TIER 1
RISK ASSESSMENT

PROJECT SITE:

MOTOR PARTNERS SITE
1234 40TH AVE., OAKLAND, CA
StID #3682

PREPARED FOR:

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PROJECT NO. 1004.95

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1.0 BACKGROUND INFORMATION

1.1 PROJECT DESCRIPTION

This study was conducted to estimate the potential future health risks of contaminants in ground water and sediments at the Motor Partners site, 1234 40th Avenue, Oakland, California. This report presents the results of a Tier I Risk Assessment.

The analysis has been conducted to determine the risk of residual chemicals at the site especially in the former waste oil tank area. A Risk Based Corrective Action (RBCA) approach in accordance with the American Society for Testing and Materials (ASTM) Standard Guidance for Risk-Based Corrective Action Applied at Petroleum Release Sites (E 1739-95) has been used to evaluate the potential risk. The RBCA Toolkit supplied by Groundwater Services, Inc. (GSI) has been used in this evaluation.

1.2 PROJECT SITE INFORMATION

The project site is known as Motor Partners, 1234 40th Avenue, Oakland, California (Figure 1), located in a commercial/light industrial area. The elevation of the site is approximately 25 feet above mean sea level.

Motor Partners is located at 1234 40th Avenue near Nimitz Highway (880) in the Fruitvale District of Oakland, California (Figure 1). The BART rail tracks are about 500 feet west of the site and San Leandro Bay is less than one mile to the southwest.

Motor Partners utilized the site for auto repair shops. Two underground storage tanks were maintained outside the 1234 40th Avenue building. A 1,000-gallon underground gasoline tank and a 500-gallon underground waste oil tank were located below the sidewalk (Figure 2). No reliable records exist to determine if inventory was lost.

1.3 TANK REMOVALS

On Oct. 12, 1990, Semco, Inc. of Modesto, California removed both the 1,000-gallon gasoline tank and the 500-gallon waste oil tank. The concentration of total petroleum hydrocarbons in the gasoline range (TPH-G) below the 1,000-gallon tank was 1,600 mg/Kg. The TPH-G and TPH-D concentrations below the 500-gallon tank were 570 mg/Kg and 650 mg/Kg, respectively. There was no record of groundwater in the excavations. The excavations were backfilled to grade with original spoils.

In January, 1994, SEMCO re-excavated the area to remove contaminated soil, and dispose of the contaminated backfill. During the course of over excavation, it was noted that contamination extended beneath the building and into the street. Utilities prevented further excavation. The over excavation was halted and samples taken from the sidewalls of each excavation. An extraction well

casing was installed in each excavation. Clean imported soil was used to backfill the two areas and the sidewalk was resurfaced with Christy boxes housing the two extraction casings.

Sampling conducted on January 11, 1994 indicated levels of TPH-gasoline for the former waste oil tank area between 100 and 700 ppm. Levels of TPH-gasoline for the former gasoline tank area ranged from 150 to 1,200 ppm.

1.4 SOIL BORINGS

GROWTH Environmental completed soil borings at the property between May and June of 1994. Eleven borings were drilled and three monitoring wells were installed. Both soil and groundwater samples were collected from the borings. Soil and groundwater contamination was found in nearly every boring. Levels of TPH-D up to 2,700 ppm were observed on the west side of the building. A sample from inside the building had a TPH-D level of 520 ppm.

Groundwater samples had highest concentrations near the former tank excavations. The highest level of TPH-G was 64,000 ppb. BTEX compounds were found in groundwater samples from all the borings. Three monitoring wells were installed on June 14-15, 1994. Two of the wells were located in the street (40th Avenue) and one well was inside the building (see Figure 2 for location).

The monitoring wells were sampled on June 17, 1994 and December 7, 1994. Contamination was reported in all three wells. Levels of TPH-G were up to 17,000 ppb and Benzene levels were up to 1,200 ppb in MW-1.

A quarterly monitoring sampling event was completed on November 29, 1995. All of the wells showed increased TPH-G and BTEX levels when compared to the previous sampling event. TPH-G levels were up to 67,000 ppb in MW-1. The groundwater gradient was calculated to be in a southwesterly direction.

Additional geoprobe borings were completed along 40th Avenue between November, 1995 and February, 1996 to determine the extent of contamination.

On February 1, 1996, Bay Area Exploration drilled a soil boring across the street from the former underground storage tank excavations at the Motor Partners site (location shown in Figure 3). A two-inch groundwater monitoring well (MW-4) was installed in the boring. The monitoring well was installed according to State of California Water Resource Control Board standards to a depth of 25 feet below grade surface (bgs) and screened from 5 to 25 feet bgs.

1.5 GEOLOGY AND HYDROGEOLOGY

Regional Geology.

The site is located on the East Bay Plain about 1.0 mile west of the Oakland Hills, about 1.0 mile east of the San Francisco Bay, and about 0.5 miles north of San Leandro Bay. The property is bounded on the northeast by 14th Street.

The site rests on Quaternary Deposits of various physical and compositional properties. The predominant formation is the Temescal Formation consisting of contemporaneous alluvial units of different origin, lithology, and physical properties. The material ranges from irregularly bedded clay, silt, sand and gravel to lenses of clay, silt, sand, and gravel with Claremont Chert.

The Hayward Fault is approximately 1.5 miles East of the site and is an active historic Fault. The Hayward Fault is the only active fault in the Oakland East Quadrangle.

Regional Hydrogeology.

The site is located within the East Bay Plain which makes up the ground water reservoir in the area. The water bearing capacity varies within the area due to the juxtaposed positions of the various types of soils and strata encountered underneath the East Bay Plain.

In General the water bearing capacities of the Younger Alluvium range from moderately permeable to low permeable soils. Below the Younger Alluvium at a depth of approximately 70 feet lies the Older Alluvium, which yields large to small quantities of well water.

Site Geology. The site soils were characterized using the United Soil Classification System (USCS). During on-site subsurface drilling, CEC (GROWTH) encountered up to two feet of baserock (fill) followed by a 4 to 5 foot layer of dark sandy clay (CL). Below the dark clay to a depth between 7 and 15 feet, a grey sandy gravel was found. Below the sandy gravel the soil varied between a clayey sand to a sandy silty clay (SC). The gravels are poorly sorted, angular to rounded clasts ranging in size from 0.2 cm to 3.0 cm.

Site Hydrogeology. The depth of first water ranged from 8 to 10 feet below the ground surface (bgs) in the borings. Groundwater was encountered within the grey clayey sandy gravel layers.

2.0 INPUT DATA FOR TIER 1 RISK ANALYSIS

The methods for this risk analysis follow the guidelines presented in the ASTM document, ASTM E-1739, "Standard Guide for Risk-Based Corrective Action (RBCA) Applied at Petroleum Release Sites." The RBCA process includes EPA risk assessment practices in addition to site investigation activities to determine cost-effective methods for protection of environmental health and resources. For this study, the RBCA Toolkit (Groundwater Services, Inc.) computer model was used in the risk evaluation.

