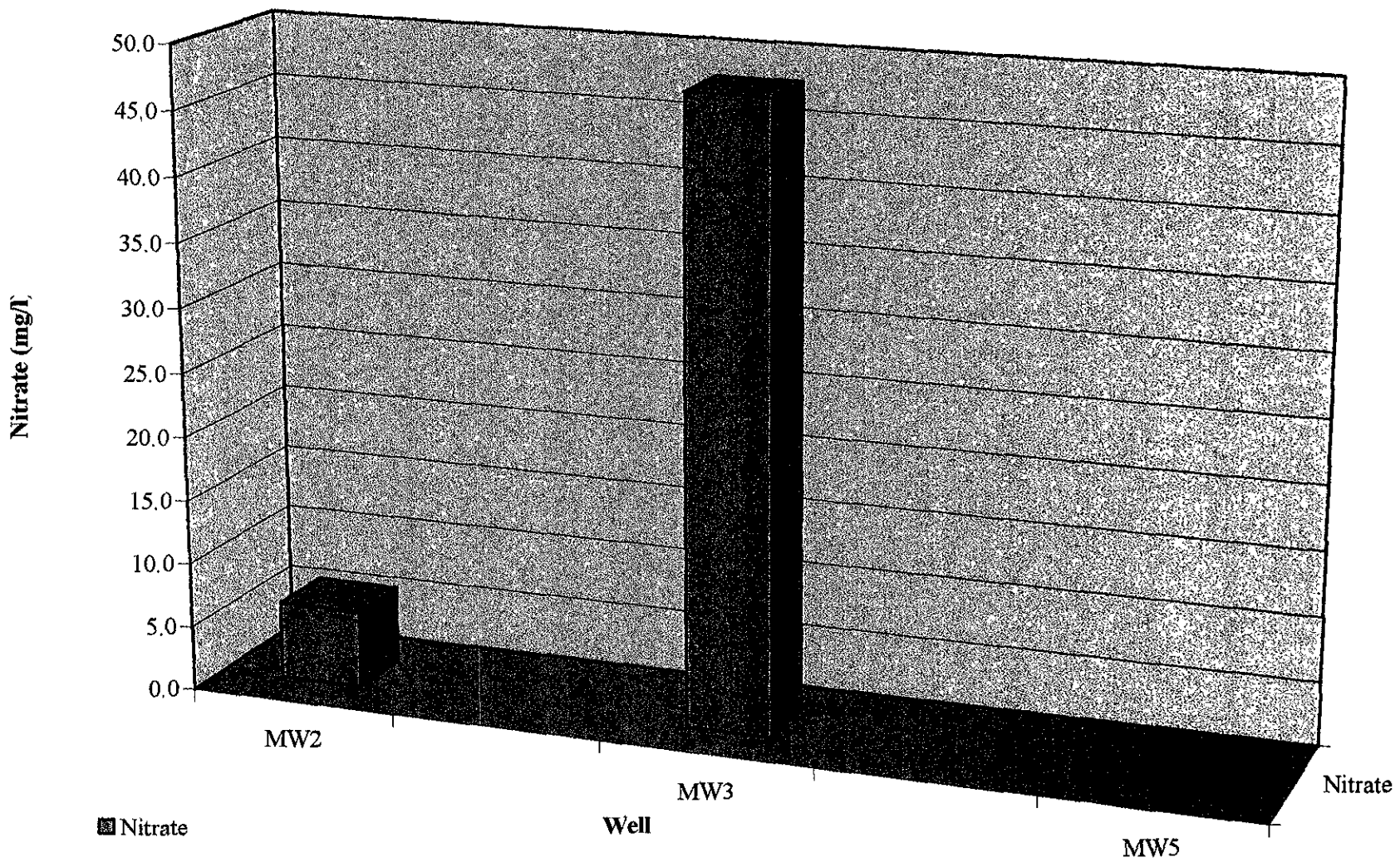
GRAPH 11

Nitrate - Third Quarter 1999

Former Exxon Service Station 7-0236

6600 East 14th Street

Oakland, California



APPENDIX A

ALAMEDA COUNTY HEALTH CARE SERVICES AGENCY–
ENVIRONMENTAL HEALTH SERVICES LETTER
DATED JANUARY 7, 1999

2009037

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION (LOP)
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
FAX (510) 337-9335

January 7, 1999
StID # 1068

Ms. Marla Guensler
Exxon Company, USA
P.O. Box 4032
Concord CA 94524-4032

Re: Request for Work Plan for Exxon RAS #7-0236, 6600 E. 14th St., Oakland CA 94621

Dear Ms. Guensler:

This letter follows up the November 19, 1998 meeting at our offices with Mr. Mark Dockum and Ms. Tracy Faulkner of Environmental Resolutions, Inc. (ERI). This meeting was meant to address my November 5, 1998 letter and provide guidance and recommendations for site closure.

The November 5th letter questioned the fluctuating dissolved oxygen concentrations reported in the well samples. It additionally requested that the additional bio-remediation parameters; oxidation-reduction potential, nitrate, sulfate, ferrous iron and alkalinity be run on the well samples. I suggest that this be done on monitoring wells MW3, MW2 and MW5 to establish the conditions up- and down-gradient and within the plume. You were also requested to consider adding oxygen releasing compound socks to MW-2, the most impacted well. Please perform these requested actions prior to your next groundwater sampling event.

The November 19th meeting was intended to discuss methods which would lead to site closure. The major obstacle was the elevated MTBE concentration found in MW-2. As you are aware, the Water Board has only provided guidance in handling MTBE cases, not policy. Because of the elevated MTBE concentration currently found in MW-2, the site must be adequately characterized and the concentration must be shown to be stable before site closure is to be considered. The Risk Management approach for the site requires the following:

- Adequate site characterization
- Removal of source
- Stable plume
- Examination of public health and ecological threat
- Institutional control

With this in mind, I requested the following; a well survey, a utility survey, a baseline risk assessment on the residual contaminants and a work plan for the advancement of off-site borings to determine the extent of MTBE plume. In a follow-up conversation with ERI, they could not confirm that you concurred with this approach, though it was my impression that you would.

This letter, therefore, requests the submission of a work plan to perform the above-mentioned items. Please submit this work plan **within 30 days or by February 5, 1999.**

You may contact me at (510) 567-6765 if you have any questions.

Sincerely,

Barney M Chan

Barney M. Chan
Hazardous Materials Specialist

C: B. Chan, files
Mr. M. Dockum, Environmental Resolutions, Inc., 74 Digital Drive, Suite 6, Novato, CA 94949
Wprq-6600E14

APPENDIX B

CALTRANS ENCROACHMENT PERMIT

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

ENCROACHMENT PERMIT

TR-0120

Permit No.	
0499-6SV2088	
Dist/Co/Rte/PM	
04-Ala-185 9.10	
Date	
Sept 27, 1999	
Fee Paid	Deposit
$280.00	
Performance Bond Amount (1)	Payment Bond Amount (2)
Bond Company	
Bond Number (1)	Bond Number (2)

In compliance with (*Check one*):

☒ Your application of Aug 10, 1999

☐ Utility Notice No. _____ of _____

☐ Agreement No. _____ of _____

☐ R/W Contract No. _____ of _____

TO: ☐ Environmental Resolutions, Inc
73 Digital Drive, Suite 100
Novato, CA 94949

Attn: James Chappell
☐ Phone (415) 382-4323 ☐, **PERMITTEE**

and subject to the following, **PERMISSION IS HEREBY GRANTED** to:

Pothole and collect groundwater samples at East 14th Street to evaluate hydrocarbon constituents down gradient of the site on State Highway 04-Ala-185, Post Mile 9.10, in the City of Oakland.

Two days before work is started under this permit, notice shall be given to, and approval of construction details, operations, public safety, and traffic control shall be obtained from State Representative, Mohammad Suleiman, 21030 Redwood Road, Castro Valley, CA 94546-5920, (510) 881-4017, weekdays, between 7:30 A.M. and 4:00 P.M.

All personnel working within the State right of way shall wear hard hats and orange vets, shirt or jackets as appropriate during construction.

Immediately following completion of the work permitted herein, the permittee shall fill out and mail the Notice of Completion attached to this permit.

The following attachments are also included as part of this permit (*Check applicable*):

☒ Yes	☐ No	General Provisions
☐ Yes	☒ No	Utility Maintenance Provisions
☐ Yes	☒ No	Special Previsions
☐ Yes	☒ No	A Cal-OSHA permit required prior to beginning work: # _____

In addition to fee, the permittee will be billed actual costs for:

☐ Yes	☒ No	Review
☐ Yes	☒ No	Inspection
☒ Yes		Field Work

(If any Caltrans effort expended)

☐ Yes ☒ No The information in the environmental documentation has been reviewed and considered prior to approval of this permit.

This permit is void unless the work is completed before December 31, 1999

This permit is to be strictly construed and no other work other than specifically mentioned is hereby authorized.
No project work shall be commenced until all other necessary permits and environmental clearances have been obtained.

OCT 26 1999

APPROVED:

~~HARRY Y. YAHATA~~, District Director

BY:

G. J. BATTAGLINI, District Permit Engineer

Name: Environmental Resolutions, Inc
Permit #: 0499-6SV2088
Date: Sept 27, 1999

Traffic control is authorized only between 9:00 A.M. and 3:00 P.M., Monday through Friday, holidays excluded. Any traffic control which requires lane closures shall be in compliance with the appropriate traffic control plan. Where required by the plan, the use of a flashing arrow sign is MANDATORY.

Before any work is begun which will interrupt the normal flow of public traffic, approval shall be obtained from State's representative, and closures will be as shown on the attached copy of Standard Plan Sheet T-11.

Survey vehicles may be parked in State highway right-of-way off paved shoulders. Auxiliary support and employee vehicles shall remain outside the right-of-way and shall not interfere with the free flow of traffic or pedestrian during work is in process.

All survey operation shall be conducted off the traveled way except where necessary to cross the pavements and medians.

No excavation shall be left open overnight without written permission from the Caltrans representative or unless otherwise specified herein.

If at the end of day, backfilling operations have not been properly completed, steel bridging is required to make the entire highway facility available to the travelling public. All steel plates utilized in the traveled way shall comply with the "Steel Plate Bridging" provisions.

The site of the work shall be enclosed by suitable barricades, signs and lights, as approved by State's representative, to warn and protect traffic effectively.

Excavations made within the limits of the highway shall be backfilled before leaving the work for the night unless otherwise authorized by State's representative. After backfilling the trench, temporary surfacing shall be placed if required by State's representative.

Any damage to existing facilities, landscaping or irrigation within the State's Right of Way shall be replaced in kind by the permittee at permittee's expense.

All painted markings shall be made with water soluble paint.

When survey operation are being conducted, the pemittee shall furnish, place and maintain signs and safety equipment in accordance with the latest edition of the "Manual of Traffic Controls for Construction and Maintenance Work Zones".

Certain details of work authorized hereby are shown on permittee's plans submitted with the request for permit.

This permit does not authorize any freeway lane closure.

This permit does not authorize tree trimming or tree removal.

STATE OF CALIFORNIA, DEPARTMENT OF TRANSPORTATION
ENCROACHMENT PERMIT GENERAL PROVISIONS
TR-0045 (REV 8/98)

1. **AUTHORITY:** The Department's authority to issue encroachment permits is provided under, Div. 1, Chpt. 3, Art. 1, Sect. 660 to 734 of the Streets and Highways Code

2. **REVOCATION:** Encroachment permits are revocable on five days notice unless otherwise stated on the permit and except as provided by law for public corporations, franchise holders, and utilities. These General Provisions and the Encroachment Permit Utility Provisions are subject to modification or abrogation at any time. Permittees' joint use agreements, franchise rights, reserved rights or any other agreements for operating purposes in State highway right of way are exceptions to this revocation.

3. **DENIAL FOR NONPAYMENT OF FEES:** Failure to pay permit fees when due can result in rejection of future applications and denial of permits.

4. **ASSIGNMENT:** No party other than the permittee or permittee's authorized agent is allowed to work under this permit.

5. **ACCEPTANCE OF PROVISIONS:** Permittee understands and agrees to accept these General Provisions and all attachments to this permit, for any work to be performed under this permit.

6. **BEGINNING OF WORK:** When traffic is not impacted (see Number 35), the permittee shall notify the Department's representative, two (2) days before the intent to start permitted work. Permittee shall notify the Department's Representative if the work is to be interrupted for a period of five (5) days or more, unless otherwise agreed upon. All work shall be performed on weekdays during regular work hours, excluding holidays, unless otherwise specified in this permit.

7. **STANDARDS OF CONSTRUCTION:** All work performed within highway right of way shall conform to recognized construction standards and current Department Standard Specifications, Department Standard Plans High and Low Risk Facility Specifications, and Utility Special Provisions. Where reference is made to "Contractor and Engineer," these are amended to be read as "Permittee and Department representative."

8. **PLAN CHANGES:** Changes to plans, specifications, and permit provisions are not allowed without prior approval from the State representative.

9. **INSPECTION AND APPROVAL:** All work is subject to monitoring and inspection. Upon completion of work, permittee shall request a final inspection for acceptance and approval by the Department. The local agency permittee shall not give final construction approval to its contractor until final acceptance and approval by the Department is obtained.

10. **PERMIT AT WORKSITE:** Permittee shall keep the permit package or a copy thereof, at the work site and show it upon request to any Department representative or law enforcement officer If the permit package is not kept and made available at the work site, the work shall be suspended.

11. **CONFLICTING ENCROACHMENTS:** Permittee shall yield start of work to ongoing, prior authorized, work adjacent to or within the limits of the project site When existing encroachments conflict with new work, the permittee shall bear all cost for rearrangements, (e g , relocation, alteration, removal, etc.).

12. **PERMITS FROM OTHER AGENCIES:** This permit is invalidated if the permittee has not obtained all permits necessary and required by law, from the Public Utilities Commission of the State of California (PUC), California Occupational Safety and Health Administration (Cal-OSHA), or any other public agency having jurisdiction.

13. **PEDESTRIAN AND BICYCLIST SAFETY:** A safe minimum passageway of 1.21 meter (4') shall be maintained through the work area at existing pedestrian or bicycle facilities At no time shall pedestrians be diverted onto a portion of the street used for vehicular traffic. At locations where safe alternate passageways cannot be provided, appropriate signs and barricades shall be installed at the limits of construction and in advance of the limits of construction at the nearest crosswalk or intersection to detour pedestrians to facilities across the street.

14. **PUBLIC TRAFFIC CONTROL:** As required by law, the permittee shall provide traffic control protection warning signs, lights, safety devices, etc , and take all other measures necessary for traveling public's safety Day and night time lane closures shall comply with the Manuals of Traffic Controls, Standard Plans, and Standard Specifications for traffic control systems These General Provisions are not intended to impose upon the permittee, by third parties, any duty or standard of care, greater than or different from, as required by law

15. **MINIMUM INTERFERENCE WITH TRAFFIC:** Permittee shall plan and conduct work so as to create the least possible inconvenience to the traveling public; traffic shall not be unreasonably delayed. On conventional highways, permittee shall place properly attired flagger(s) to stop or warn the traveling public in compliance with the Manual of Traffic Controls and Instructions to Flaggers Pamphlet.