2.1 Summary of Previous Data

Tables 1 through 6 present all of the data gathered from soil and groundwater sampling completed at the Motor Partners site. The following summaries list information and analytical results that have been used in this Risk Analysis. Additional information is available in the referenced documents.

SITE DESCRIPTION Motor Partners, 1234 40th Ave., Oakland, California		
Subject	**Discussion**	**Reference**
Site Address	1234 40th Avenue, Oakland, California	CEC, 1994a
Site Owner/Contact	Bill Owens 2221 Olympic Blvd. Walnut Creek, California	CEC, 1994a
Agency Contacts	Barney Chan Alameda County Environmental Health 1131 Harbor Bay Parkway Alameda, California	CEC, 1994a
Local Land Use	Commercial Property	CEC, 1994a
Topography	Flat Surface Topography Sloping Slightly toward San Francisco Bay	CEC, 1994a
Surface Water Characterization	San Francisco Bay approximately 1 mile to west	CEC, 1994a

SITE ACTIVITY RECORD Motor Partners Site, 1234 40th Ave., Oakland, California		
Subject	**Discussion**	**Reference**
Materials Handling Activities	Former Underground Fuel Tank and Waste Oil Tank	CEC, 1994a
Waste Disposal Practices	Unknown	
Active Site or Vacant?	Site currently used for Mexican Restaurant business; previously used by Motor Partners as an auto repair facility.	CEC, 1994a
Potential Sources for Spills	Two Underground Storage Tanks at the site until 1990. Duration, time and volume of leak unknown.	CEC, 1994a
Potential Off-site Sources	Plume at Motor Partners site co-mingled with plume from across 40th Avenue -- Hausauer Site (3927 E 14th Street).	Kelleher

SUMMARY OF SITE ACTIVITIES Motor Partners Site, 1234 40th Ave., Oakland, California		
Subject	**Discussion**	**Reference**
Underground Tanks Removed	One 1,000 gallon underground gasoline tank removed on October 12, 1990 One 500 gallon underground waste oil tank removed on October 12, 1990	CEC, 1994a
Over Excavation Performed	January 1994 area re-excavated. Utilities limited over excavation. Approximately 100 tons of soil was removed and stockpiled offsite.	CEC, 1994a
Site Investigation	Eleven (11) soil borings inside building and in the street (40th Ave.) completed between May and June, 1994 Additional borings in November 1995 and February 1996	CEC, 1994c
Monitoring Wells Installed	Three wells installed on June 14-15, 1994 in vicinity of the former USTs. One additional well installed on February 1, 1996 across 40th Ave. in street	CEC, 1994c RES, 1996a

SUMMARY OF SITE ACTIVITIES Motor Partners Site, 1234 40th Ave., Oakland, California		
Subject	**Discussion**	**Reference**
Sampling of Wells	Wells sampled quarterly	RES, 1995a RES, 1996a RES, 1996b RES, 1996d RES, 1996e RES, 1997a RES, 1997b
Groundwater Pumping	4" extraction casings installed in each of former UST areas. However, no groundwater has been pumped from the extraction casings. 500 gallons of groundwater was pumped from MW-1 during aquifer pump test	 RES, 1996c
Pilot Tests	Aquifer pump test completed in May 1996 Soil vapor extraction pilot test completed in November, 1996	RES, 1996c RES, 1996f

HYDROGEOLOGIC CONDITIONS Motor Partners Site, 1234 40th Ave., Oakland, California		
Subject	**Discussion**	**Reference**
Regional Geology	Quarternary deposits, part of Temescal Formation. Interbedded clay, silt, sand and gravel. Hayward fault about 1.5 miles to east. Elevation of site approximately 20 above msl.	CEC, 1994a
Regional Hydrogeology	East Bay Plain groundwater reservoir.	CEC, 1994a
Depth to Groundwater	The depth to groundwater is approximately 8-10 feet	CEC, 1994a
Site Geology	Up to 2' baserock 4-5' layer clay 7-15' sandy gravel below 15' - clay	CEC, 1994a
Site Hydrogeology	Groundwater flow and direction, calculated using MW-1, MW-2, and MW-3, has trended to the southwest at 0.0033 to 0.0082 ft/ft.	RES, 1997b
Groundwater Quality	Hydrocarbon contamination documented in vicinity of former USTs. Levels of Benzene from well near inside building have ranged from 110 to 1200 ppb.	CEC, 1994c RES, 1997b

ANALYTICAL SUMMARY Motor Partners Site, 1234 40th Ave., Oakland, California							
Subject	**Media**	**Benzene**	**Toluene**	**Xylenes**	**Ethyl benzene**	**TPH-G**	**TPH-D**
Analytical Method	Soil	EPA 8020	EPA 8020	EPA 8020	EPA 8020	EPA 8015M	EPA 8015M
	Ground water	EPA 8020	EPA 8020	EPA 8020	EPA 8020	EPA 8015M	EPA 8015M
Reporting Limits	Soil (ppm)	0.005	0.005	0.005	0.005	1.0	1.0
	Ground water (ppb)	0.5	0.5	0.5	0.5	50	50
Summary of Data	Max. Soil (ppm), date, location	5/17/94 15 B-5-2	6/1/94 8.4 B-4-3	6/1/94 71 B-4-3	6/1/94 36 B-2-2	6/1/94 1,900 B-2-2	5/17/94 2,700 B-5-2
	Max. Ground water (ppb), date, location	6/17/94 1200 MW-1	6/17/94 220 MW-1	11/29/95 3,100 MW-1	11/29/95 1,300 MW-1	11/29/95 67,000 MW-1	11/29/95 53,000 MW-1

ND = Not detected
NA = Not analyzed
ppm = parts per million
ppb = parts per billion

GROUNDWATER QUALITY GOALS Motor Partners Site, 1234 40th Ave., Oakland, California		
Constituent	**Numerical Limitation (ppb)**	**Reference**
Benzene	1	California MCL[1]
Toluene	1000	California MCL
Ethylbenzene	150	California MCL
Xylenes	1750	California MCL

[1] Summary of California Drinking Water Standards, Nov. 10, 1994

2.2 Well Survey

A well survey was completed for a half mile radius around the Motor Partners property. The results of the survey are presented in Appendix A. The following table summarizes the results.

Well Inventory Summary (Within 0.5 mile radius of Site) Motor Partners Site, 1234 40th Ave., Oakland, California		
Type of Well	**Total Number of Wells (Within 0.5 mile radius of Site)**	**Number in Downgradient Direction of Site**
Public/Municipal (MUN)	0	0
Industrial (IND)	1[a]	0
Domestic (DOM)	1[b]	1[b]
Agricultural (IRR)	3[c]	1[d]

a - 4701 San Leandro Street
b - 500 High Street
c - 39th Avenue
4251 E 14th Street
3701 E 8th Street
d - 3801 E 8th Street

2.3 Constituents of Concern

2.3.1 Media of Concern

In general, air, soil, and groundwater are the media through which exposure to contaminants may occur. For the Motor Partners site, exposure may occur by way of the air (from contaminants that may volatilize from contaminated soil or ground water) or by direct exposure to contaminated soils. Since there are drinking water wells or surface water bodies within ½ mile of the site, direct groundwater exposure is possible and was considered in this study.