16. **STORAGE OF EQUIPMENT AND MATERIALS:** Equipment and material storage in State right of way shall comply with Standard Specifications, Standard Plans, and Special Provisions Whenever the permittee places an obstacle within 3.63 m (12') feet of the traveled way, the permittee shall place temporary railing (Type K).

17. **CARE OF DRAINAGE:** Permittee shall provide alternate drainage for any work interfering with an existing drainage facility in compliance with the Standard Specifications, Standard Plans and/or as directed by the Department's representative.

18. **RESTORATION AND REPAIRS IN RIGHT OF WAY:** Permittee is responsible for restoration and repair of State highway right of way resulting from permitted work (State Streets and Highways Code, Sections 670 et. seq.).

19. **RIGHT OF WAY CLEAN UP:** Upon completion of work, permittee shall remove and dispose of all scraps, brush, timber, materials, etc. off the right of way. The aesthetics of the highway shall be as it was before work started.

20. **COST OF WORK:** Unless stated in the permit, or a separate written agreement, the permittee shall bear all costs incurred for work within the State right of way and waives all claims for indemnification or contribution from the State.

21. **ACTUAL COST BILLING:** When specified in the permit, the Department will bill the permittee actual costs at the currently set hourly rate for encroachment permits.

22 **AS-BUILT PLANS:** When required, permittee shall submit one (1) set of as-built plans in compliance with Department's requirements. Plans shall be submitted within thirty (30) days after completion and approval of work.

As-Built plans or accompanying correspondence shall not include disclaimer statements of any kind. Such statements shall constitute non-compliance with these provisions. Failure to provide complete and signed As-Built plans shall be cause for bond or deposit retention by the Department.

23. **PERMITS FOR RECORD PURPOSES ONLY:** When work in the right of way is within an area under a Joint Use Agreement (JUA) or a Consent to Common Use Agreement (CCUA), a fee exempt permit is issued to the permittee for the purpose of providing a notice and record of work. The Permittee's prior rights shall be preserved without the intention of creating new or different rights or obligations. "Notice and Record Purposes Only" shall be stamped across the face of the permit.

24. **BONDING:** The permittee shall file bond(s), in advance, in the amount set by the Department. Failure to maintain bond(s) in full force and effect will result in the Department stopping of all work and revoking permit(s) Bonds are not required of public corporations or privately owned utilities, unless permittee failed to comply with the provision and conditions under a prior permit. The surety company is responsible for any latent defects as provided in California Code of Civil Procedures, Section 337.15 Local agency permittee shall comply with requirements established as follows: In recognition that project construction work done on State property will not be directly funded and paid by State, for the purpose of protecting stop notice claimants and the interests of State relative to successful project completion, the local agency permittee agrees to require the construction contractor furnish both a payment and performance bond in the local agency's name with both bonds complying with the requirements set forth in Section 3-1 02 of State's current Standard Specifications before performing any project construction work. The local agency permittee shall defend, indemnify, and hold harmless the State, its officers and employees from all project construction related claims by contractors and all stop notice or mechanic's lien claimants The local agency also agrees to remedy, in a timely manner and to State's satisfaction, any latent defects occurring as a result of the project construction work.

25. **FUTURE MOVING OF INSTALLATIONS:** Permittee understands and agrees to rearrange a permitted installation upon request by the Department, for State construction, reconstruction, or maintenance

Caltrans Metric

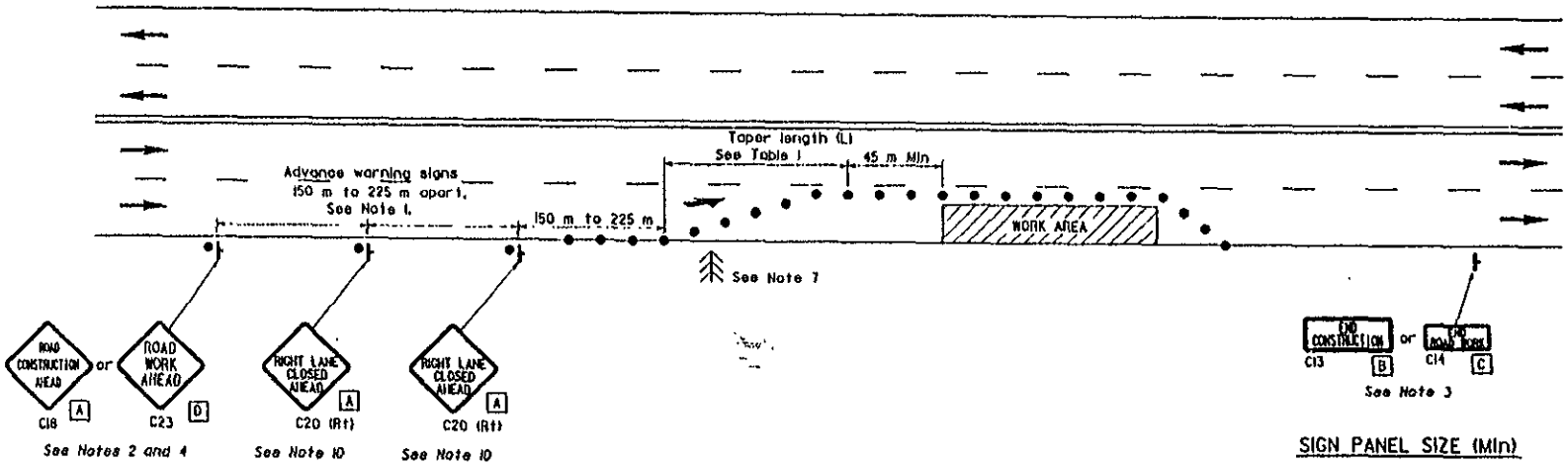
DIST	COUNTY	ROUTE	BRIDGE NO.	TOTAL SHEETS

REGISTERED CIVIL ENGINEER

July 1, 1997
PLANS APPROVAL DATE

The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic media of this plan sheet.

TYPICAL LANE CLOSURE



SIGN PANEL SIZE (Min)

- A 900 mm x 900 mm
- B 1200 mm x 450 mm
- C 900 mm x 450 mm
- D 750 mm x 750 mm

LEGEND

- Traffic Cone
- Portable Sign
- Direction of Travel
- Flashing Arrow Sign

NOTES

1. Where approach speeds are low, signs may be placed at 90 m spacing, and in urban areas, closer.
2. All advance warning sign installations shall be equipped with flags for daytime closures.
3. A C13 "END CONSTRUCTION" or C14 "END ROAD WORK" sign, as appropriate, shall be placed at the end of the lane closure unless the end of work area is obvious, or ends within a larger project's limits.
4. If the C18 (or C23) sign would follow within 600 m of a stationary C18, C23, or C11 "STATE HIGHWAY CONSTRUCTION NEXT _____ MILES", use a C20 sign for the first advance warning sign.
5. All cones used for night lane closures shall be fitted with reflective sleeves as specified in the specifications.
6. Portable delineators, placed at one-half the spacing indicated for traffic cones, may be used in lieu of cones for daytime closures only.
7. Flashing arrow sign shall be either Type I or Type II.
8. The maximum spacing between cones in a taper shall be approximately as shown in Table I and 15 m maximum spacing on tangent.
9. For approach speeds over 80 km/h, use the "Traffic Control System for Lane Closure On Freeways And Expressways" plan for lane closure details and requirements.
10. Where specified in the special provisions, a W11 "LANE REDUCTION SYMBOL" sign is to be used in place of the C20 "RIGHT LANE CLOSED AHEAD" sign.

TABLE I

Approach Speed (km/h)	* Taper Length (L) (m)	* Number of Cones for Taper	Spacing of Cones Along Taper (m) ±
0-40	38	6	7.5
40-65	98	9	12
65-80	183	13	15
Over 80	See Note 9		

* Based on 3.6 m wide lane. This column is also appropriate for lane widths less than 3.6 m.

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

TRAFFIC CONTROL SYSTEM FOR LANE CLOSURE ON MULTILANE CONVENTIONAL HIGHWAYS

NO SCALE

T11

APPENDIX C

LABORATORY ANALYSIS REPORT AND CHAIN OF CUSTODY RECORD

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Case Narrative for:

EXXON Company U.S.A.

Certificate of Analysis Number:

99100225

Report To:		Project Name:	200903X	
Environmental Resolution, Inc.		Site:	7-0236,19432502	
Jim Chappell		Site Address:	6600 E. 14th St.	
73 Digital Drive Suite 100			Oakland	CA
Novato		PO Number:	EWR#19911922	
California		State:	California	
94949-		State Cert. No.:	1903	
ph: (415) 382-5996	fax: (415) 382-1856	Date Reported:		

Any data flags or quality control exceptions associated with this report will be footnoted in the analytical result page(s) or the quality control summary page(s).

Please do not hesitate to contact us if you have any questions or comments pertaining to this data report. Please reference the above Certificate of Analysis Number.

SPL, Inc. is pleased to be of service to you. We anticipate working with you in fulfilling all your current and future analytical needs.

Wyatt, Neaundra
Project Manager

11/6/99
Date

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

EXXON Company U.S.A.

Certificate of Analysis Number:

99100225

Report To:

Environmental Resolution, Inc.
Jim Chappell
73 Digital Drive Suite 100

Novato
California
94949-
ph: (415) 382-5996 fax: (415) 382-1856

Project Name:	200903X
Site:	7-0236,19432502
Site Address:	6600 E. 14th St. Oakland CA
PO Number:	EWR#19911922
State:	California
State Cert. No.:	1903
Date Reported:	

Client Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COC ID	HOLD
16-SB3	99100225-01	Water	10/13/99 12:00:00 PM	10/15/99 10:00:00 AM		☑
16-SB3	99100225-01	Water	10/13/99 12:00:00 PM	10/15/99 10:00:00 AM		☐
W-13-SB2	99100225-02	Water	10/13/99 1:15:00 PM	10/15/99 10:00:00 AM		☑
13-SB2	99100225-02	Water	10/13/99 1:15:00 PM	10/15/99 10:00:00 AM		☐
11-SB1	99100225-03	Water	10/13/99 4:15:00 PM	10/15/99 10:00:00 AM		☑
W-11-SB1	99100225-03	Water	10/13/99 4:15:00 PM	10/15/99 10:00:00 AM		☐
W-21-MW2	99100225-04	Water	10/13/99 5:20:00 PM	10/15/99 10:00:00 AM		☐
21-MW2	99100225-04	Water	10/13/99 5:20:00 PM	10/15/99 10:00:00 AM		☑
BB-MW2	99100225-05	Water	10/13/99 5:10:00 PM	10/15/99 10:00:00 AM		☐

11/6/99

yatt, Neaundra
roject Manager

Date

Joel Grice
Laboratory Director

Ted Yen
Quality Assurance Officer

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Client Sample ID W-16-SB3 **Collected:** 10/13/99 12:00:0 **SPL Sample ID:** 99100225-01

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
GASOLINE RANGE ORGANICS			**CA_GRO**		**Units: ug/L**		
Gasoline Range Organics	ND	50	1		10/21/99 1:38	D_R	77937
Surr: 1,4-Difluorobenzene	97	62-144	1		10/21/99 1:38	D_R	77937
Surr: 4-Bromofluorobenzene	110	44-153	1		10/21/99 1:38	D_R	77937
PURGEABLE AROMATICS			**SW8021B**		**Units: ug/L**		
Benzene	ND	1	1		10/21/99 1:38	D_R	77565
Ethylbenzene	ND	1	1		10/21/99 1:38	D_R	77565
Toluene	ND	1	1		10/21/99 1:38	D_R	77565
m,p-Xylene	ND	1	1		10/21/99 1:38	D_R	77565
o-Xylene	ND	1	1		10/21/99 1:38	D_R	77565
Xylenes,Total	ND	1	1		10/21/99 1:38	D_R	77565
Surr: 1,4-Difluorobenzene	93	72-137	1		10/21/99 1:38	D_R	77565
Surr: 4-Bromofluorobenzene	97	48-156	1		10/21/99 1:38	D_R	77565
VOLATILE ORGANICS METHOD 8260B			**SW8260B**		**Units: ug/L**		
Methyl tert-butyl ether	ND	5	1		10/20/99 9:44	JC	77119
Surr: 1,2-Dichloroethane-d4	100	80-120	1		10/20/99 9:44	JC	77119
Surr: 4-Bromofluorobenzene	90	86-115	1		10/20/99 9:44	JC	77119
Surr: Toluene-d8	98	88-110	1		10/20/99 9:44	JC	77119

Neaundra Wyatt

Wyatt, Neaundra
Project Manager

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Client Sample ID W-13-SB2 Collected: 10/13/99 1:15:00 SPL Sample ID: 99100225-02

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
GASOLINE RANGE ORGANICS			CA_GRO		Units: ug/L		
Gasoline Range Organics	ND	50	1		10/21/99 2:06	D_R	77949
Surr: 1,4-Difluorobenzene	92	62-144	1		10/21/99 2:06	D_R	77949
Surr: 4-Bromofluorobenzene	110	44-153	1		10/21/99 2:06	D_R	77949
PURGEABLE AROMATICS			SW8021B		Units: ug/L		
Benzene	ND	1	1		10/21/99 2:06	D_R	77578
Ethylbenzene	ND	1	1		10/21/99 2:06	D_R	77578
Toluene	ND	1	1		10/21/99 2:06	D_R	77578
m,p-Xylene	ND	1	1		10/21/99 2:06	D_R	77578
o-Xylene	ND	1	1		10/21/99 2:06	D_R	77578
Xylenes,Total	ND	1	1		10/21/99 2:06	D_R	77578
Surr: 1,4-Difluorobenzene	98	72-137	1		10/21/99 2:06	D_R	77578
Surr: 4-Bromofluorobenzene	100	48-156	1		10/21/99 2:06	D_R	77578
VOLATILE ORGANICS METHOD 8260B			SW8260B		Units: ug/L		
Methyl tert-butyl ether	ND	5	1		10/20/99 13:47	JC	77126
Surr: 1,2-Dichloroethane-d4	96	80-120	1		10/20/99 13:47	JC	77126
Surr: 4-Bromofluorobenzene	92	86-115	1		10/20/99 13:47	JC	77126
Surr: Toluene-d8	100	88-110	1		10/20/99 13:47	JC	77126

Neaundra Wyatt

Wyatt, Neaundra
Project Manager

Qualifiers:
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HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Client Sample ID: W-11-SB1 **Collected:** 10/13/99 4:15:00 **SPL Sample ID:** 99100225-03

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
GASOLINE RANGE ORGANICS			**CA_GRO**		**Units: ug/L**		
Gasoline Range Organics	18000	1200	25		10/22/99 2:33	D_R	78885
Surr: 1,4-Difluorobenzene	150	62-144	25	*	10/22/99 2:33	D_R	78885
Surr: 4-Bromofluorobenzene	120	44-153	25		10/22/99 2:33	D_R	78885
PURGEABLE AROMATICS			**SW8021B**		**Units: ug/L**		
Benzene	46	25	25		10/22/99 2:33	D_R	78825
Ethylbenzene	1200	25	25		10/22/99 2:33	D_R	78825
Toluene	ND	25	25		10/22/99 2:33	D_R	78825
m,p-Xylene	32	25	25		10/22/99 2:33	D_R	78825
o-Xylene	ND	25	25		10/22/99 2:33	D_R	78825
Xylenes,Total	32	25	25		10/22/99 2:33	D_R	78825
Surr: 1,4-Difluorobenzene	97	72-137	25		10/22/99 2:33	D_R	78825
Surr: 4-Bromofluorobenzene	97	48-156	25		10/22/99 2:33	D_R	78825
VOLATILE ORGANICS METHOD 8260B			**SW8260B**		**Units: ug/L**		
Methyl tert-butyl ether	1900	120	25		10/20/99 16:03	JC	77130
Surr: 1,2-Dichloroethane-d4	88	80-120	25		10/20/99 16:03	JC	77130
Surr: 4-Bromofluorobenzene	96	86-115	25		10/20/99 16:03	JC	77130
Surr: Toluene-d8	96	88-110	25		10/20/99 16:03	JC	77130

Wyatt, Neaundra
Project Manager

Qualifiers:
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HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Client Sample ID W-21-MW2 **Collected:** 10/13/99 5:20:00 **SPL Sample ID:** 99100225-04

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS- CA			**CA_DRO**		**Units: ug/L**		
Diesel Range Organics	590	50	1		10/21/99 21:31	RR	79348
Surr: n-Pentacosane	100	20-150	1		10/21/99 21:31	RR	79348

Run ID/Seq #: HP_V_991021C-79348

Prep Method	Prep Date	Prep Initials
SW3510B	10/20/1999 10:44	KL

GASOLINE RANGE ORGANICS			**CA_GRO**		**Units: ug/L**		
Gasoline Range Organics	1800	250	5		10/21/99 3:01	D_R	77951
Surr: 1,4-Difluorobenzene	93	62-144	5		10/21/99 3:01	D_R	77951
Surr: 4-Bromofluorobenzene	130	44-153	5		10/21/99 3:01	D_R	77951
PURGEABLE AROMATICS			**SW8021B**		**Units: ug/L**		
Benzene	8.6	5	5		10/21/99 3:01	D_R	77582
Ethylbenzene	ND	5	5		10/21/99 3:01	D_R	77582
Toluene	ND	5	5		10/21/99 3:01	D_R	77582
m,p-Xylene	ND	5	5		10/21/99 3:01	D_R	77582
o-Xylene	ND	5	5		10/21/99 3:01	D_R	77582
Xylenes,Total	ND	5	5		10/21/99 3:01	D_R	77582
Surr: 1,4-Difluorobenzene	95	72-137	5		10/21/99 3:01	D_R	77582
Surr: 4-Bromofluorobenzene	100	48-156	5		10/21/99 3:01	D_R	77582
VOLATILE ORGANICS METHOD 8260B			**SW8260B**		**Units: ug/L**		
Methyl tert-butyl ether	1300	50	10		10/20/99 15:37	JC	77129
Surr: 1,2-Dichloroethane-d4	100	80-120	10		10/20/99 15:37	JC	77129
Surr: 4-Bromofluorobenzene	94	86-115	10		10/20/99 15:37	JC	77129
Surr: Toluene-d8	98	88-110	10		10/20/99 15:37	JC	77129

Wyatt, Neaundra
Project Manager

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
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J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
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HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Client Sample ID W-BB-MW2 **Collected:** 10/13/99 5:10:00 **SPL Sample ID:** 99100225-05

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS- CA			**CA_DRO**		**Units: ug/L**		
Diesel Range Organics	ND	50	1		10/21/99 23:27	RR	79351
Surr: n-Pentacosane	29	20-150	1		10/21/99 23:27	RR	79351

Run ID/Seq #: HP_V_991021C-79351

Prep Method	Prep Date	Prep Initials
SW3510B	10/20/1999 10:44	KL

GASOLINE RANGE ORGANICS			**CA_GRO**		**Units: ug/L**		
Gasoline Range Organics	ND	50	1		10/21/99 3:28	D_R	77966
Surr: 1,4-Difluorobenzene	94	62-144	1		10/21/99 3:28	D_R	77966
Surr: 4-Bromofluorobenzene	120	44-153	1		10/21/99 3:28	D_R	77966
PURGEABLE AROMATICS			**SW8021B**		**Units: ug/L**		
Benzene	ND	1	1		10/21/99 3:28	D_R	77592
Ethylbenzene	ND	1	1		10/21/99 3:28	D_R	77592
Toluene	ND	1	1		10/21/99 3:28	D_R	77592
m,p-Xylene	ND	1	1		10/21/99 3:28	D_R	77592
o-Xylene	ND	1	1		10/21/99 3:28	D_R	77592
Xylenes,Total	ND	1	1		10/21/99 3:28	D_R	77592
Surr: 1,4-Difluorobenzene	96	72-137	1		10/21/99 3:28	D_R	77592
Surr: 4-Bromofluorobenzene	100	48-156	1		10/21/99 3:28	D_R	77592

Wyatt, Neaundra
Project Manager

Qualifiers:
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D - Surrogate Recovery Unreportable due to Dilution

Quality Control Documentation

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Quality Control Report

EXXON Company U.S.A.

200903X

Analysis: Diesel Range Organics-CA
Method: CA_DRO
WorkOrder: 99100225
Lab Batch ID: 1237

Method Blank

RunID: HP_V_991021C-79345 Units: mg/L
Analysis Date: 10/21/1999 20:15 Analyst: RR
Preparation Date: 10/20/1999 10:44 Prep By: KL Method SW3510B

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
99100225-04C	W-21-MW2
99100225-05B	W-BB-MW2

Analyte	Result	Rep Limit
Diesel Range Organics	ND	0.050
Surr: n-Pentacosane	87.2	20-150

Laboratory Control Sample (LCS)

RunID: HP_V_991021C-79346 Units: mg/L
Analysis Date: 10/21/1999 20:53 Analyst: RR
Preparation Date: 10/20/1999 10:44 Prep By: KL Method SW3510B

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Diesel Range Organics	2.5	2.4	96	21	175

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 99100225-04
RunID: HP_V_991021C-79349 Units: mg/L
Analysis Date: 10/21/1999 22:10 Analyst: RR
Preparation Date: 10/20/1999 10:44 Prep By: KL Method SW3510B

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Diesel Range Organics	0.59	5	2.2	32.8	5	2.2	33.0	0.608	20	21	175

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
* - Recovery Outside Advisable QC Limits
D - Surrogate Recovery Unreportable due to Dilution

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Quality Control Report

EXXON Company U.S.A.

200903X

Analysis: Purgeable Aromatics
Method: SW8021B

WorkOrder: 99100225
Lab Batch ID: R3667

Method Blank

RunID: VARE_991020C-77488 Units: ug/L
Analysis Date: 10/20/1999 20:36 Analyst: D_R

Analyte	Result	Rep Limit
Benzene	ND	1.0
Ethylbenzene	ND	1.0
Toluene	ND	1.0
m,p-Xylene	ND	1.0
o-Xylene	ND	1.0
Xylenes,Total	ND	1.0
Surr: 1,4-Difluorobenzene	93.7	72-137
Surr: 4-Bromofluorobenzene	102.0	48-156

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
99100225-01A	W-16-SB3
99100225-02A	W-13-SB2
99100225-04A	W-21-MW2
99100225-05A	W-BB-MW2

Laboratory Control Sample (LCS)

RunID: VARE_991020C-77487 Units: ug/L
Analysis Date: 10/20/1999 19:41 Analyst: D_R

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	50	55	110	61	119
Ethylbenzene	50	52	103	70	118
Toluene	50	56	113	65	125
m,p-Xylene	100	100	103	72	116
o-Xylene	50	46	92	72	117
Xylenes,Total	150	146	97	72	116

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 99100224-03
RunID: VARE_991020C-77489 Units: ug/L
Analysis Date: 10/20/1999 21:03 Analyst: D_R

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Benzene	ND	20	20	99.8	20	22	112	11.9	21	32	164
Ethylbenzene	ND	20	16	80.0	20	19	96.1	18.4	19	52	142
Toluene	ND	20	19	95.5	20	22	109	13.4	20	38	159

Qualifiers:
ND/U - Not Detected at the Reporting Limit
* - Recovery Outside Advisable QC Limits
B - Analyte detected in the associated Method Blank
D - Surrogate Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Quality Control Report

EXXON Company U.S.A.

200903X

Analysis: Purgeable Aromatics
Method: SW8021B
WorkOrder: 99100225
Lab Batch ID: R3667

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 99100224-03
RunID: VARE_991020C-77489 Units: ug/L
Analysis Date: 10/20/1999 21:03 Analyst: D_R

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
p-Xylene	ND	40	34	85.3	40	41	102	17.5*	17	53	144
o-Xylene	ND	20	16	79.6	20	20	99.4	22.1*	18	53	143
Xylenes,Total	ND	60	50	83.3	60	61	102	19.8*	17	53	143

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
* - Recovery Outside Advisable QC Limits
D - Surrogate Recovery Unreportable due to Dilution

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Quality Control Report

EXXON Company U.S.A.

200903X

Analysis: Gasoline Range Organics
Method: CA_GRO

WorkOrder: 99100225
Lab Batch ID: R3687

Method Blank

RunID: VARE_991020D-77908 Units: mg/L
Analysis Date: 10/20/1999 20:36 Analyst: D_R

Analyte	Result	Rep Limit
Gasoline Range Organics	ND	0.050
Surr: 1,4-Difluorobenzene	95.2	62-144
Surr: 4-Bromofluorobenzene	114.6	44-153

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
99100225-01A	W-16-SB3
99100225-02A	W-13-SB2
99100225-04A	W-21-MW2
99100225-05A	W-BB-MW2

Laboratory Control Sample (LCS)

RunID: VARE_991020D-77906 Units: mg/L
Analysis Date: 10/20/1999 20:08 Analyst: D_R

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Gasoline Range Organics	1	0.95	95	64	131

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 99100224-04
RunID: VARE_991020D-77913 Units: mg/L
Analysis Date: 10/20/1999 21:58 Analyst: D_R

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Gasoline Range Organics	ND	0.9	0.67	74.2	0.9	0.47	52.5	34.1	36	36	160

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
* - Recovery Outside Advisable QC Limits
D - Surrogate Recovery Unreportable due to Dilution

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Quality Control Report

EXXON Company U.S.A.

200903X

Analysis: Purgeable Aromatics
Method: SW8021B
WorkOrder: 99100225
Lab Batch ID: R3721

Method Blank

RunID: VARE_991021D-78809 Units: ug/L
Analysis Date: 10/21/1999 12:10 Analyst: D_R

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
99100225-03A	W-11-SB1

Analyte	Result	Rep Limit
Benzene	ND	1.0
Ethylbenzene	ND	1.0
Toluene	ND	1.0
m,p-Xylene	ND	1.0
Xylenes,Total	ND	1.0
Surr: 1,4-Difluorobenzene	90.2	72-137
Surr: 4-Bromofluorobenzene	103.9	48-156

Laboratory Control Sample (LCS)

RunID: VARE_991021D-78808 Units: ug/L
Analysis Date: 10/21/1999 11:15 Analyst: D_R

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	50	57	114	61	119
Ethylbenzene	50	52	104	70	118
Toluene	50	58	117	65	125
m,p-Xylene	100	100	103	72	116
o-Xylene	50	46	93	72	117
Xylenes,Total	150	146	97	72	116

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 9910247-01A
RunID: VARE_991021D-78866 Units: ug/L
Analysis Date: 10/21/1999 13:38 Analyst: D_R

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Benzene	ND	20	22	110	20	22	110	0.248	21	32	164
Ethylbenzene	ND	20	19	92.5	20	18	87.6	5.52	19	52	142
Toluene	ND	20	20	101	20	20	102	1.42	20	38	159

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
* - Recovery Outside Advisable QC Limits
D - Surrogate Recovery Unreportable due to Dilution

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Quality Control Report

EXXON Company U.S.A.

200903X

Analysis: Purgeable Aromatics
Method: SW8021B
WorkOrder: 99100225
Lab Batch ID: R3721

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 9910247-01A
RunID: VARE_991021D-78866 Units: ug/L
Analysis Date: 10/21/1999 13:38 Analyst: D_R

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
,p-Xylene	ND	40	39	98.2	40	38	95.9	2.39	17	53	144
o-Xylene	ND	20	20	97.7	20	19	95.5	2.31	18	53	143
Xylenes,Total	ND	60	59	98.3	60	57	95.0	3.45	17	53	143

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
* - Recovery Outside Advisable QC Limits
D - Surrogate Recovery Unreportable due to Dilution

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Quality Control Report

EXXON Company U.S.A.

200903X

Analysis: Gasoline Range Organics
Method: CA_GRO
WorkOrder: 99100225
Lab Batch ID: R3725

Method Blank

RunID: VARE_991021E-78904 Units: mg/L
Analysis Date: 10/21/1999 12:10 Analyst: D_R

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
99100225-03A	W-11-SB1

Analyte	Result	Rep Limit
Gasoline Range Organics	ND	0.050
Surr: 1,4-Difluorobenzene	95.9	62-144
Surr: 4-Bromofluorobenzene	131.4	44-153

Laboratory Control Sample (LCS)

RunID: VARE_991021E-78869 Units: mg/L
Analysis Date: 10/21/1999 11:43 Analyst: D_R

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Gasoline Range Organics	1	0.93	93	64	131

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 99100247-02
RunID: VARE_991021E-78878 Units: mg/L
Analysis Date: 10/21/1999 21:58 Analyst: D_R

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Gasoline Range Organics	0.58	0.9	1.2	65.5	0.9	0.99	45.0	37.1*	36	36	160

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
* - Recovery Outside Advisable QC Limits
D - Surrogate Recovery Unreportable due to Dilution

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Quality Control Report

EXXON Company U.S.A.