2.3.2 Contaminants of Concern

Samples from soil and groundwater were collected at the time of tank removals. In addition, site investigations and well sampling has been completed on several occasions. The major contaminants at the site are petroleum hydrocarbons (Total Petroleum Hydrocarbons as Diesel and Gasoline as well as Benzene, Ethylbenzene, Toluene, and Xylenes). Of the reported

chemicals, benzene is the most hazardous chemical at the site and has been found in both soil and groundwater samples. According to the U.S. EPA, benzene is classified as a carcinogen.

2.3.3 Concentrations of Chemicals of Concern Used in the Risk Assessment

The results of four consecutive Quarterly Monitoring events have shown that hydrocarbon contamination is present at the site. Groundwater samples from each of the four monitoring wells have reported TPH-G and Benzene.

2.4 Exposure Assessment

2.4.1 Exposure Pathways

The potential exposure pathways for the Motor Partners site inlcude; inhalation of volatile substances and direct contact with contaminated soil (entry through the skin). Drinking water and irrigation wells are located in the area. Therefore, exposure from contact with groundwater was also considered.

2.4.2 Potentially Exposed Population

Because contamination is localized in a small area and soil lithography has prevented significant movement of contaminants, there should be no offsite exposure pathways. In addition, the only known potential for onsite exposure would be in the case of excavation activities. Present site activities should pose no hazard since contamination is confined to a small subsurface area.

2.4.3 Exposure Point Concentration Estimates

The RBCA Toolkit (Groundwater Services, Inc.) was used in this study to assess the potential future health risks of the known contaminants at the site. The Tier 1 Risk Assessment utilized maximum groundwater values from MW-4 and subsurface soil sample results from within the former waste oil tank excavtion area.

2.4.4 Exposure Frequency and Duration

The exposure period was assumed to be a 70-year lifetime. Other parameters for frequency and duration are presented in Appendix B.

3.0 TIER 1 RISK ANALYSIS RESULTS

Output data sheets from the RBCA Toolkit analysis are presented in Appendix B. The following discussion summarizes the results.

3.1 Risk Characterization

The potential health risks to humans exposed to the chemical constituents of concern (COC) are quantified by calculating the average daily intake rates and the toxicological effects for both carcinogenic and noncarcinogenic risks. The toxicological data for each COC is classified as carcinogen (Class A, B, or C), systemic toxicant, or both.

3.1.1 Carcinogenic Risks

The carcinogenic risks are estimated using the following equation that considers chronic exposure to a carcinogen.

$$R = CDI \times SF$$

where, R is the excess lifetime cancer risk, CDI is the chronic daily intake of the carcinogen, and SF is the slope factor for the COC. An excess lifetime cancer risk of 1 x 10-6 indicates an individual has a one in one million chance of developing cancer as a result of exposure to a carcinogen over a 70-year lifetime under the specific exposure conditions at a site.

Table 8.3 in Appendix B summarizes the estimated cancer risks for the Motor Partners site. The carcinogenic risk estimate for the critical exposure pathway was 2.6 x 10-4. This number exceeds the target carcinogenic risk which is 1.0 x 10-6.

3.1.2 Hazard Index

The hazard index (HI) is calculated by summing the individual hazard quotients (HQ) for all contaminants within a medium. Both the HI and HQ are used to describe the noncarcinogenic effect of a contaminant. The HQ is calculated using the following equation that describes exposure to a systemic toxicant.

$$HQ = I/RfD$$

where, HQ is hazard quotient, I is the average daily chemical intake for the toxicant, and RfD is the reference dose. The hazard index (HI) is estimated by adding the HQ's. For only one compound, the HQ is equal to the HI. If the HI value is greater than 1.0, exposure could result in adverse health effects. Table 8.3 in Appendix B summarizes the estimated HQ's and HI's for the chemicals of concern at Motor Partners. The estimated HQ is 2.7 x 10-1, and the HI is 3.1 x 10-1.

4.0 CONCLUSIONS AND RECOMMENDATIONS

4.1 Conclusions

The results of a Tier 1 risk assessment suggest that hydrocarbon contamination at the Motor Partners site does provide a significant risk to human health and the environment. This assessment is based on the following observations and findings:

1) Groundwater at all four monitoring wells has been impacted by hydrocarbons.

2) There are drinking water and irrigation wells located within ½ mile of the site.

3) The carcinogenic risk estimate for the critical exposure pathway was 2.6 x 10-4.

4) The estimated Hazard Quotient and Hazard Index for the Tier 1 risk analysis were 2.7 x 10-1 and 3.1 x 10-1, respectively.

4.2 Recommendations

It is recommended that environmental work be continued at the Motor Partners site. A Tier II Risk Assessment should be completed to assist in the definition of action levels for remediation. The Phase II report (in preparation) and Remedial Action Plan need to be completed for the site so that Phase III remedial activities may proceed. Lastly, quarterly monitoring should be continued at the site.

5.0 REFERENCES

CEC, 1994a. Work Plan for Remediation, 1234 40th Avenue, Oakland, CA. Prepared by Certified Environmental Consulting, Inc., March 15, 1994.

CEC, 1994b. Amendments to Work Plan for Remediation, 1234 40th Avenue, Oakland, CA. Prepared by Certified Environmental Consulting, Inc., April 6, 1994.

CEC, 1994c. Report of Phase I Site Investigation, 1234 40th Avenue, Oakland, CA. Prepared by Certified Environmental Consulting, Inc., September 21, 1994.

Growth, 1995a. Work Plan for Phase II Site Characterization of Groundwater, 1234 40th Avenue, Oakland, CA. Prepared by Growth Environmental Services, Inc., February 15, 1995.

Growth, 1995b. Site Investigation Report, 1234 40th Avenue, Oakland, CA. Prepared by Growth Environmental Services, Inc., 1995.

VISTA, 1995. Site Assessment Plus Report, 1234 40th Avenue, Oakland, CA. Prepared by VISTA Information Services, November 20, 1995.

RES, 1995a. Report of Quarterly Sampling, 1234 40th Avenue, Oakland, CA. Prepared by Rogers Environmental Services, December 8, 1995.

RES, 1995b. Revised Work Plan for Phase II Investigation, 1234 40th Avenue, Oakland, CA. Prepared by Rogers Environmental Services, December 19, 1995.

RES, 1996a. Report of Monitoring Well Installation and Quarterly Sampling, 1234 40th Avenue, Oakland, CA. Prepared by Rogers Environmental Services, February 27, 1996.

RES, 1996b. Report of Quarterly Monitoring at 1234 40th Avenue, Oakland, CA. Prepared by Rogers Environmental Services, May 28, 1996.

RES, 1996c. Aquifer Pump Test Report, 1234 40th Avenue, Oakland, CA. Prepared by Rogers Environmental Services, June 1996.