200903X

Analysis: Volatile Organics
Method: SW8260B
WorkOrder: 99100225
Lab Batch ID: R3649

Method Blank

RunID: N_991020A-77118 Units: ug/L
Analysis Date: 10/20/1999 9:15 Analyst: JC

Analyte	Result	Rep Limit
Methyl tert-butyl ether	ND	5.0
Surr: 1,2-Dichloroethane-d4	100.0	80-120
Surr: 4-Bromofluorobenzene	92.0	86-115
Surr: Toluene-d8	98.0	88-110

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
99100225-01B	W-16-SB3
99100225-02B	W-13-SB2
99100225-03B	W-11-SB1
99100225-04B	W-21-MW2

Laboratory Control Sample (LCS)

RunID: N_991020A-77117 Units: ug/L
Analysis Date: 10/20/1999 8:49 Analyst: JC

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
1,1-Dichloroethene	50	55	110	61	145
Benzene	50	57	114	76	127
Chlorobenzene	50	54	108	75	130
Toluene	50	55	110	76	125
Trichloroethene	50	57	114	71	120

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 99100225-01
RunID: N_991020A-77120 Units: ug/L
Analysis Date: 10/20/1999 10:10 Analyst: JC

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
-Dichloroethene	ND	50	53	106	50	54	108	2	14	61	145
Benzene	ND	50	56	112	50	55	110	2	11	76	127
Chlorobenzene	ND	50	53	106	50	53	106	0	13	75	130
uene	ND	50	54	108	50	54	108	0	13	76	125
richloroethene	ND	50	54	108	50	54	108	0	14	71	120

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
* - Recovery Outside Advisable QC Limits
D - Surrogate Recovery Unreportable due to Dilution

Chain of Custody

And

Sample Receipt Checklist

EXXON COMPANY, USA. 9910225

CHAIN OF CUSTODY RECORD NO. _____ Page 1 of 2

Exxon Engineer: Darin L. Rouse Phone: (925) 246-8768
Consultant Co. Name: ERI Contact: Jim Chappell
Address: 73 Digital Drive Phone: (415) 382-4323
Suite 100, Fax: -1856
Novato Ca 94949
RAS #: 7-0236 Facility/State ID # (TN Only): _____
AFE # (Terminal Only): _____ Consultant Project #: 200903X
Location: 6600 E 14th Street (City): Oakland (State): Ca
☒ EE ☐ C & M ☐ SDT
Consultant Work Release #: 1943 2502
Sampled By: Dylan Crouse

SAMPLE I.D.	DATE	TIME	COMP.	GRAB	MATRIX H_2O	MATRIX SOIL	MATRIX AIR	OTHER	PRESERVATIVE	NO OF CONTAINERS	CONTAINER SIZE	BTEX 8020 WITH MTBE ☐ 602 ☐	PURGEABLE HALOCARBON 8010 ☐ 601 ☐	TPH/IR 418.1 ☐	O&G IR 413.1 ☐ GRAV. 413.2 ☐	TPH/GC 8015 GRO ☒ 8015 DRO ☒	VOL 8240 ☐ 624 ☐	SEMI-VOL 8270 ☐ 625 ☐	PNA/PAH 8100 ☐ 8270 ☐ 8310 ☐	PCB/PEST 8080 ☐ PCB ONLY ☐	TCLP FULL ☐ VOA ☐ SEMI-VOA ☐ PEST ☐ HERB ☐	METALS, TOTAL ☐ METALS, TCLP ☐	LEAD, TOTAL 239.1 ☐ 7421 ☐ LEAD, TCLP ☐	TOX/TOH ☐	REACTIVITY ☐ CORROSIVITY ☐ IGNITABILITY ☐	STATE	OTHER: MTBE 8260		
W-16-SB3	10/13	1200		X	X				HCL	4	40 ml	X				X											X		
W-13-SB2		1315		X	X				HCL	6		X				X											X		
W-11-SB1		1615		X	X				HCL	6		X				X											X		
W-21-MW2		1720			X				HCL	9	And 1 liter	X				X											X		
W-BB-MW2	V	1710			X				NA	2	40ml 1 liter					X													
													Diesel Also																

TAT
24 HR. ___* 72 Hr. ___*
48 HR. ___* 96 Hr. ___*
Standard X *Contact US Prior to Sending Sample
Other ___

EXXON UST CONTRACT NO. S02317M01

QA/QC Level
Standard ☒ CLP ☐ Other ☐ _____

SPECIAL DETECTION LIMITS (Specify)

SPECIAL REPORTING REQUIREMENTS (Specify)

FAX ☐ ☐ FAX C-O-C W/REPORT

REMARKS:

LAB USE ONLY Lot # Storage Location
550 NW
WORK ORDER #: 9910225 LAB WORK RELEASE #:

CUSTODY RECORD

Relinquished By Sampler: D. Crouse	Date 10/14/99	Time	Received By:
Relinquished By:	Date	Time	Received By:
Relinquished By:	Date	Time	Received By Laboratory: Cooler Temp: 4c

10/15/99 1000

SHIP SAMPLES BACK TO: SPL INCORPORATED, 8880 Interchange Drive, Houston, TX 77054 Ph. (713) 660-0901 Fax: (713) 660-8975 Ph. 1-800-969-6775

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Sample Receipt Checklist

Workorder:	99100225	Received by:	Estrada, Ruben
Date and Time Received:	10/15/99 10:00:00 AM	Carrier name:	FedEx
Temperature:	4		

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Water - VOA vials have zero headspace?	Yes ☑	No ☐	Not Present ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	

HOUSTON LABORATORY
6880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Case Narrative for:

EXXON Company U.S.A.

Certificate of Analysis Number:

99100237

Report To:		Project Name:	2009BX
Environmental Resolution, Inc.		Site:	7-0236;19432502
Jim Chappell		Site Address:	6600 E. 14th St.
73 Digital Drive Suite 100			Oakland CA
Novato		PO Number:	EWR#19911923
California		State:	California
94949-		State Cert. No.:	1903
ph (415) 382-5996	fax: (415) 382-1856	Date Reported:	11/08/1999

Your sample ID " SP1 (1-4) Composite " (SPL ID: 99100237-01) was randomly selected for the use in SPL's quality control program for the Diesel Range Organics analysis by California method. The Matrix Spike Duplicate (MSD) was outside of the advisable quality control limits (Batch ID: 1248), due to matrix interference. A Laboratory Control Sample (LCS) was analyzed as a quality control check for the analytical batch and all recoveries were within acceptable limits.

Any other data flags or quality control exceptions associated with this report will be footnoted in the analytical result page(s) or the quality control summary page(s).

Please do not hesitate to contact us if you have any questions or comments pertaining to this data report. Please reference the above Certificate of Analysis Number.

SPL, Inc. is pleased to be of service to you. We anticipate working with you in fulfilling all your current and future analytical needs.

Wyatt, Neaundra
Project Manager

11/11/1999
Date

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

EXXON Company U.S.A.

Certificate of Analysis Number:

99100237

Report To:		Project Name:	200903X
Environmental Resolution, Inc.		Site:	7-0236,19432502
Jim Chappell		Site Address:	6600 E. 14th St.
73 Digital Drive Suite 100			Oakland CA
Novato		PO Number:	EWR#19911923
California		State:	California
94949-		State Cert. No.:	1903
ph: (415) 382-5996	fax: (415) 382-1856	Date Reported:	

Client Sample ID	Lab Sample ID	Matrix	Date Collected	Date Received	COC ID	HOLD
SP1 (1-4) Composite	99100237-01	Soil	10/13/99 5:15:00 PM	10/15/99 10:00:00 AM		☐

Neaundra Wyatt

11/8/99

Wyatt, Neaundra
Project Manager

Date

Joel Grice
Laboratory Director

Ted Yen
Quality Assurance Officer

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Client Sample ID SP1 (1-4) Composite **Collected:** 10/13/99 5:15:00 **SPL Sample ID:** 99100237-01

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
DIESEL RANGE ORGANICS			**CA_DRO**		**Units: mg/Kg**		
Diesel Range Organics	2.1	2	1		10/22/99 0:45	RR	79255
Surr: n-Pentacosane	87	20-150	1		10/22/99 0:45	RR	79255
Run ID/Seq #: HP_V_991021B-79255							
Prep Method: SW3550A	Prep Date: 10/19/1999 8:35	Prep Initials: CB					
GASOLINE RANGE ORGANICS			**CA_GRO**		**Units: mg/Kg**		
Gasoline Range Organics	ND	1	1		10/19/99 23:47	FB	76606
Surr: 1,4-Difluorobenzene	85	72-153	1		10/19/99 23:47	FB	76606
Surr: 4-Bromofluorobenzene	94	51-149	1		10/19/99 23:47	FB	76606
METALS BY METHOD 6010B, TOTAL			**SW6010B**		**Units: mg/Kg**		
Lead	4.12	0.5	1		10/19/99 0:03	EG	75257
Run ID/Seq #: TJAT_991018A-75257							
Prep Method: SW3050B	Prep Date: 10/18/1999 9:26	Prep Initials: EE					
PURGEABLE AROMATICS			**SW8021B**		**Units: mg/Kg**		
Benzene	ND	0.001	1		10/19/99 23:47	FB	76738
Ethylbenzene	0.0011	0.001	1		10/19/99 23:47	FB	76738
Toluene	ND	0.001	1		10/19/99 23:47	FB	76738
m,p-Xylene	0.001	0.001	1		10/19/99 23:47	FB	76738
o-Xylene	ND	0.001	1		10/19/99 23:47	FB	76738
Xylenes,Total	ND	0.001	1		10/19/99 23:47	FB	76738
Surr: 1,4-Difluorobenzene	93	59-127	1		10/19/99 23:47	FB	76738
Surr: 4-Bromofluorobenzene	99	48-156	1		10/19/99 23:47	FB	76738

Neaundra Wyatt

Wyatt, Neaundra
Project Manager

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Client Sample ID SP1 (1-4) Composite **Collected:** 10/13/99 5:15:00 **SPL Sample ID:** 99100237-01

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
VOLATILES ORGANIC COMPOUNDS			**SW8021B**		**Units: mg/Kg**		
1,1,1,2-Tetrachloroethane	ND	0.001	1		10/19/99 23:03	JN	91894
1,1,1-Trichloroethane	ND	0.001	1		10/19/99 23:03	JN	91894
1,1,2,2-Tetrachloroethane	ND	0.002	1		10/19/99 23:03	JN	91894
1,1,2-Trichloroethane	ND	0.001	1		10/19/99 23:03	JN	91894
1,1-Dichloroethane	ND	0.001	1		10/19/99 23:03	JN	91894
1,1-Dichloroethene	ND	0.001	1		10/19/99 23:03	JN	91894
1,1-Dichloropropene	ND	0.001	1		10/19/99 23:03	JN	91894
1,2,3-Trichlorobenzene	ND	0.001	1		10/19/99 23:03	JN	91894
1,2,3-Trichloropropane	ND	0.001	1		10/19/99 23:03	JN	91894
1,2,4-Trichlorobenzene	ND	0.002	1		10/19/99 23:03	JN	91894
1,2,4-Trimethylbenzene	ND	0.002	1		10/19/99 23:03	JN	91930
1,2-Dibromo-3-chloropropane	ND	0.001	1		10/19/99 23:03	JN	91894
1,2-Dibromoethane	ND	0.001	1		10/19/99 23:03	JN	91894
1,2-Dichlorobenzene	ND	0.001	1		10/19/99 23:03	JN	91894
1,2-Dichloroethane	ND	0.001	1		10/19/99 23:03	JN	91894
1,2-Dichloropropane	ND	0.001	1		10/19/99 23:03	JN	91894
1,3,5-Trimethylbenzene	ND	0.002	1		10/19/99 23:03	JN	91930
1,3-Dichlorobenzene	ND	0.002	1		10/19/99 23:03	JN	91894
1,3-Dichloropropane	ND	0.001	1		10/19/99 23:03	JN	91894
1,4-Dichlorobenzene	ND	0.002	1		10/19/99 23:03	JN	91894
2,2-Dichloropropane	ND	0.001	1		10/19/99 23:03	JN	91894
2-Chlorotoluene	ND	0.001	1		10/19/99 23:03	JN	91894
4-Chlorotoluene	ND	0.001	1		10/19/99 23:03	JN	91894
Allyl chloride	ND	0.005	1		10/19/99 23:03	JN	91894
Benzene	ND	0.001	1		10/19/99 23:03	JN	91930
Bromobenzene	ND	0.001	1		10/19/99 23:03	JN	91930
Bromobenzene	ND	0.001	1		10/19/99 23:03	JN	91894
Bromochloromethane	ND	0.001	1		10/19/99 23:03	JN	91894
Bromodichloromethane	ND	0.001	1		10/19/99 23:03	JN	91894
Bromoform	ND	0.001	1		10/19/99 23:03	JN	91894
Bromomethane	ND	0.001	1		10/19/99 23:03	JN	91894
Carbon tetrachloride	ND	0.001	1		10/19/99 23:03	JN	91894
Chlorobenzene	ND	0.001	1		10/19/99 23:03	JN	91894
Chloroethane	ND	0.001	1		10/19/99 23:03	JN	91894
Chloroform	ND	0.001	1		10/19/99 23:03	JN	91894
Chloromethane	ND	0.001	1		10/19/99 23:03	JN	91894
cis-1,2-Dichloroethene	ND	0.001	1		10/19/99 23:03	JN	91894
cis-1,3-Dichloropropene	ND	0.001	1		10/19/99 23:03	JN	91894
Dibromochloromethane	ND	0.001	1		10/19/99 23:03	JN	91894
Dibromomethane	ND	0.001	1		10/19/99 23:03	JN	91894

Wyatt, Neaundra
Project Manager

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Client Sample ID SP1 (1-4) Composite **Collected:** 10/13/99 5:15:00 **SPL Sample ID:** 99100237-01

Analyses/Method	Result	Rep.Limit	Dil. Factor	QUAL	Date Analyzed	Analyst	Seq. #
Dichlorodifluoromethane	ND	0.001	1		10/19/99 23:03	JN	91894
Ethylbenzene	ND	0.001	1		10/19/99 23:03	JN	91930
Hexachlorobutadiene	ND	0.001	1		10/19/99 23:03	JN	91894
Isopropylbenzene	ND	0.001	1		10/19/99 23:03	JN	91930
Methyl tert-butyl ether	ND	0.001	1		10/19/99 23:03	JN	91930
Methylene chloride	ND	0.005	1		10/19/99 23:03	JN	91894
n-Butylbenzene	ND	0.002	1		10/19/99 23:03	JN	91930
n-Propylbenzene	ND	0.001	1		10/19/99 23:03	JN	91930
Naphthalene	ND	0.002	1		10/19/99 23:03	JN	91930
p-Isopropyltoluene	ND	0.001	1		10/19/99 23:03	JN	91930
sec-Butylbenzene	ND	0.002	1		10/19/99 23:03	JN	91930
Styrene	ND	0.002	1		10/19/99 23:03	JN	91930
tert-Butylbenzene	ND	0.001	1		10/19/99 23:03	JN	91930
Tetrachloroethene	ND	0.001	1		10/19/99 23:03	JN	91894
Toluene	ND	0.001	1		10/19/99 23:03	JN	91930
trans-1,2-Dichloroethene	ND	0.001	1		10/19/99 23:03	JN	91894
trans-1,3-Dichloropropene	ND	0.001	1		10/19/99 23:03	JN	91894
Trichloroethene	ND	0.001	1		10/19/99 23:03	JN	91894
Trichlorofluoromethane	ND	0.001	1		10/19/99 23:03	JN	91894
Vinyl chloride	ND	0.001	1		10/19/99 23:03	JN	91894
m,p-Xylene	ND	0.001	1		10/19/99 23:03	JN	91930
o-Xylene	ND	0.001	1		10/19/99 23:03	JN	91930
Xylenes,Total	ND	0.001	1		10/19/99 23:03	JN	91930
Surr: 3-Bromochlorobenzene	110	50-150	1		10/19/99 23:03	JN	91894
Surr: Fluorobenzene	98	70-130	1		10/19/99 23:03	JN	91930

Wyatt, Neaundra
Project Manager

Qualifiers:
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B - Analyte detected in the associated Method Blank
* - Surrogate Recovery Outside Advisable QC Limits
J - Estimated Value between MDL and PQL
>MCL - Result Over Maximum Contamination Limit(MCL)
D - Surrogate Recovery Unreportable due to Dilution

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Quality Control Report

EXXON Company U.S.A.

200903X

Analysis: Diesel Range Organics
Method: CA_DRO

WorkOrder: 99100237
Lab Batch ID: 1248

Method Blank

RunID: HP_V_991021B-79258 Units: mg/Kg
Analysis Date: 10/22/1999 3:59 Analyst: RR
Preparation Date: 10/19/1999 8:35 Prep By: CB Method SW3550A

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
99100237-01A	SP1 (1-4) Composite

Analyte	Result	Rep Limit
Diesel Range Organics	ND	2.0
Surr: n-Pentacosane	97.4	20-150

Laboratory Control Sample (LCS)

RunID: HP_V_991021B-79259 Units: mg/Kg
Analysis Date: 10/22/1999 4:38 Analyst: RR
Preparation Date: 10/19/1999 8:35 Prep By: CB Method SW3550A

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Diesel Range Organics	166	140	87	53	148

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 99100237-01
RunID: HP_V_991021B-79256 Units: mg/Kg
Analysis Date: 10/22/1999 1:24 Analyst: RR
Preparation Date: 10/19/1999 8:35 Prep By: CB Method SW3550A

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Diesel Range Organics	2.1	166	150	86.9	166	130	74.9*	14.8	30	75	125

Qualifiers:

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B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
* - Recovery Outside Advisable QC Limits
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Quality Control Report

EXXON Company U.S.A.

200903X

Analysis: Gasoline Range Organics
Method: CA_GRO
WorkOrder: 99100237
Lab Batch ID: R3627

Method Blank

RunID: HP_O_991019B-76604 Units: mg/Kg
Analysis Date: 10/19/1999 23:19 Analyst: FB

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
99100237-01A	SP1 (1-4) Composite

Analyte	Result	Rep Limit
Gasoline Range Organics	ND	1.0
Surr: 1,4-Difluorobenzene	81.4	72-153
Surr: 4-Bromofluorobenzene	94.7	51-149

Laboratory Control Sample (LCS)

RunID: HP_O_991019B-76577 Units: mg/Kg
Analysis Date: 10/19/1999 20:58 Analyst: FB

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Gasoline Range Organics	1	0.73	73	53	137

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 9910577-01A
RunID: HP_O_991019B-76578 Units: mg/Kg
Analysis Date: 10/19/1999 22:23 Analyst: FB

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Gasoline Range Organics	ND	0.9	0.63	70.0	0.9	0.7	77.8	10.5	50	36	163

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
* - Recovery Outside Advisable QC Limits
D - Surrogate Recovery Unreportable due to Dilution

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Quality Control Report

EXXON Company U.S.A.

200903X

Analysis: Purgeable Aromatics
Method: SW8021B

WorkOrder: 99100237
Lab Batch ID: R3633

Method Blank

RunID: HP_O_991019C-76737 Units: ug/Kg
Analysis Date: 10/19/1999 23:19 Analyst: FB

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
99100237-01A	SP1 (1-4) Composite

Analyte	Result	Rep Limit
Benzene	ND	1.0
Ethylbenzene	ND	1.0
Toluene	ND	1.0
m,p-Xylene	ND	1.0
o-Xylene	ND	1.0
Xylenes,Total	ND	1.0
Surr: 1,4-Difluorobenzene	92.3	59-127
Surr: 4-Bromofluorobenzene	99 2	48-156

Laboratory Control Sample (LCS)

RunID: HP_O_991019C-76734 Units: ug/Kg
Analysis Date: 10/19/1999 20:30 Analyst: FB

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Benzene	50	47	95	60	116
Ethylbenzene	50	46	93	68	127
Toluene	50	47	94	64	122
m,p-Xylene	100	93	93	68	129
o-Xylene	50	46	93	68	127
Xylenes,Total	150	139	93	68	127

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 9910577-01A
RunID: HP_O_991019C-76735 Units: ug/Kg
Analysis Date: 10/19/1999 21:26 Analyst: FB

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Benzene	ND	20	20	99.1	20	22	108	8.78	34	35	139
Ethylbenzene	ND	20	19	93.4	20	21	103	9.61	35	31	137
Toluene	ND	20	19	96.3	20	20	102	6.00	28	31	137

Qualifiers:
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(713) 660-0901

Quality Control Report

EXXON Company U.S.A.

200903X

Analysis: Purgeable Aromatics
Method: SW8021B

WorkOrder: 99100237
Lab Batch ID: R3633

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 9910577-01A
RunID: HP_O_991019C-76735 Units: ug/Kg
Analysis Date: 10/19/1999 21:26 Analyst: FB

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
m,p-Xylene	ND	40	35	87.6	40	41	102	14.8	38	19	144
o-Xylene	ND	20	18	88.6	20	21	103	14.6	57	25	139
Xylenes,Total	ND	60	53	88.3	60	62	103	15.7	38	25	139

Qualifiers:

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Quality Control Report

EXXON Company U.S.A.

200903X

Analysis: Volatiles Organic Compounds
Method: SW8021B

WorkOrder: 99100237
Lab Batch ID: R4340

Method Blank

RunID: HP_F_991018A-91843 Units: ug/Kg
Analysis Date: 10/19/1999 3:02 Analyst: JN

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
99100237-01A	SP1 (1-4) Composite

Analyte	Result	Rep Limit
1,1,1,2-Tetrachloroethane	ND	1.0
1,1,1-Trichloroethane	ND	1.0
1,1,2,2-Tetrachloroethane	ND	2.0
1,1,2-Trichloroethane	ND	1.0
1,1-Dichloroethane	ND	1.0
1,1-Dichloroethene	ND	1.0
1,1-Dichloropropene	ND	1.0
1,2,3-Trichlorobenzene	ND	1.0
1,2,3-Trichloropropane	ND	1.0
1,2,4-Trichlorobenzene	ND	2.0
1,2-Dibromo-3-chloropropane	ND	1.0
1,2-Dibromoethane	ND	1.0
1,2-Dichlorobenzene	ND	1.0
1,2-Dichloroethane	ND	1.0
1,2-Dichloropropane	ND	1.0
1,3-Dichlorobenzene	ND	2.0
1,3-Dichloropropane	ND	1.0
1,4-Dichlorobenzene	ND	2.0
2,2-Dichloropropane	ND	1.0
2-Chlorotoluene	ND	1.0
4-Chlorotoluene	ND	1.0
Allyl chloride	ND	5.0
Bromobenzene	ND	1.0
Bromochloromethane	ND	1.0
Bromodichloromethane	ND	1.0
Bromoform	ND	1.0
Bromomethane	ND	1.0
Carbon tetrachloride	ND	1.0
Chlorobenzene	ND	1.0
Chloroethane	ND	1.0
Chloroform	ND	1.0
Chloromethane	ND	1.0
cis-1,2-Dichloroethene	ND	1.0
cis-1,3-Dichloropropene	ND	1.0
Dibromochloromethane	ND	1.0
Dibromomethane	ND	1.0
Dichlorodifluoromethane	ND	1.0
Hexachlorobutadiene	ND	1.0
Methylene chloride	ND	5.0
Tetrachloroethene	ND	1.0
trans-1,2-Dichloroethene	ND	1.0
trans-1,3-Dichloropropene	ND	1.0
Trichloroethene	ND	1.0
Trichlorofluoromethane	ND	1.0
Vinyl chloride	ND	1.0
Surr: 3-Bromochlorobenzene	143.8	50-150

Laboratory Control Sample (LCS)

Qualifiers:

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D - Surrogate Recovery Unreportable due to Dilution

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Quality Control Report

EXXON Company U.S.A.

200903X

Analysis: Volatiles Organic Compounds
Method: SW8021B

WorkOrder: 99100237
Lab Batch ID: R4340

RunID: HP_F_991018A-91841 Units: ug/Kg
Analysis Date: 10/18/1999 11:04 Analyst: JN

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
1,1,1,2-Tetrachloroethane	20	19	93	50	150
1,1,1-Trichloroethane	20	18	92	50	150
1,1,2,2-Tetrachloroethane	20	18	90	50	150
1,1,2-Trichloroethane	20	18	90	50	150
1,1-Dichloroethane	20	18	88	50	150
1,1-Dichloroethene	20	18	91	50	150
1,1-Dichloropropene	20	18	92	50	150
1,2,3-Trichlorobenzene	20	17	87	50	150
1,2,3-Trichloropropane	20	18	89	50	150
1,2-Dibromo-3-chloropropane	20	17	87	50	150
1,2-Dibromoethane	20	19	93	50	150
1,2-Dichlorobenzene	20	17	84	50	150
1,2-Dichloroethane	20	17	83	50	150
1,2-Dichloropropane	20	19	93	50	150
1,3-Dichlorobenzene	20	17	87	50	150
1,3-Dichloropropane	20	18	91	50	150
1,4-Dichlorobenzene	20	16	82	50	150
2,2-Dichloropropane	20	17	87	50	150
2-Chlorotoluene	20	19	94	50	150
4-Chlorotoluene	20	18	91	50	150
Allyl chloride	20	17	87	50	150
Bromobenzene	20	18	91	50	150
Bromochloromethane	20	18	89	50	150
Bromodichloromethane	20	17	85	50	150
Bromoform	20	19	95	50	150
Bromomethane	20	18	92	50	150
Carbon tetrachloride	20	19	93	50	150
Chlorobenzene	20	16	82	50	150
Chloroethane	20	17	87	50	150
Chloroform	20	18	89	50	150
Chloromethane	20	18	89	50	150
cis-1,2-Dichloroethene	20	18	89	50	150
cis-1,3-Dichloropropene	20	18	89	50	150
Dibromochloromethane	20	19	93	50	150
Dibromomethane	20	19	96	50	150
Dichlorodifluoromethane	20	20	101	50	150
Hexachlorobutadiene	20	16	82	50	150

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
* - Recovery Outside Advisable QC Limits
D - Surrogate Recovery Unreportable due to Dilution

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
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Quality Control Report

EXXON Company U.S.A.

200903X

Analysis: Volatiles Organic Compounds
Method: SW8021B
WorkOrder: 99100237
Lab Batch ID: R4340

Laboratory Control Sample (LCS)

RunID: HP_F_991018A-91841 Units: ug/Kg
Analysis Date: 10/18/1999 11:04 Analyst: JN

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Methylene chloride	20	17	86	50	150
Tetrachloroethene	20	19	93	50	150
trans-1,2-Dichloroethene	20	18	89	50	150
trans-1,3-Dichloropropene	20	18	91	50	150
Trichloroethene	20	19	94	50	150
Trichlorofluoromethane	20	18	92	50	150
Vinyl chloride	20	18	90	50	150

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 99100260-04
RunID: HP_F_991018A-91880 Units: ug/Kg
Analysis Date: 10/19/1999 16:02 Analyst: JN

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
1,1,1,2-Tetrachloroethane	ND	20	19	96.1	20	16	78.1	20.7	30	50	150
1,1,1-Trichloroethane	ND	20	19	95.6	20	17	82.9	14.2	30	50	150
1,1,2,2-Tetrachloroethane	ND	20	20	98.2	20	16	78.6	22.2	30	50	150
1,1,2-Trichloroethane	ND	20	19	93.4	20	15	75.9	20.8	30	50	150
1,1-Dichloroethane	ND	20	20	100	20	17	84.5	17.3	30	50	150
1,1-Dichloroethene	ND	20	19	95.2	20	17	84.5	11.9	30	50	150
1,1-Dichloropropene	ND	20	19	95.5	20	16	80.7	16.8	30	50	150
1,2,3-Trichlorobenzene	ND	20	18	90.7	20	13	62.6	36.6*	30	50	150
1,2,3-Trichloropropane	ND	20	18	90.2	20	15	73.4	20.5	30	50	150
1,2,4-Trichlorobenzene	ND	20	18	90.1	20	12	61.1	38.4*	30	50	150
1,2-Dibromo-3-chloropropane	ND	20	17	85.9	20	14	67.6	23.9	30	50	150
1,2-Dibromoethane	ND	20	19	93.8	20	16	76.6	20.3	30	50	150
1,2-Dichlorobenzene	ND	20	16	79.1	20	12	58.0	30.8*	30	50	150
1,2-Dichloroethane	2.0	20	18	82.1	20	15	66.8	20.5	30	50	150
1,2-Dichloropropane	ND	20	19	95.8	20	17	86.3	10.4	30	50	150
1,3-Dichlorobenzene	ND	20	17	83.1	20	13	64.1	25.9	30	50	150

Qualifiers:
ND/U - Not Detected at the Reporting Limit
* - Recovery Outside Advisable QC Limits
B - Analyte detected in the associated Method Blank
D - Surrogate Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL

Quality Control Documentation

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Quality Control Report

EXXON Company U.S.A.

200903X

Analysis: Volatiles Organic Compounds
Method: SW8021B
WorkOrder: 99100237
Lab Batch ID: R4340

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 99100260-04
RunID: HP_F_991018A-91880 Units: ug/Kg
Analysis Date: 10/19/1999 16:02 Analyst: JN

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
1,3-Dichloropropane	ND	20	19	92.8	20	15	75.9	20.0	30	50	150
1,4-Dichlorobenzene	ND	20	15	76.9	20	11	55.8	31.8*	30	50	150
2,2-Dichloropropane	ND	20	18	91.3	20	16	81.8	10.9	30	50	150
2-Chlorotoluene	ND	20	18	89.7	20	15	74.0	19.2	30	50	150
4-Chlorotoluene	ND	20	15	75.3	20	13	64.4	15.6	30	50	150
Allyl chloride	ND	20	19	95.5	20	17	83.3	13.7	30	50	150
Bromobenzene	ND	20	18	91.1	20	14	71.9	23.5	30	50	150
Bromochloromethane	ND	20	20	98.3	20	17	86.1	13.3	30	50	150
Bromodichloromethane	ND	20	18	91.0	20	16	78.5	14.8	30	50	150
Bromoform	ND	20	20	98.6	20	16	77.8	23.6	30	50	150
Bromomethane	ND	20	20	99.2	20	18	90.9	8.68	30	50	150
Carbon tetrachloride	ND	20	19	94.0	20	16	80.2	15.9	30	50	150
Chlorobenzene	ND	20	17	83.3	20	14	70.4	16.8	30	50	150
Chloroethane	ND	20	19	92.7	20	17	86.4	7.07	30	50	150
Chloroform	ND	20	19	94.1	20	17	84.6	10.6	30	50	150
Chloromethane	ND	20	19	94.8	20	19	93.0	1.93	30	50	150
cis-1,2-Dichloroethene	ND	20	19	96.4	20	17	85.8	11.6	30	50	150
cis-1,3-Dichloropropene	ND	20	19	96.3	20	16	79.7	18.9	30	50	150
Dibromochloromethane	ND	20	19	97.0	20	16	79.2	20.1	30	50	150
Dibromomethane	ND	20	21	106	20	18	88.8	17.7	30	50	150
Dichlorodifluoromethane	ND	20	20	101	20	20	99.4	1.28	30	50	150
Hexachlorobutadiene	ND	20	15	73.8	20	12	59.9	20.9	30	50	150
Methylene chloride	ND	20	24	118	20	21	105	11.2	30	50	150
Tetrachloroethene	ND	20	17	87.2	20	14	70.8	20.7	30	50	150
trans-1,2-Dichloroethene	ND	20	20	97.7	20	17	83.9	15.1	30	50	150
trans-1,3-Dichloropropene	ND	20	20	97.6	20	16	78.2	22.1	30	50	150
Trichloroethene	ND	20	18	92.2	20	16	78.4	16.2	30	50	150
Trichlorofluoromethane	ND	20	19	93.0	20	16	81.9	12.7	30	50	150
Vinyl chloride	ND	20	19	91.3	20	17	83.3	9.18	30	50	150

Qualifiers:
ND/U - Not Detected at the Reporting Limit
* - Recovery Outside Advisable QC Limits
B - Analyte detected in the associated Method Blank
D - Surrogate Recovery Unreportable due to Dilution
J - Estimated value between MDL and PQL

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Quality Control Report

EXXON Company U.S.A.