RES, 1996d. Report of Quarterly Monitoring at 1234 40th Avenue, Oakland, CA. Prepared by Rogers Environmental Services, August 29, 1996.

RES, 1996e. Quarterly Monitoring Report, 1234 40th Avenue, Oakland, CA. Prepared by Rogers Environmental Services, December 3, 1996.

REFERENCES (CONTINUED)

RES, 1996f. Report of Soil Vapor Extraction Pilot Test Completed at 1234 40th Avenue, Oakland, CA. Prepared by Rogers Environmental Services, December 16, 1996.

RES, 1997a. Report of Quarterly Monitoring at 1234 40th Avenue, Oakland, CA. Prepared by Rogers Environmental Services, March 7, 1997.

RES, 1997b. Report of Quarterly Monitoring at 1234 40th Avenue, Oakland, CA. Prepared by Rogers Environmental Services, June 4, 1997.

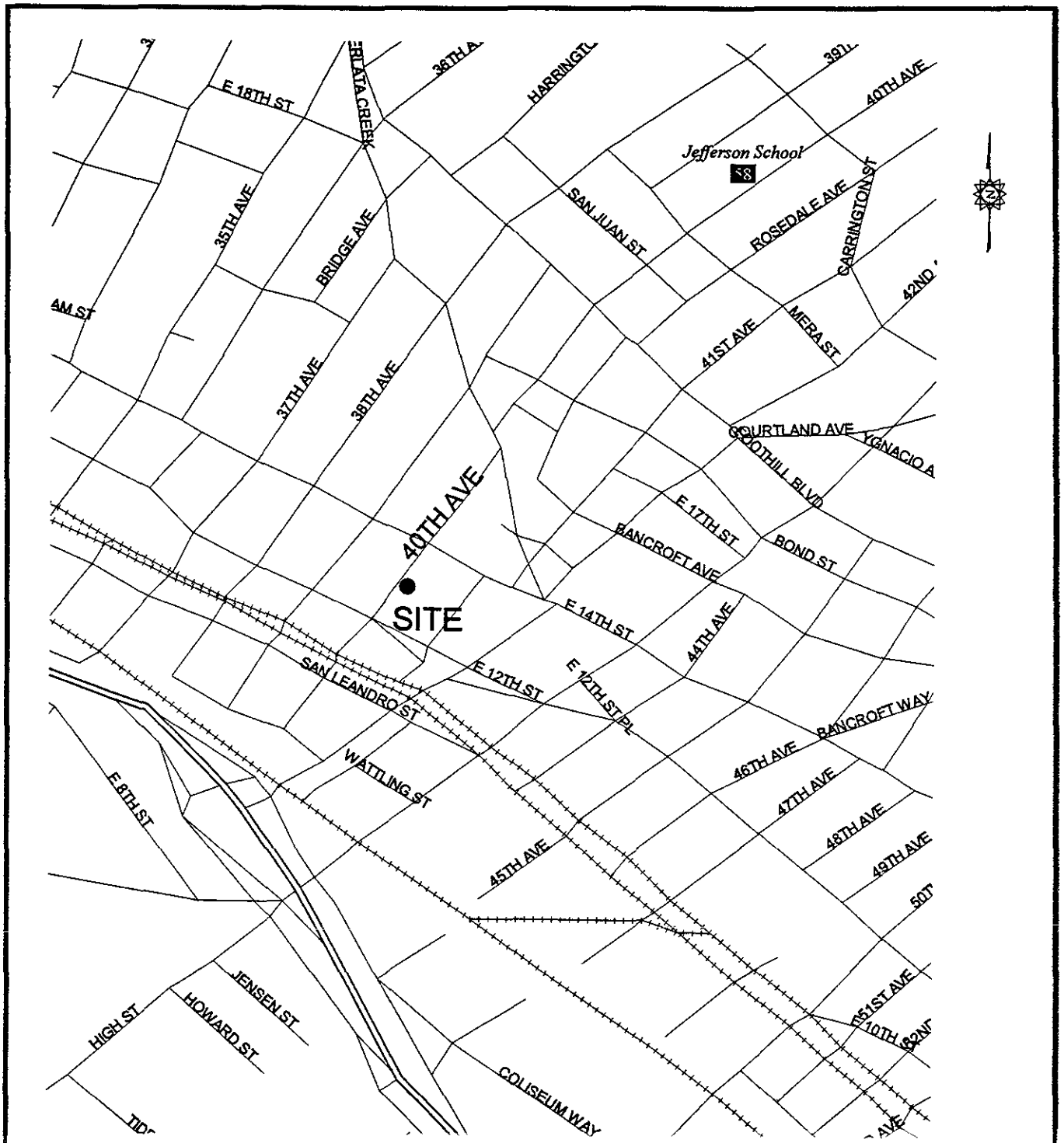
6.0 LIMITATIONS

This report has been prepared in accordance with generally accepted environmental, geological and engineering practices. No warranty, either expressed or implied is made as to the professional advice presented herein. The analysis, conclusions, and recommendations contained in this report are based upon site conditions as they existed at the time of the investigation and they are subject to change.

The conclusions presented in this report are professional opinions based solely upon visual observations of the site and vicinity, and interpretation of available information as described in this report. The scope of services performed in execution of this investigation may not be appropriate to satisfy the needs of other users and any use or reuse of this document or its findings, conclusions or recommendations presented herein is at the sole risk of the said user.

Stanley L. Klemetson, Ph.D., P.E.