200903X

Analysis: Volatiles Organic Compounds
Method: SW8021B

WorkOrder: 99100237
Lab Batch ID: R4342

Method Blank

RunID: HP_F_991018D-91887 Units: ug/Kg
Analysis Date: 10/19/1999 3:02 Analyst: JN

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
99100237-01A	SP1 (1-4) Composite

Analyte	Result	Rep Limit
1,2,4-Trimethylbenzene	ND	2.0
1,3,5-Trimethylbenzene	ND	2.0
Benzene	ND	1.0
Bromobenzene	ND	1.0
Ethylbenzene	ND	1.0
Isopropylbenzene	ND	1.0
Methyl tert-butyl ether	ND	1.0
n-Butylbenzene	ND	2.0
n-Propylbenzene	ND	1.0
Naphthalene	ND	2.0
p-Isopropyltoluene	ND	1.0
sec-Butylbenzene	ND	2.0
Styrene	ND	2.0
tert-Butylbenzene	ND	1.0
Toluene	ND	1.0
m,p-Xylene	ND	1.0
o-Xylene	ND	1.0
Xylenes,Total	ND	1.0
Surr: Fluorobenzene	97.7	70-130

Laboratory Control Sample (LCS)

RunID: HP_F_991018D-91884 Units: ug/Kg
Analysis Date: 10/18/1999 11:04 Analyst: JN

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
1,3,5-Trimethylbenzene	20	18	92	50	150
Benzene	20	19	93	50	150
Bromobenzene	20	18	90	50	150
Ethylbenzene	20	19	93	50	150
Isopropylbenzene	20	19	94	50	150
Methyl tert-butyl ether	20	19	93	50	150
n-Butylbenzene	20	14	69	50	150
n-Propylbenzene	20	18	91	50	150
Naphthalene	20	15	77	50	150
p-Isopropyltoluene	20	17	86	50	150
sec-Butylbenzene	20	18	90	50	150
Styrene	20	18	90	50	150
tert-Butylbenzene	20	18	90	50	150

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
* - Recovery Outside Advisable QC Limits
D - Surrogate Recovery Unreportable due to Dilution

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Quality Control Report

EXXON Company U.S.A.

200903X

Analysis: Volatiles Organic Compounds
Method: SW8021B
WorkOrder: 99100237
Lab Batch ID: R4342

Laboratory Control Sample (LCS)

RunID: HP_F_991018D-91884 Units: ug/Kg
Analysis Date: 10/18/1999 11:04 Analyst: JN

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Toluene	20	19	93	50	150
m,p-Xylene	40	37	93	50	150
o-Xylene	20	18	91	50	150
Xylenes,Total	60	55	92	50	150

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 99100260-04
RunID: HP_F_991018D-91904 Units: ug/Kg
Analysis Date: 10/19/1999 16:02 Analyst: JN

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
1,2,4-Trimethylbenzene	ND	20	15	73.7	20	11	56.3	26.7	30	50	150
1,3,5-Trimethylbenzene	ND	20	16	80.6	20	13	65.4	20.9	30	50	150
Benzene	ND	20	18	86.8	20	15	72.7	17.8	30	50	150
Bromobenzene	ND	20	16	82.2	20	13	63.6	25.5	30	50	150
Ethylbenzene	ND	20	17	82.3	20	14	66.7	20.9	30	50	150
Isopropylbenzene	ND	20	16	79.9	20	13	65.6	19.7	30	50	150
Methyl tert-butyl ether	ND	20	18	91.9	20	15	76.2	18.7	30	50	150
n-Butylbenzene	ND	20	11	56.7	20	9.2	46.2*	20.3	30	50	150
n-Propylbenzene	ND	20	15	74.5	20	12	62.4	17.7	30	50	150
Naphthalene	ND	20	14	71.6	20	11	56.7	23.2	30	50	150
p-Isopropyltoluene	ND	20	14	68.2	20	11	52.8	25.5	30	50	150
sec-Butylbenzene	ND	20	14	70.6	20	11	53.1	28.3	30	50	150
Styrene	ND	20	16	80.5	20	13	62.9	24.6	30	50	150
tert-Butylbenzene	ND	20	14	68.6	20	11	53.9	24.0	30	50	150
Toluene	ND	20	18	87.5	20	14	71.0	20.8	30	50	150
m,p-Xylene	2.2	40	34	79.5	40	28	63.3	22.6	30	50	150
o-Xylene	ND	20	17	81.8	20	14	67.2	19.6	30	50	150
Xylenes,Total	2.2	60	51	81.3	60	42	66.3	20.3	30	50	150

Qualifiers:
ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
* - Recovery Outside Advisable QC Limits
D - Surrogate Recovery Unreportable due to Dilution

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Quality Control Report

EXXON Company U.S.A.

200903X

Analysis: Metals by Method 6010B, Total
Method: SW6010B

WorkOrder: 99100237
Lab Batch ID: 1235-T

Method Blank

RunID: TJAT_991018A-75243 Units: mg/L
Analysis Date: 10/18/1999 22:25 Analyst: EG
Preparation Date: 10/18/1999 9:26 Prep By: EE Method SW3050B

Samples in Analytical Batch:

Lab Sample ID	Client Sample ID
99100237-01A	SP1 (1-4) Composite

Analyte	Result	Rep Limit
Lead	ND	0.5

Laboratory Control Sample (LCS)

RunID: TJAT_991018A-75244 Units: mg/Kg
Analysis Date: 10/18/1999 22:30 Analyst: EG
Preparation Date: 10/18/1999 9:26 Prep By: EE Method SW3050B

Analyte	Spike Added	Result	Percent Recovery	Lower Limit	Upper Limit
Lead	135	129	N/A	103	167

Post Digestion Spike (PDS) / Post Digestion Spike Duplicate (PDSD)

Sample Spiked: 9910456-05B
RunID: TJAT_991018A-75249 Units: mg/Kg
Analysis Date: 10/18/1999 22:54 Analyst: EG

Analyte	Sample Result	PDS Spike Added	PDS Result	PDS % Recovery	PDSD Spike Added	PDSD Result	PDSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Lead	1.03	100	101	100	100	103	102	1.5	20	75	125

Matrix Spike (MS) / Matrix Spike Duplicate (MSD)

Sample Spiked: 9910456-05B
RunID: TJAT_991018A-75246 Units: mg/Kg
Analysis Date: 10/18/1999 22:40 Analyst: EG

Analyte	Sample Result	MS Spike Added	MS Result	MS % Recovery	MSD Spike Added	MSD Result	MSD % Recovery	RPD	RPD Limit	Low Limit	High Limit
Lead	1.0	100	0.624	-0.408*	100	0.705	-0.327*	22.0*	20	75	125

Qualifiers:

ND/U - Not Detected at the Reporting Limit
B - Analyte detected in the associated Method Blank
J - Estimated value between MDL and PQL
* - Recovery Outside Advisable QC Limits
D - Surrogate Recovery Unreportable due to Dilution

Chain of Custody

And

Sample Receipt Checklist

HOUSTON LABORATORY
8880 INTERCHANGE DRIVE
HOUSTON, TEXAS 77054
(713) 660-0901

Sample Receipt Checklist

Workorder:	99100237	Received by:	Estrada, Ruben
Date and Time Received:	10/15/99 10:00:00 AM	Carrier name:	FedEx
Temperature:	4		

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Water - VOA vials have zero headspace?	Yes ☐	No ☐	Not Present ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☑	

EXXON COMPANY, USA. 99100237

CHAIN OF CUSTODY RECORD NO. _____ Page 1 of 1

Exxon Engineer: Darin I. Rouse Phone: (925) 246-8768
Consultant Co. Name: ERI Contact: Jim Chappell
Address: 73 Digital Drive Phone: (415) 382-4323
Suite 100, Fax: -1856
Novato Ca 94549
RAS #: 7-0236 Facility/State ID # (TN Only): _____
AFE # (Terminal Only): _____ Consultant Project #: 200903x
Location: 6600 E. 14th Street (City): Oakland (State): Ca
☒ EE ☐ C & M ☐ SDT
Consultant Work Release #: 1943 2502
Sampled By: Dylan Crouse

SAMPLE I.D.	DATE	TIME	COMP.	GRAB	MATRIX H_2O	MATRIX SOIL	MATRIX AIR	OTHER	PRESERVATIVE	NO. OF CONTAINERS	CONTAINER SIZE	BTEX 8020 ☐ WITH MTBE ☐ 602 ☐	PURGEABLE HALOCARBON 8010 ☐ 601 ☐	TPH/IR 418.1 ☐	O&G IR 413.1 ☐ GRAV. 413.2 ☐	TPH/GC 8015 GRO ☒ 8015 DRO ☒	VOL 8240 ☐ 624 ☐	SEMI-VOL 8270 ☐ 625 ☐	PNA/PAH 8100 ☐ 8310 ☐ 8270 ☐	PCB/PEST 8080 ☐ PCB ONLY ☐	TCLP FULL ☐ VOA ☐ SEMI-VOA ☐ PEST ☐ HERB ☐	METALS, TOTAL ☐ METALS, TCLP ☐	LEAD, TOTAL 239.1 ☐ 7421 ☐ LEAD, TCLP ☐	TOX/TOH ☐	REACTIVITY ☐ CORROSIVITY ☐ IGNITABILITY ☐	OTHER: STATE	OTHER: HUOCs 8010	OTHER: Total lead GOLD
SP1 (1-4) composite	10-13	1715	X			X				4	Brass sleeve	X				X											X	X

TAT
24 HR. ___* 72 Hr. ___*
48 HR. ___* 96 Hr. ___*
Standard ☒ *Contact US Prior to Sending Sample
Other ___

EXXON UST CONTRACT NO. S02317M01

QA/QC Level
Standard ☒ CLP ☐ Other ☐ _____

SPECIAL DETECTION LIMITS (Specify)

SPECIAL REPORTING REQUIREMENTS (Specify)

FAX ☐ ☐ FAX C-O-C W/REPORT

REMARKS: 814372884478

LAB USE ONLY Lot # NO 200 Storage Location

WORK ORDER #: 99100237 LAB WORK RELEASE #:

CUSTODY RECORD

Relinquished By Sampler: D. Crouse	Date 10/14/99	Time
Relinquished By:	Date	Time
Relinquished By:	Date	Time

Received By:		
Received By:		
Received By Laboratory:	10/15/99	1000
Way Bill #:	Cooler Temp:	4°

SHIP SAMPLES BACK TO: SPL INCORPORATED 8880 Interchange Drive Houston, TX 77054 Ph: (713) 660-0901 Fax: (713) 660-8975 Ph: 1-800-969-6775

APPENDIX D

SOIL DISPOSAL DOCUMENTATION

Dillard Trucking, Inc. dba

Dillard Environmental Services

P.O. Box 579 Byron, CA 94514
Phone (925) 634-6850 – Fax (925) 634-0874
EPA #CAD981692809 • D.T.S.C. # 1715 • CA LIC #624665-A HAZ

November 29, 1999

ERI

Attn: James Chappell

RE: Exxon #7-0236/6600 East 14th Street, Oakland, CA
Removed: 1.0 cubic yards of bulk soil

Dear Mr. James Chappell:

Please be advised that 1.0 cubic yards of bulk soil from the above referenced site has been removed. The soil was transported for disposal to Redwood Landfill on November 23, 1999.

Should you have any questions, please do not hesitate to call.