7.0 FIGURES



GARY ROGERS, PH.D. ENVIRONMENTAL CONSULTANT 38053 DAVY CT. FREMONT, CA 94536 (510) 791-7157	DESCRIPTION: Site Location			FIGURE: 1
	PROJECT/LOCATION: Motor Partners 1234 40th Ave., Oakland, CA			
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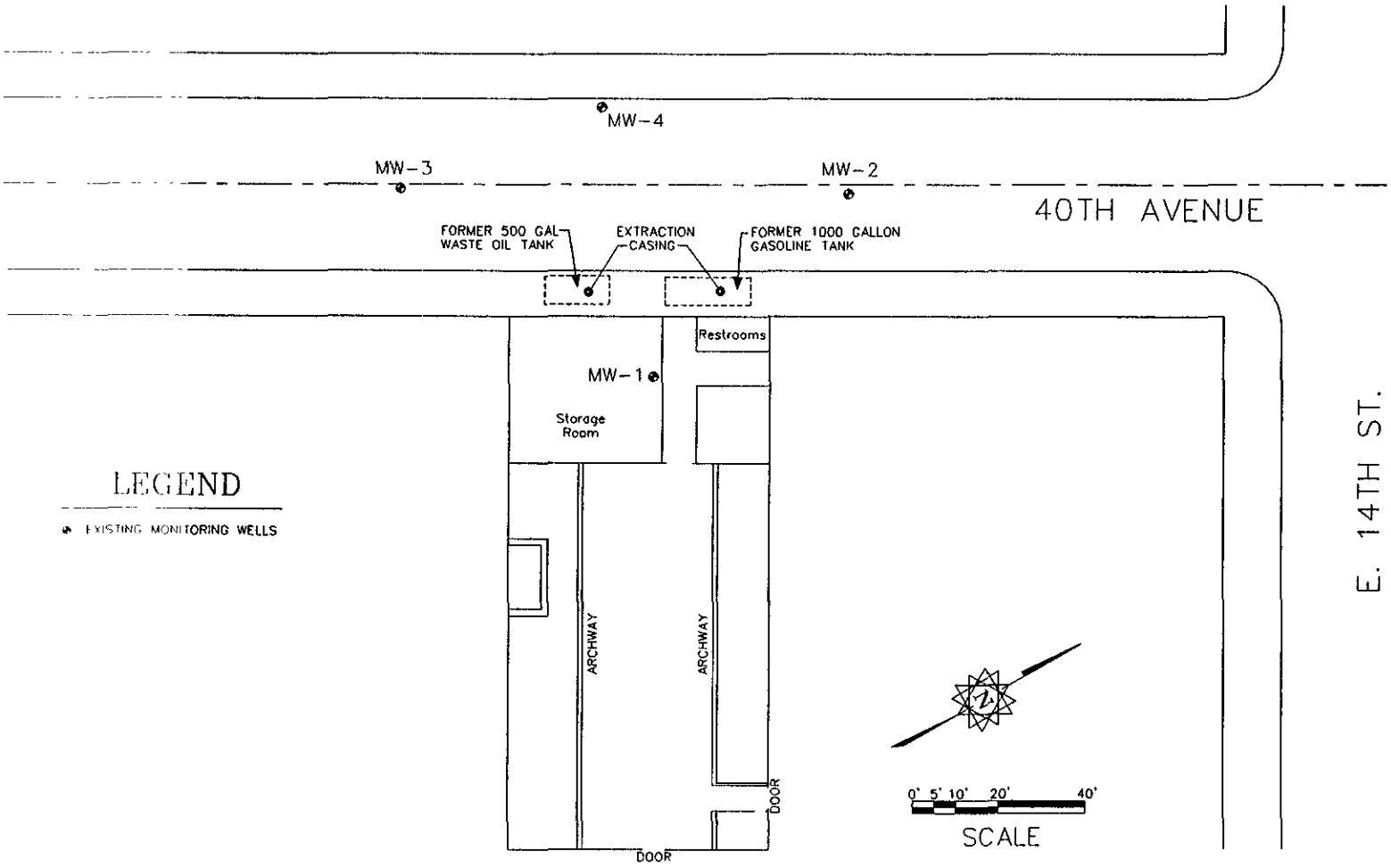

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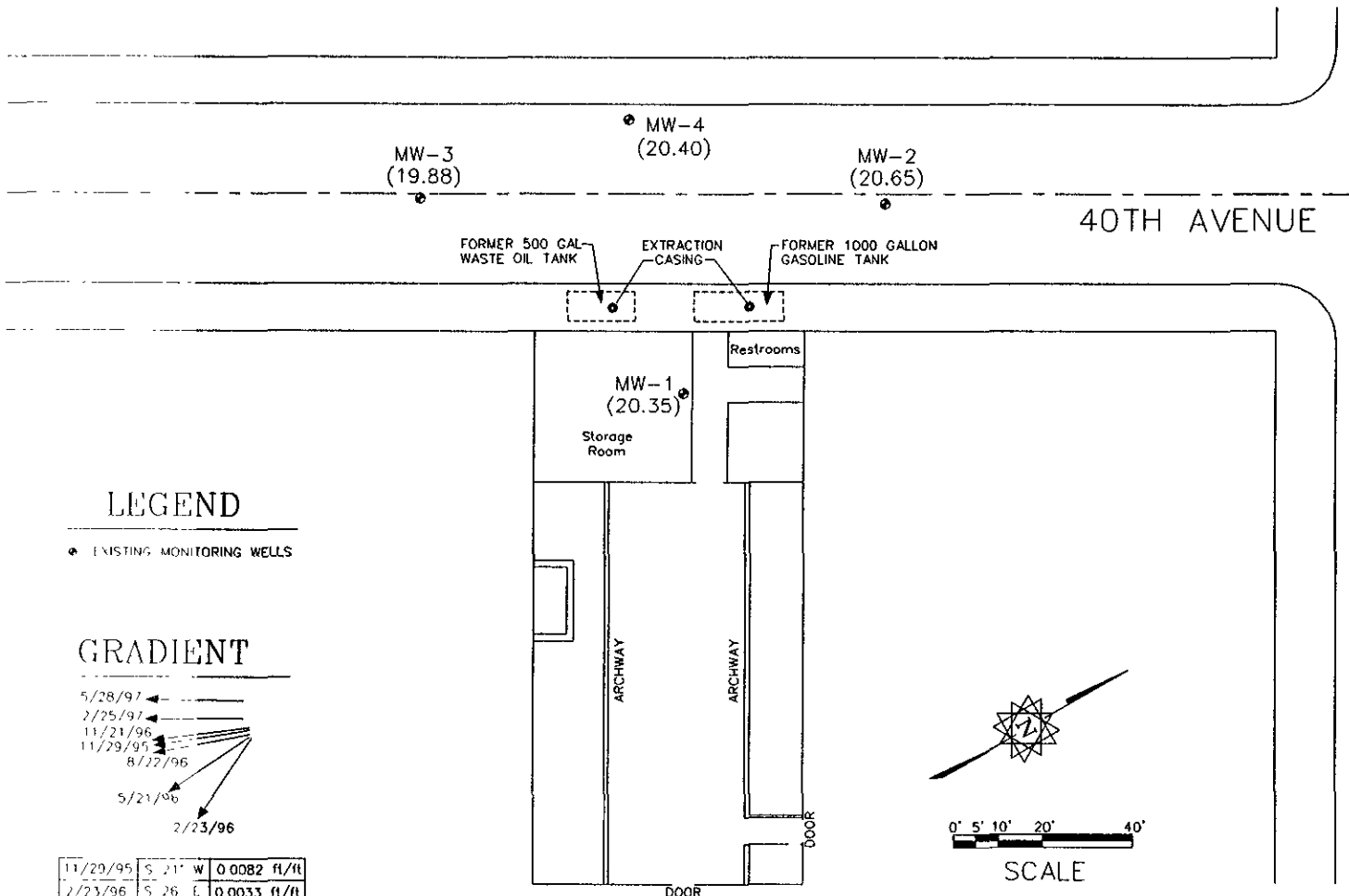
	REVISION BY:	CHECKED BY:		



LEGEND

● EXISTING MONITORING WELLS

GRADIENT

11/29/95	S 21° W	0.0082 ft/ft
2/23/96	S 26° E	0.0033 ft/ft
5/21/96	S 5° E	0.0064 ft/ft
8/22/96	S 19° W	0.0077 ft/ft
11/21/96	S 23° W	0.0062 ft/ft
2/25/97	S 30° W	0.0076 ft/ft
5/28/97	S 51° W	0.0071 ft/ft