Sincerely,

Dillard Trucking, Inc. dba,
DILLARD ENVIRONMENTAL SERVICES

Regan Cortez /mf

Regan Cortez
Customer Service Representative

Rc:maf

cc:file

APPENDIX E

RBCA ANALYSIS

RBCA TIER 1/TIER 2 EVALUATION

Output Table 1

Site Name: Former Exxon Station 7-0236 Job Identification: 2009RBCA
Site Location: 6600 East 14th Street Date Completed: 11/10/99
Completed By. Steve M. Zigan

Software: GSI RBCA Spreadsheet
Version: 1.0.1

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

Exposure Parameter	Definition (Units)	Residential Adult	Residential (1-6yrs)	Residential (1-16 yrs)	Commercial/Industrial Chronic	Commercial/Industrial Constrctn
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
t	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)?	TRUE				
gwMCL?	Use MCL as exposure limit in groundwater?	FALSE				

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

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

Matrix of Target Risks		Individual	Cumulative
TRab	Target Risk (class A&B carcinogens)	1.0E-06	
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	

Surface Parameters	Definition (Units)	Residential	Constrctn
A	Contaminated soil area (cm^2)	***8.0E+05***	***8.0E+05***
W	Length of affect. soil parallel to wind (cm)	***1.3E+03***	***1.3E+03***
W.gw	Length of affect. soil parallel to groundwater (cm	***6.4E+02***	
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)	***9.1E+01***	← 3'
Pe	Particulate areal emission rate (g/cm^2/s)	6.9E-14	

Groundwater	Definition (Units)	Value
delta.gw	Groundwater mixing zone depth (cm)	***1.8E+02*** ≈ 6'
I	Groundwater infiltration rate (cm/yr)	3.0E+01
Ugw	Groundwater Darcy velocity (cm/yr)	
Ugw.tr	Groundwater seepage velocity (cm/yr)	
Ks	Saturated hydraulic conductivity(cm/s)	
grad	Groundwater gradient (cm/cm)	
Sw	Width of groundwater source zone (cm)	9.8E+02
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?	FALSE
BC	Biodegradation Capacity (mg/L)	

Soil	Definition (Units)	Value
hc	Capillary zone thickness (cm)	5.0E+00
hv	Vadose zone thickness (cm)	***2.8E+02*** ≈ 9.2'
rho	Soil density (g/cm^3)	1.7
foc (.01)	Fraction of organic carbon in vadose zone	***0.001***
phi	Soil porosity in vadose zone	0.38
Lgw	Depth to groundwater (cm)	***2.9E+02*** ≈ 9.5'
Ls	Depth to top of affected subsurface soil (cm)	***9.1E+01*** = 3'
Lsubs	Thickness of affected subsurface soils (cm)	***4.0E+02***
pH	Soil/groundwater pH	6.5

		capillary	vadose	foundation
phi.w	Volumetric water content	0.342	0.12	0.12
phi.a	Volumetric air content	0.038	0.26	0.26

Building	Definition (Units)	Residential	Commercial
Lb	Building volume/area ratio (cm)	2.0E+02	3.0E+02
ER	Building air exchange rate (s^-1)	1.4E-04	2.3E-04
Lcrk	Foundation crack thickness (cm)	1.5E+01	
eta (.01)	Foundation crack fraction	***0.00001*** ← ? low. Needed	

Transport Parameters	Definition (Units)	Residential	Commercial
Groundwater			
ax	Longitudinal dispersivity (cm)		
ay	Transverse dispersivity (cm)		
az	Vertical dispersivity (cm)		
Vapor			
dcy	Transverse dispersion coefficient (cm)		
dcz	Vertical dispersion coefficient (cm)		

RBCA CHEMICAL DATABASE

Physical Property Data

CAS Number	Constituent	type	Molecular Weight (g/mole) MW	ref	Diffusion Coefficients in air (cm2/s) Dair	ref	in water (cm2/s) Dwat	ref	log (Koc) or log(Kd) (@ 20 - 25 C) log(l/kg)	ref	Henry's Law Constant (@ 20 - 25 C) (atm-m3/mol)	(unitless)	ref	Vapor Pressure (@ 20 - 25 C) (mm Hg)	ref	Solubility (@ 20 - 25 C) (mg/L)	ref	acid pKa	base pKb	ref
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: Former Exxon Station 7-0236 Site Location: 6600 East 14th Street, Completed By: Steve M. Zigan Date Completed: 11/10/1999

Software version: 1.0.1

RBCA CHEMICAL DATABASE

Toxicity Data

CASF-G.1

CAS Number	Constituent	Reference Dose (mg/kg/day) Oral RfD_oral	ref	Inhalation RfD_inhal	ref	Slope Factors 1/(mg/kg/day) Oral SF_oral	ref	Inhalation SF_inhal	ref	EPA Weight of Evidence	Is Constituent Carcinogenic ?
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: Former Exxon Station 7-02 Site Location: 6600 East 14th Street Completed By: Steve M. Zigan Date Completed: 11/10/1999

Software version: 1.0.1

RBCA CHEMICAL DATABASE

Miscellaneous Chemical Data

CAS Number	Constituent	Maximum Contaminant Level MCL (mg/L)	reference	Permissible Exposure Limit PEL/TLV (mg/m3)	ref	Relative Absorption Factors Oral	Dermal	Detection Limits Groundwater (mg/L)	ref	Soil (mg/kg)	ref	Half Life (First-Order Decay) (days) 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: Former Exxon Station 7-02 Site Location: 6600 East 14th Street, Oakland, Ca Completed By: Steve M. Zigan Date Completed: 11/10/1999

Software version: 1.0.1

RBCA SITE ASSESSMENT	Input Screen 7

REPRESENTATIVE COC CONCENTRATIONS IN SOURCE MEDIA

(Complete the following table)

CONSTITUENT	Representative COC Concentration					
	in Groundwater		in Surface Soil		in Subsurface Soil	
	value (mg/L)	note	value (mg/kg)	note	value (mg/kg)	note
Benzene	1.0E-1	max			2.6E-1	max
Ethylbenzene	2.2E-2	max			1.3E-1	max
Toluene	1.0E-2	max			8.7E-2	max
Xylene (mixed isomers)	1.0E-2	max			1.3E+0	max

Site Name: Former Exxon Station 7-0236
Site Location: 6600 East 14th Street, Oakland, Ca

Completed By: Steve M. Zigan
Date Completed: 11/10/1999

RBCA SITE ASSESSMENT | Input Screen 6.3

CONSTITUENT MOLE FRACTIONS

(Complete the following table)

CONSTITUENT	Mole Fraction of Constituent in Source Material
Benzene	
Ethylbenzene	
Toluene	
Xylene (mixed isomers)	

Site Name: Former Exxon Station 7-02 Completed By: Steve M. Zigan
Site Location: 6600 East 14th Street, O Date Completed: 11/10/1999

RBCA SITE ASSESSMENT	Input Screen 9.4

GROUNDWATER DAF VALUES

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

CONSTITUENT	Dilution Attenuation Factor (DAF) in Groundwater	
	Residential Receptor	Comm./Ind. Receptor
Benzene	1.0E+0	1.0E+0
Ethylbenzene	1.0E+0	1.0E+0
Toluene	1.0E+0	1.0E+0
Xylene (mixed isomers)	1.0E+0	1.0E+0

Site Name: Former Exxon Station 7-0236
Site Location: 6600 East 14th Street, Oakland, Ca

Completed By: Steve M. Zigan
Date Completed: 11/10/1999

RBCA SITE ASSESSMENT | Input Screen 9.1

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: Former Exxon Station 7-023 Completed By: Steve M. Zigan
Site Location: 6600 East 14th Street, Oa Date Completed: 11/10/1999

Site Name: Former Exxon Station 7-0236 Site Location: 6600 East 14th Street Completed By: Steve M. Zigan Date Completed: 11/10/1999

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS ☐ (CHECKED IF PATHWAY IS ACTIVE)

SURFACE SOILS: VAPOR AND DUST INHALATION

NA

Constituents of Concern	Exposure Concentration 1) Source Medium: Surface Soil Conc. (mg/kg)	2) NAF Value (m^3/kg) Receptor		3) Exposure Medium: Outdoor Air POE Conc (mg/m^3) (1) / (2)		4) Exposure Multiplier: ((IRxEFxED)/(BWxAT) (m^3/kg-day)		5) Average Daily Intake Rate: (mg/kg-day) (3) X (4)	
Benzene	0.0E+0								
Ethylbenzene	0.0E+0								
Toluene	0.0E+0								
Xylene (mixed isomers)	0.0E+0								

NOTE: ABS = Dermal absorption factor (dim); AF = Adherance factor (mg/cm^2); AT = Averaging time (days); BW = Body weight (kg); CF = Units conversion factor; ED = Exposure duration (yrs); EF = Exposure frequencey (days/yr); ET = Exposure time (hrs/day); IR = Inhalation rate (m^3/day); POE = Point of exposure; SA = Skin exposure area (cm^2/day)

Site Name: Former Exxon Station 7-0236 | Site Location: 6600 East 14th Street | Completed By: Steve M. Zigan | Date Completed: 11/10/1999 | 2 OF 9

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS ■ (CHECKED IF PATHWAY IS ACTIVE)

SUBSURFACE SOILS: VAPOR INHALATION

Constituents of Concern	Exposure Concentration 1) Source Medium: Subsurface Soil Conc. (mg/kg)	2) NAF Value (m^3/kg) Receptor: On-Site Residential		3) Exposure Medium: Outdoor Air POE Conc. (mg/m^3) (1) / (2) On-Site Residential		4) Exposure Multiplier (IRxEFxED)/(BWxAT) (m^3/kg-day) On-Site Residential		5) Average Daily Intake Rate (mg/kg-day) (3) X (4) On-Site Residential	
Benzene	2.6E-1	4.9E+4		5.3E-6		1.2E-1		6.2E-7	
Ethylbenzene	1.3E-1	4.9E+4		2.6E-6		2.7E-1		7.2E-7	
Toluene	8.7E-2	4.9E+4		1.8E-6		2 7E-1		4.8E-7	
Xylene (mixed isomers)	1.3E+0	4.9E+4		2.6E-5		2.7E-1		7.0E-6	

NOTE. ABS = Dermal absorption factor (dim) | BW = Body weight (kg) | EF = Exposure frequencey (days/yr) | POE = Point of exposure
AF = Adherance factor (mg/cm^2) | CF = Units conversion factor | ET = Exposure time (hrs/day) | SA = Skin exposue area (cm^2/day)
AT = Averaging time (days) | ED = Exposure duration (yrs) | IR = Inhalation rate (m^3/day)

Site Name: Former Exxon Station 7-0236 | Site Location: 6600 East 14th Street | Completed By: Steve M. Zigan | Date Completed: 11/10/1999 | 3 OF 9

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS ■ (CHECKED IF PATHWAY IS ACTIVE)

GROUNDWATER: VAPOR INHALATION

Exposure Concentration

Constituents of Concern	1) Source Medium: Groundwater Conc. (mg/L)	2) NAF Value (m^3/L) Receptor: On-Site Residential		3) Exposure Medium: Outdoor Air POE Conc (mg/m^3) (1) / (2): On-Site Residential		4) Exposure Multiplier (IRxEFxED)/(BWxAT) (m^3/kg-day): On-Site Residential		5) Average Daily Intake Rate (mg/kg-day) (3) X (4): On-Site Residential		TOTAL PATHWAY INTAKE (mg/kg-day) (Sum intake values from surface, subsurface & groundwater routes.): On-Site Residential	
Benzene	1.0E-1	4.3E+4		2.3E-6		1.2E-1		2.7E-7		8.9E-7	
Ethylbenzene	2.2E-2	4.2E+4		5.3E-7		2.7E-1		1.4E-7		8.7E-7	
Toluene	1.0E-2	4.3E+4		2.3E-7		2.7E-1		6.3E-8		5.5E-7	
Xylene (mixed isomers)	1.0E-2	4.6E+4		2.2E-7		2.7E-1		5.9E-8		7.1E-6	

NOTE:
ABS = Dermal absorption factor (dim)
AF = Adherance factor (mg/cm^2)
AT = Averaging time (days)
BW = Body weight (kg)
CF = Units conversion factor
ED = Exposure duration (yrs)
EF = Exposure frequencey (days/yr)
ET = Exposure time (hrs/day)
IR = Inhalation rate (m^3/day)
POE = Point of exposure
SA = Skin exposure area (cm^2/day)

Site Name: Former Exxon Station 7-0236 Site Location: 6600 East 14th Street, Oakland, C Completed By: Steve M. Zigan Date Completed: 11/10/1999

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

INDOOR AIR EXPOSURE PATHWAYS ■ (CHECKED IF PATHWAY IS ACTIVE)

SUBSURFACE SOILS:
VAPOR INTRUSION TO BUILDINGS

Constituents of Concern	Exposure Concentration 1) Source Medium: Subsurface Soil Conc. (mg/kg)	2) NAF Value (m^3/kg) Receptor: On-Site Residential		3) Exposure Medium: Indoor Air POE Conc. (mg/m^3) (1) / (2) On-Site Residential		4) Exposure Multiplier: (IRxEFxED)/(BWxAT) (m^3/kg-day) On-Site Residential		5) Average Daily Intake Rate: (mg/kg-day) (3) X (4) On-Site Residential	
Benzene	2.6E-1	3.7E+3		6.9E-5		8.8E-2		6.1E-6	
Ethylbenzene	1.3E-1	4.8E+3		2.7E-5		2.1E-1		5.6E-6	
Toluene	8.7E-2	6.0E+3		1.5E-5		2.1E-1		3.0E-6	
Xylene (mixed isomers)	1.3E+0	9.1E+3		1.4E-4		2.1E-1		2.8E-5	

NOTE:
ABS = Dermal absorption factor (dim)
AF = Adherance factor (mg/cm^2)
AT = Averaging time (days)
BW = Body weight (kg)
CF = Units conversion factor
ED = Exposure duration (yrs)
EF = Exposure frequencey (days/yr)
ET = Exposure time (hrs/day)
IR = Inhalation rate (m^3/day)
POE = Point of exposure
SA = Skin exposure area (cm^2/day)

Site Name: Former Exxon Station 7-0236 Site Location: 6600 East 14th Street, Oakla Completed By: Steve M. Zigan Date Completed: 11/10/1999

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

INDOOR AIR EXPOSURE PATHWAYS ■ (CHECKED IF PATHWAY IS ACTIVE)

GROUNDWATER:
VAPOR INTRUSION TO BUILDINGS

Constituents of Concern	Exposure Concentration 1) Source Medium: Groundwater Conc (mg/L)	2) NAF Value (m^3/L) Receptor: On-Site Residential		3) Exposure Medium: Indoor Air: POE Conc. (mg/m^3) (1) / (2) On-Site Residential		4) Exposure Multiplier: (IRxEFxED)/(BWxAT) (m^3/kg-day) On-Site Residential		5) Average Daily Intake Rate: (mg/kg-day) (3) X (4) On-Site Residential		TOTAL PATHWAY INTAKE (mg/kg-day) (Sum intake values from subsurface & groundwater routes.) On-Site Residential	
Benzene	1.0E-1	2.6E+4		3.8E-6		8.8E-2		3.3E-7		6.5E-6	
Ethylbenzene	2.2E-2	2.2E+4		9.9E-7		2.1E-1		2.0E-7		5.8E-6	
Toluene	1.0E-2	2.4E+4		4.1E-7		2.1E-1		8.4E-8		3.1E-6	
Xylene (mixed isomers)	1.0E-2	2.6E+4		3.9E-7		2.1E-1		8.0E-8		2.8E-5	

NOTE:
ABS = Dermal absorption factor (dim)
AF = Adherance factor (mg/cm^2)
AT = Averaging time (days)
BW = Body weight (kg)
CF = Units conversion factor
ED = Exposure duration (yrs)
EF = Exposure frequencey (days/yr)
ET = Exposure time (hrs/day)
IR = Inhalation rate (m^3/day)
POE = Point of exposure
SA = Skin exposure area (cm^2/day)

Site Name: Former Exxon Statio Site Location: 6600 East 14th Street Completed By: Steve M. Z Date Completed: 11/10/1999 *6 OF 9*

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

SOIL EXPOSURE PATHWAYS ■ (CHECKED IF PATHWAY IS ACTIVE)

SURFACE SOILS OR SEDIMENTS:

DERMAL CONTACT

	Exposure Concentration				
	1) Source Medium	2) Exposure Multiplier (SAxAFxABSxCFxEFxED)/(BWxAT) (kg/kg-day)		3) Average Daily Intake Rate (mg/kg-day) (1) x (2)	
Constituents of Concern	Surface Soil Conc. (mg/kg)	On-Site Residential	On-Site Commercial	On-Site Residential	On-Site Commercial
Benzene	0.0E+0		1.0E-5		0.0E+0
Ethylbenzene	0.0E+0		2.8E-5		0.0E+0
Toluene	0.0E+0		2.8E-5		0.0E+0
Xylene (mixed isomers)	0.0E+0		2.8E-5		0.0E+0