GARY ROGERS, PH.D. ENVIRONMENTAL CONSULTANT 38053 DAVY CT. FREMONT, CA 94536 (510) 791-7157	DRAWN BY: GLR DRAWING DATE: 8/13/97 REVISION BY: REVISION BY:	PROJECT NUMBER: 1004 FILE NAME: 1004-RSK.DWG PROJECT MANAGER: GLR CHECKED BY:	DESCRIPTION: Groundwater Gradient PROJECT/LOCATION: Motor Partners 1234 40th Ave., Oakland	FIGURE: 3

8.0 TABLES

Table 1. Summary of Soil Sampling Results
Motor Partners Site, 1234 40th Ave., Oakland, California

Sample I.D. Number	Date Collected	Depth (ft)	TPH-D (mg/kg)	TPH-G (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl Benzene (mg/kg)	Total Xylenes (mg/kg)
B-1-2 @ 9'	5-17-94	9	260	850	0.55	0.63	0.42	3.6
B-2-2 @ 9.5'	6-1-94	9.5	1,000	1,900	ND	5.0	36	29
B-3-1 @ 6'	5-17-94	6	ND	910	ND	0.026	0.049	0.092
B-4-1 @ 3'	6-1-94	3	ND	ND	ND	ND	ND	ND
B-4-2 @ 7.5'	6-1-94	7.5	44	83	0.087	0.20	0.21	0.46
B-4-3 @ 11'	6-1-94	11	450	1,000	5.6	8.4	15	71
B-5-2 @ 12'	5-17-94	12	2,700	1,100	15	3.7	13	24
B-6-1 @ 9.5'	5-17-94	9.5	140	260	0.49	0.53	3.9	13
B-7-1 @ 6'	6-1-94	6	ND	3.0	0.01	ND	ND	0.019
B-7-2 @ 10.5'	6-1-94	10.5	280	1,100	0.38	1.9	3.4	5.9
B-8-1 @ 6'	6-1-94	6	ND	ND	ND	ND	ND	ND
B-8-2 @ 11'	6-1-94	11	ND	ND	ND	ND	ND	ND
B-9-1 @ 6'	6-2-94	6	ND	ND	ND	ND	ND	0.008
B-9-2 @ 11'	6-2-94	11	ND	1.8	ND	ND	ND	0.01
B-10-1 @ 4'	6-2-94	4	ND	ND	ND	ND	ND	ND
B-10-2 @ 9'	6-2-94	9	ND	2.3	ND	ND	0.007	0.01
B-11-1 @ 4.5'	6-2-94	4.5	ND	ND	ND	ND	ND	ND
B-11-2 @ 9.5'	6-2-94	9.5	520	30	ND	ND	ND	0.073
B-16-3	11-30-95	11.5	640	190	0.1	0	0	3.2
B-15-3	11-30-95	14.5	0	0	0	0	0	0
B-19-2	11-30-95	14.5	0	0	0	0	0	0
B-14-2	2-7-96	12	0	0	0	0	0	0
B-13-2	2-7-96	11	0	0	0	0	0	0
B-12-2	2-7-96	11	150	200	0	0.084	0.62	0.8
B-18-2	2-7-96	11	0	0	0	0	0	0
MW-4-2	2-1-96	10	350	470	0.05	0.14	4.3	1.8
VP-1-1	2-7-96	2 5	240	31	0 01	0	0 24	0 038
VP-1-2	2-7-96	7.5	0	0	0	0	0	0

Notes:
All soil results in mg/kg (ppm)
ND = Not Detected
NA = Not Analyzed

Table 2. Summary of Groundwater Sampling Results
Motor Partners Site, 1234 40th Ave., Oakland, California

Sample I.D. Number	Date Collected	TPH-D (μg/L)	TPH-G (μg/L)	Benzene (μg/L)	Toluene (μg/L)	Ethyl Benzene (μg/L)	Total Xylenes (μg/L)
B-1-W-1	5-17-94	16,000	16,000	210	46	150	190
B-2-W	6-1-94	7,000	8,100	220	34	220	60
B-3-W-4	5-17-94	620	910	5.3	2.5	3.0	5.0
B-4-W	6-1-94	4,900	38,000	3,200	1,800	2,000	7,100
B-5-W-2	5-17-94	2,100	3,700	370	25	180	160
B-6-W-3	5-17-94	8,600	64,000	2,900	5,200	3,800	13,000
B-7-W	6-1-94	4,500	12,000	380	36	520	170
B-8-W	6-1-94	470	570	6.8	3.2	1.7	5.7
B-9-W	6-2-94	ND	160	2.8	0.62	ND	0.61
B-10-W	6-2-94	1,700	6,100	28	29	14	62
B-11-W	6-2-94	94	750	6.8	3.2	1.7	5.7
B-16	11/30/95	300	2000	0	2	0	65
B-15	11/30/95	80	0	0	0	0	0
B-19	11/30/95	0	0	0	0	0	0
B-14	2/7/96	0	0	0	0	0	0
B-13	2/7/96	0	400	3	0	2	3
B-12	2/7/96	16000	22000	250	7	210	120
B-18	2/7/96	0	0	0	0	0	0
California Drinking Water MCL (μg/L)		None Listed	None Listed	1.0	1000	680	1750
Detection Limit		50	50	0.5	0.5	0.5	0.5

Notes:
All groundwater results in μg/L (ppb)
ND = Not Detected
NA = Not Analyzed

Table 3. Monitoring Well Construction Data
Motor Partners Site, 1234 40th Ave., Oakland, California

	MW-1	MW-2	MW-3	MW-4
Date Drilled	6/15/94	6/14/94	6/14/94	2/1/96
Total Depth	22.5 ft.	22.0 ft.	23.0 ft.	23.0 ft.
Bore Diameter	10 inches	10 inches	10 inches	10 inches
Casing Diameter	2 inch	2 inch	2 inch	2 inch
Well Seal Type	Bentonite Pellets	Bentonite Pellets	Bentonite Pellets	Bentonite Pellets
Well Seal Interval	5.0 - 6.0 bgs	5.0 - 6.0 bgs	5.0 - 6.0 bgs	3.0 - 4.0 bgs
Filter Pack Material	2/14 Lonestar Sand	2/14 Lonestar Sand	2/14 Lonestar Sand	2/14 Lonestar Sand
Filter Pack Interval	6.0 - 17.0 bgs	9.0 - 20.0 bgs	6.5 - 20.0 bgs	4.0 - 25.0 bgs
Screen Slot Size	0.020 in.	0.020 in.	0.020 in.	0.010 in.
Screened Interval	7.0 - 17.0 bgs	10.0 - 20.0 bgs	7.0 - 20.0 bgs	5.0 - 25.0 bgs
Well Elevation[1]	28.43 ft.	28.03 ft.	27.41 ft.	27.34 ft.