NOTE: ABS = Dermal absorption factor (dim) BW = Body weight (kg) EF = Exposure frequency (days/ POE = Point of exposure
AF = Adherance factor (mg/cm^2) CF = Units conversion factor ET = Exposure time (hrs/day) SA = Skin exposure area (cm^2/day)
AT = Averaging time (days) ED = Exposure duration (yrs) IR = Intake rate (mg/day)

Site Name: Former Exxon Station 7 Site Location: 6600 East 14th Street Completed By: Steve M. Zigan Date Completed: 11/10/1999

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

SOIL EXPOSURE PATHWAYS ■ (CHECKED IF PATHWAY IS ACTIVE)

SURFACE SOILS OR SEDIMENTS:

INGESTION

N/A

	Exposure Concentration	2) Exposure Multiplier (IRxCFxEFxED)/(BWxAT) (kg/kg-day)		3) Average Daily Intake Rate (mg/kg-day) (1) x (2)		TOTAL PATHWAY INTAKE (mg/kg-day) (Sum intake values from dermal & ingestion routes.)	
	1) Source Medium						
Constituents of Concern	Surface Soil Conc. (mg/kg)	On-Site Residential	On-Site Commercial	On-Site Residential	On-Site Commercial	On-Site Residential	On-Site Commercial
Benzene	0.0E+0		1.7E-7		0.0E+0		0.0E+0
Ethylbenzene	0.0E+0		4.9E-7		0.0E+0		0.0E+0
Toluene	0.0E+0		4.9E-7		0.0E+0		0.0E+0
Xylene (mixed isomers)	0.0E+0		4.9E-7		0.0E+0		0.0E+0

NOTE: ABS = Dermal absorption factor (dim) BW = Body weight (kg) EF = Exposure frequencey (days/yr) POE = Point of exposure
AF = Adherance factor (mg/cm^2) CF = Units conversion factor ET = Exposure time (hrs/day) SA = Skin exposure area (cm^2/day)
AT = Averaging time (days) ED = Exposure duration (yrs) IR = Intake rate (mg/day)

Site Name: Former Exxon Station Site Location: 6600 East 14th Street, Oakland, Ca Completed By: Steve M. Zigan Date Completed: 11/10/1999

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

GROUNDWATER EXPOSURE PATHWAYS ☐ (CHECKED IF PATHWAY IS ACTIVE)

SOIL: LEACHING TO GROUNDWATER/ GROUNDWATER INGESTION

Constituents of Concern	Exposure Concentration 1) Source Medium Soil Concentration (mg/kg)	2) NAF Value (L/kg) Receptor		3) Exposure Medium Groundwater POE Conc (mg/L) (1)/(2)		4) Exposure Multiplier (IRxEFxED)/(BWxAT) (L/kg-day)		5) Average Daily Intake Rate (mg/kg-day) (3) x (4)	
Benzene	2.6E-1								
Ethylbenzene	1.3E-1								
Toluene	8.7E-2								
Xylene (mixed isomers)	1.3E+0								

NOTE
ABS = Dermal absorption factor (dim)
AF = Adherance factor (mg/cm^2)
AT = Averaging time (days)
BW = Body Weight (kg)
CF = Units conversion factor
ED = Exposure duration (yrs)
EF = Exposure frequencey (days/yr)
ET = Exposure time (hrs/day)
IR = Intake rate (L/day)
POE = Point of exposure
SA = Skin exposure area (cm^2/day)

Site Name: Former Exxon Station Site Location: 6600 East 14th Street, Oakland, Ca Completed By: Steve M. Zigan Date Completed: 11/10/1999

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

GROUNDWATER EXPOSURE PATHWAYS ☐ (CHECKED IF PATHWAY IS ACTIVE)

GROUNDWATER: INGESTION

Constituents of Concern	Exposure Concentration 1) Source Medium Groundwater Conc. (mg/L)	2) NAF Value (dim) Receptor		3) Exposure Medium Groundwater POE Conc (mg/L) (1)/(2)		4) Exposure Multiplier (IRxEFxED)/(BWxAT) (L/kg-day)		5) Average Daily Intake Rate (mg/kg-day) (3) x (4)		MAX. PATHWAY INTAKE (mg/kg-day) *(Maximum intake of active pathways soil leaching & groundwater routes.)*	
Benzene	1.0E-1										
Ethylbenzene	2.2E-2										
Toluene	1.0E-2										
Xylene (mixed isomers)	1.0E-2										

NOTE: ABS = Dermal absorption factor (dim); AF = Adherance factor (mg/cm^2); AT = Averaging time (days); BW = Body weight (kg); CF = Units conversion factor; ED = Exposure duration (yrs); EF = Exposure frequency (days/yr); ET = Exposure time (hrs/day); IR = Intake rate (L/day); POE = Point of exposure; SA = Skin exposure area (cm^2/day)

RBCA SITE ASSESSMENT | **Tier 2 Worksheet 8.2**

Site Name: Former Exxon Station 7-0236 Site Location: 6600 East 14th Street Completed By: Steve M. Zigan Date Completed: 11/10/1999

TIER 2 PATHWAY RISK CALCULATION

OUTDOOR AIR EXPOSURE PATHWAYS ■ (CHECKED IF PATHWAYS ARE ACTIVE)

	CARCINOGENIC RISK					TOXIC EFFECTS			
	(1) EPA	(2) Total Carcinogenic Intake Rate (mg/kg/day)		(3) Inhalation Slope Factor	(4) Individual COC Risk (2) x (3)	(5) Total Toxicant Intake Rate (mg/kg/day)		(6) Inhalation Reference Dose	(7) Individual COC Hazard Quotient (5) / (6)
Constituents of Concern	Carcinogenic Classification	On-Site Residential		(mg/kg-day)^-1	On-Site Residential	On-Site Residential		(mg/kg-day)	On-Site Residential
Benzene	A	8.9E-7		2.9E-2	2.6E-8	2.1E-6		1.7E-3	1.2E-3
Ethylbenzene	D					8.7E-7		2.9E-1	3.0E-6
Toluene	D					5.5E-7		1.1E-1	4.8E-6
Xylene (mixed isomers)	D					7.1E-6		2.0E+0	3.5E-6
		Total Pathway Carcinogenic Risk =			2.6E-8	***Total Pathway Hazard Index =***			1.2E-3
					0.0E+0				0.0E+0

RBCA SITE ASSESSMENT | **Tier 2 Worksheet 8.2**

Site Name: Former Exxon Station 7-0236 Site Location: 6600 East 14th Street, Oakland, Ca Completed By: Steve M. Zigan Date Completed: 11/10/1999

TIER 2 PATHWAY RISK CALCULATION

INDOOR AIR EXPOSURE PATHWAYS ■ (CHECKED IF PATHWAYS ARE ACTIVE)

	CARCINOGENIC RISK						TOXIC EFFECTS				
	(1) EPA	(2) Total Carcinogenic Intake Rate (mg/kg/day)		(3) Inhalation Slope Factor	(4) Individual COC Risk (2) x (3)		(5) Total Toxicant Intake Rate (mg/kg/day)		(6) Inhalation Reference Dose	(7) Individual COC Hazard Quotient (5) / (6)	
Constituents of Concern	Carcinogenic Classification	On-Site Residential		(mg/kg-day)^-1	On-Site Residential		On-Site Residential		(mg/kg-day)	On-Site Residential	
Benzene	A	6.5E-6		2.9E-2	1.9E-7		1.5E-5		1.7E-3	8.9E-3	
Ethylbenzene	D						5.8E-6		2.9E-1	2.0E-5	
Toluene	D						3.1E-6		1.1E-1	2.7E-5	
Xylene (mixed isomers)	D						2.8E-5		2.0E+0	1.4E-5	
Total Pathway Carcinogenic Risk =					**1.9E-7**	**0.0E+0**	***Total Pathway Hazard Index =***			**8.9E-3**	**0.0E+0**

RBCA SITE ASSESSMENT	Tier 2 Worksheet 8.2

Site Name: Former Exxon Station 7-0236 Site Location: 6600 East 14th Street Completed By: Steve M. Zigan Date Completed: 11/10/1999

TIER 2 PATHWAY RISK CALCULATION

SOIL EXPOSURE PATHWAYS ■ (CHECKED IF PATHWAYS ARE ACTIVE)

	CARCINOGENIC RISK							TOXIC EFFECTS			
	(1) EPA	(2) Total Carcinogenic Intake Rate (mg/kg/day)		(3) Oral Slope Factor	(4) Individual COC Risk (2) x (3)		(5) Total Toxicant Intake Rate (mg/kg/day)		(6) Oral Reference Dose	(7) Individual COC Hazard Quotient (5) / (6)	
Constituents of Concern	Carcinogenic Classification	On-Site Residential	On-Site Commercial	(mg/kg-day)^-1	On-Site Residential	On-Site Commercial	On-Site Residential	On-Site Commercial	(mg/kg-day)	On-Site Residential	On-Site Commercial
Benzene	A		0.0E+0	2.9E-2		0.0E+0					
Ethylbenzene	D							0.0E+0	1.0E-1		0.0E+0
Toluene	D							0.0E+0	2.0E-1		0.0E+0
Xylene (mixed isomers)	D							0.0E+0	2.0E+0		0.0E+0
Total Pathway Carcinogenic Risk =					**0.0E+0**	**0.0E+0**	***Total Pathway Hazard Index =***			**0.0E+0**	**0.0E+0**

Site Name: Former Exxon Station 7-0236 Site Location: 6600 East 14th Street, Oakland, Ca Completed By: Steve M. Zigan Date Completed: 11/10/1999 4 OF 4

TIER 2 PATHWAY RISK CALCULATION

GROUNDWATER EXPOSURE PATHWAYS ☐ (CHECKED IF PATHWAYS ARE ACTIVE)

		CARCINOGENIC RISK					TOXIC EFFECTS				
Constituents of Concern	(1) EPA Carcinogenic Classification	(2) Total Carcinogenic Intake Rate (mg/kg/day)		(3) Oral Slope Factor (mg/kg-day)^-1	(4) Individual COC Risk (2) x (3)		(5) Total Toxicant Intake Rate (mg/kg/day)		(6) Oral Reference Dose (mg/kg-day)	(7) Individual COC Hazard Quotient (5) / (6)	
Benzene	A			2.9E-2							
Ethylbenzene	D								1.0E-1		
Toluene	D								2.0E-1		
Xylene (mixed isomers)	D								2.0E+0		
Total Pathway Carcinogenic Risk =					0.0E+0	0.0E+0	***Total Pathway Hazard Index =***			0.0E+0	0.0E+0

RBCA SITE ASSESSMENT | **Tier 2 Worksheet 9.1**

Site Name: Former Exxon Station 7-0236
Site Location: 6600 East 14th Street

Completed By: Steve M. Zigan
Date Completed: 11/10/1999

SURFACE SOIL SSTL VALUES (< 3 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

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

CONSTITUENTS OF CONCERN		Representative Concentration		Soil Leaching to Groundwater			X	Ingestion and Dermal Contact		X	Construction Worker	Applicable SSTL	SSTL Exceeded ?	Required CRF
CAS No.	Name	(mg/kg)	Residential: (on-site)	Commercial: (on-site)	Regulatory(MCL): (on-site)	Residential: (on-site)		Commercial. (on-site)		Commercial: (on-site)		(mg/kg)	"■" If yes	Only if "yes" left
71-43-2	Benzene	0.0E+0	NA	NA	NA	NA		3.3E+0		7.8E+1		3.3E+0	☐	<1
100-41-4	Ethylbenzene	0.0E+0	NA	NA	NA	NA		>Res		>Res		>Res	☐	<1
108-88-3	Toluene	0.0E+0	NA	NA	NA	NA		>Res		>Res		>Res	☐	<1
1330-20-7	Xylene (mixed isomers)	0.0E+0	NA	NA	NA	NA		>Res		>Res		>Res	☐	<1

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

Software: GSI RBCA Spreadsheet
Version: 1.0.1

Serial: G-311-YSX-926

RBCA SITE ASSESSMENT

Tier 2 Worksheet 9.2

Site Name: Former Exxon Station 7-0236
Site Location: 6600 East 14th Street, Oakland, Ca

Completed By: Steve M. Zigan
Date Completed: 11/10/1999

SUBSURFACE SOIL SSTL VALUES (> 3 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

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

CONSTITUENTS OF CONCERN		Representative Concentration		Soil Leaching to Groundwater			X	Soil Volatilization to Indoor Air		X	Soil Volatilization to Outdoor Air		Applicable SSTL	SSTL Exceeded ?	Required CRF
CAS No.	Name	(mg/kg)	Residential: (on-site)	Commercial: (on-site)	Regulatory(MCL): (on-site)		Residential: (on-site)	Commercial: (on-site)		Residential (on-site)	Commercial (on-site)	(mg/kg)	"■" If yes	Only If "yes" left
71-43-2	Benzene	2.6E-1	NA	NA	NA		1.5E+0	NA		1.4E+1	NA	1.5E+0	☐	<1
100-41-4	Ethylbenzene	1.3E-1	NA	NA	NA		>Res	NA		>Res	NA	>Res	☐	<1
108-88-3	Toluene	8.7E-2	NA	NA	NA		>Res	NA		>Res	NA	>Res	☐	<1
1330-20-7	Xylene (mixed isomers)	1.3E+0	NA	NA	NA		>Res	NA		>Res	NA	>Res	☐	<1

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

Software: GSI RBCA Spreadsheet Version 1.0.1

Serial: G-311-YSX-926

RBCA SITE ASSESSMENT

Tier 2 Worksheet 9.3

Site Name: Former Exxon Station 7-0236
Site Location: 6600 East 14th Street, Oakland, Ca

Completed By: Steve M. Zigan
Date Completed: 11/10/1999

GROUNDWATER SSTL VALUES

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

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

CONSTITUENTS OF CONCERN		Representative Concentration		Groundwater Ingestion			X Groundwater Volatilization to Indoor Air		X Groundwater Volatilization to Outdoor Air		Applicable SSTL	SSTL Exceeded ?	Required CRF
CAS No.	Name	(mg/L)		Residential: (on-site)	Commercial: (on-site)	Regulatory(MCL): (on-site)	Residential. (on-site)	Commercial: (on-site)	Residential (on-site)	Commercial. (on-site)	(mg/L	"■" If yes	Only if "yes" left
71-43-2	Benzene	1.0E-1		NA	NA	NA	1.0E+1	NA	1.3E+1	NA	1.0E+1	☐	<1
100-41-4	Ethylbenzene	2.2E-2		NA	NA	NA	>Sol	NA	>Sol	NA	>Sol	☐	<1
108-88-3	Toluene	1.0E-2		NA	NA	NA	>Sol	NA	>Sol	NA	>Sol	☐	<1
1330-20-7	Xylene (mixed isomers)	1.0E-2		NA	NA	NA	>Sol	NA	>Sol	NA	>Sol	☐	<1

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

Software: GSI RBCA Spreadsheet
Version: 1.0.1

Serial: G-311-YSX-926