[1]TOC -Top of Casing Elevations for MW-1, MW-2, and MW-3 were surveyed on 11/17/95 to a City of Oakland benchmark at the northwest corner of the block using an elevation of 29.07 feet above mean sea level. The Top of Casing Elevation for MW-4 was surveyed on 2/14/96 to the TOC Elevations for MW-2 and MW-3.

Table 4. Groundwater Elevation Results
Motor Partners Site, 1234 40th Ave., Oakland, California

	DATE	MW-1	MW-2	MW-3	MW-4	GRADIENT
TOC		28.43 ft	28.03 ft	27.41 ft.	27. 34	
SWL	11/29/95	10.13	9.31	9.53		S 21° W
GSE		18.3	18.72	17.88		0.0082 ft/ft
SWL	2/23/96	4.59	3.77	3.56	3.17	S 26° E
GSE		23.84	24.26	23.85	24.17	0.0033 ft/ft
SWL	5/21/96	6.04	5.24	5.29	4.68	S 5° E
GSE		22.39	22.79	22.12	22.66	0.0064 ft/ft
SWL	8/22/96	8.46	7.66	7.88	7.10	S 19° W
GSE		19.97	20.37	19.53	20.24	0.0077 ft/ft
SWL	11/21/96	8.44	7.73	7.76	7.31	S 23° W
GSE		19.99	20.30	19.65	20.03	0.0062 ft/ft
SWL	2/25/97	6.53	5.78	5.97	5.06	S 30° W
GSE		21.90	22.25	21.44	22.28	0.0076 ft/ft
SWL	5/28/97	8.08	7.38	7.53	6.94	S 31° W
GSE		20.35	20.65	19.88	20.40	0.0071 ft/ft

TOC - Top of Casing Elevations for MW-1, MW-2, and MW-3 were surveyed on 11/17/95 to City of Oakland benchmark at northwest corner of block, using an elevation of 29.07 feet above mean sea level. The Top of Casing Elevation for MW-4 was surveyed on 2/14/96 to MW-2 and MW-3.
SWL - Static Water Level (ft)
GSE - Groundwater Surface Elevation (feet relative to mean sea level)

Table 5. Quarterly Groundwater Sampling Results
Motor Partners, 1234 40th Ave., Oakland, California

Sample I.D. Number	Date Collected	TPH-D (μg/L)	TPH-G (μg/L)	Benzene (μg/L)	Toluene (μg/L)	Ethyl Benzene (μg/L)	Total Xylenes (μg/L)
MW-1	6/17/94	2,400	17,000	1,200	220	1,000	2,600
	11/29/95	53,000	67,000	860	180	1,300	3,100
	2/23/96	25,000	16,000	360	ND	370	740
	5/21/96	650	11,000	290	37	600	1,300
	8/22/96	ND	13,000	270	51	540	1,400
	11/21/96	5,500	15,000	810	79	680	1,700
	2/25/97	3,900	15,000	430	36	760	1,200
	5/28/97	3,700	7,600	110	15	370	870
MW-2	6/17/94	370	990	ND	1.3	2.3	4.4
	12/07/94	ND	170	2.1	0.70	0.60	1.7
	11/29/95	200	400	ND	ND	ND	3
	2/23/96	ND	500	ND	ND	ND	ND
	5/21/96	ND	62	ND	ND	ND	1
	8/22/96	ND	120	0.58	0.62	ND	0.62
	11/21/96	89	89	0.60	0.78	ND	ND
	2/25/97	ND	250	1.2	1.0	ND	ND
	5/28/97	ND	ND	ND	ND	ND	ND
California Drinking Water MCL		None Listed	None Listed	1.0	1,000	680	1,750
Reporting Limit		50	50	0.5	0.5	0.5	1.0

Notes: All results in μg/l (ppb)
ND = Not Detected
NA = Not Analyzed

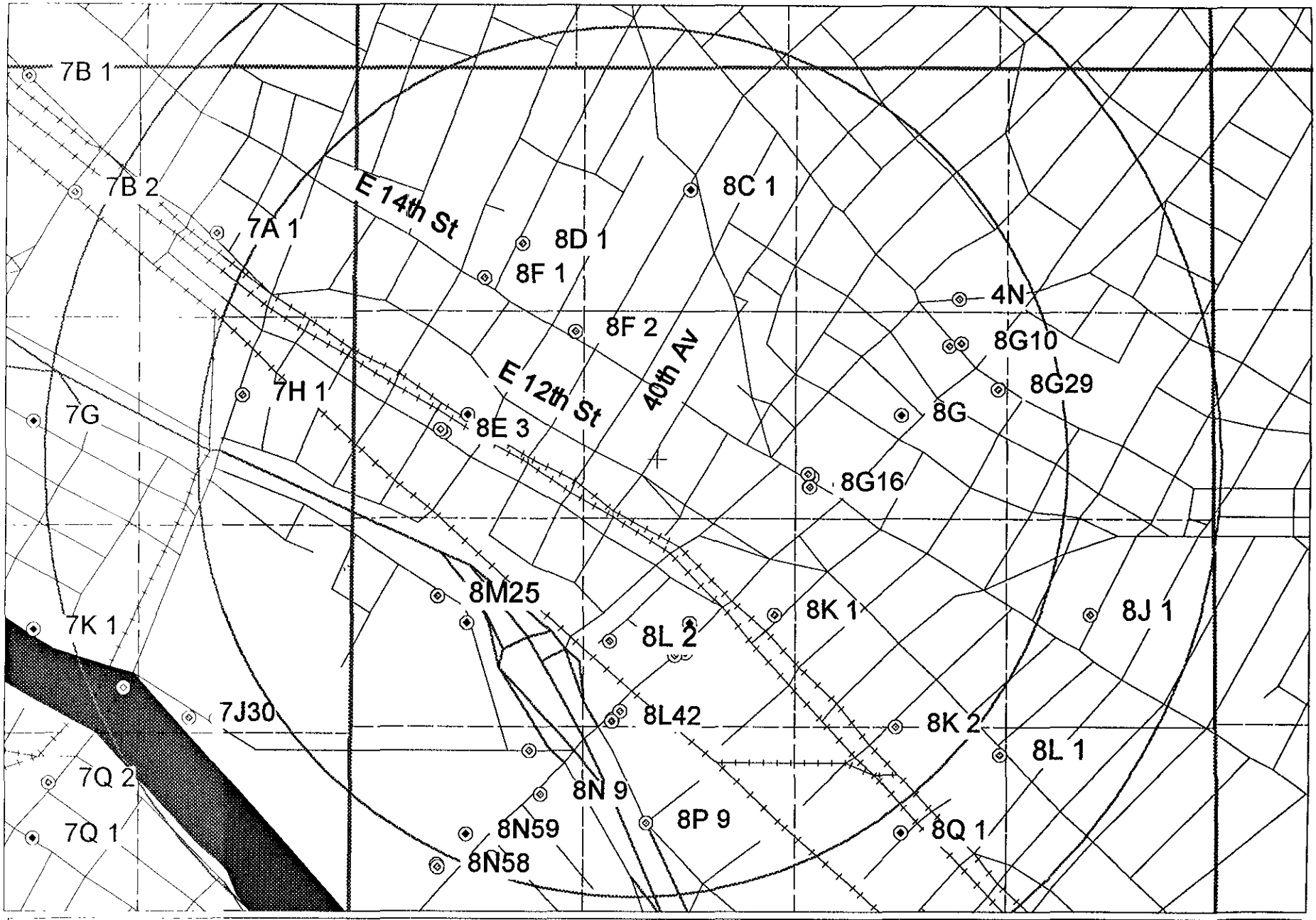
Table 5 (Continued). Quarterly Groundwater Sampling Results at Motor Partners, 1234 40th Ave., Oakland, California

Sample I.D. Number	Date Collected	TPH-D (μg/L)	TPH-G (μg/L)	Benzene (μg/L)	Toluene (μg/L)	Ethyl Benzene (μg/L)	Total Xylenes (μg/L)
MW-3	6/17/95	2,200	9,500	330	40	100	74
	12/07/94	1,700	7,500	380	42	130	72
	11/29/95	14,000	9,000	300	49	300	16
	2/23/96	14,000	13,000	270	83	260	67
	5/21/96	350	6,600	220	48	160	66
	8/22/96	ND	4,800	120	34	44	44
	11/21/96	3,300	8,700	220	51	150	68
	2/25/97	ND	8,200	260	57	200	72
	5/28/97	1,800	7,000	140	22	44	31
MW-4	2/23/96	3,000	6,000	58	36	6	28
	5/21/96	78	1,200	18	2.5	6.2	12
	8/22/96	ND	400	8.6	3.4	1.8	2.6
	11/21/96	87	170	3.6	1.1	1.7	2.3
	2/25/97	ND	120	5.4	0.64	0.93	0.80
	5/28/97	55	150	5.6	0.64	4.4	8.8
California Drinking Water MCL		None Listed	None Listed	1.0	1,000	680	1,750
Reporting Limit		50	50	0.5	0.5	0.5	1.0

Notes: All results in μg/l (ppb)
ND = Not Detected
NA = Not Analyzed

9.0 APPENDICES

APPENDIX A
WELL SURVEY



.5 mile radius from 1234-40th Ave

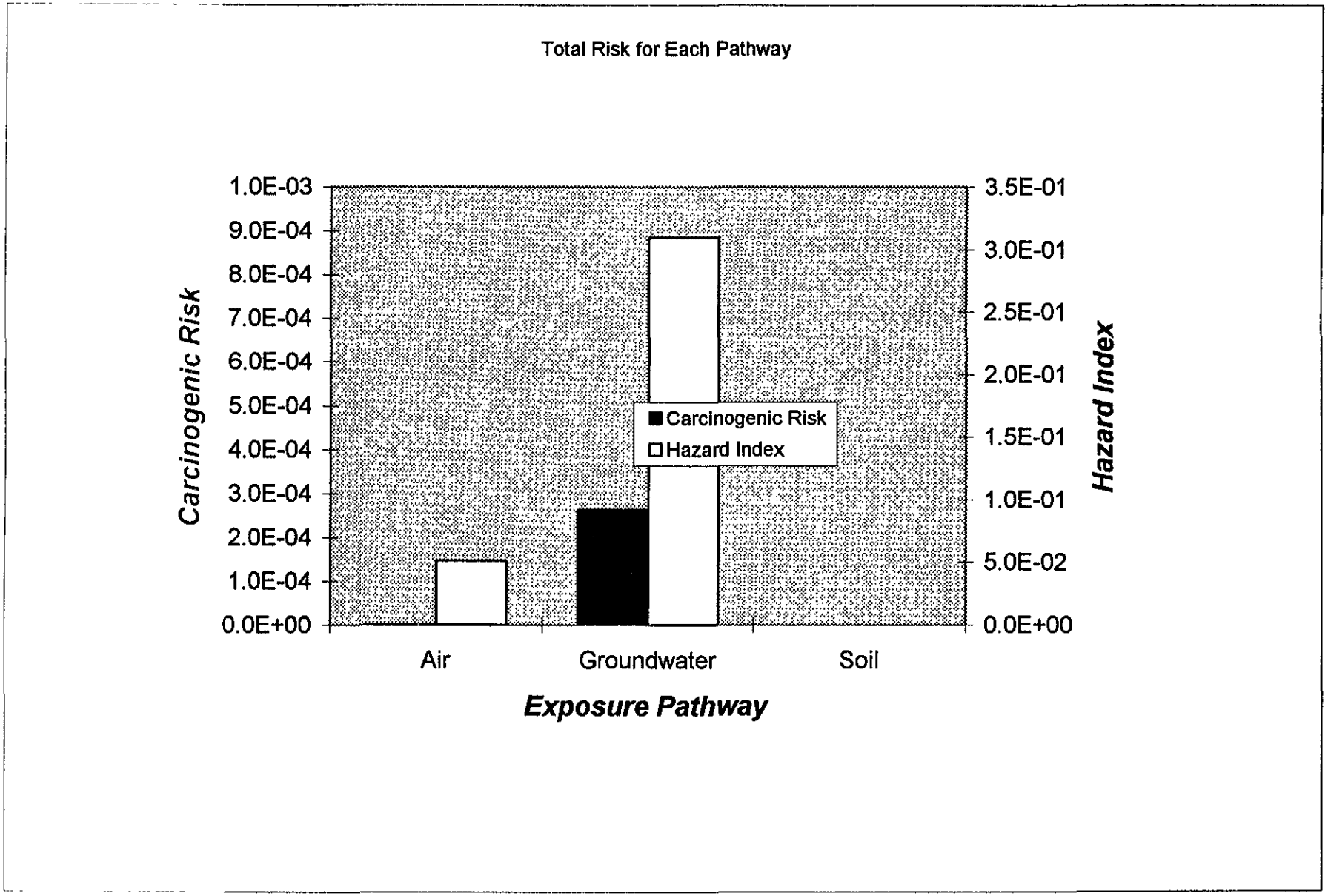
WELL #	CITY	ADDRESS	OWNER	PHONE	USE	DR.DATE	DIAM	TOT.DEPTH	DTW	ST.ELEV	WA.ELEV	YIELD	LOG	WQ	WL	DATAORGN	MARGIN
1S/4W 26C 4	OAK	900 HIGH ST.	OAKLAND SCHOOL DIST.	0	IRR	?	0	120	0	0	0	25	D	0	0	L	
2S/3W 4N	OAK	COURTLAND/CONGRESS AVE	COUNTY OF ALAMEDA	0	BOR	3/86	0	32	17	0	0	0	G	0	0	L	
2S/3W 5N 1	OAK	E 18TH ST S/O 34TH AVE	PG&E	0	CAT	4/76	0	120	0	0	0	0	D	0	0	L	Yes
2S/3W 7H	OAK	880 Fruitvale Ave	State Shingle Company	0	MON	7/90	6	26	12	0	0	0	G	0	0	D	
2S/3W 7H 1	OAK	880 Fruitvale Ave	State Shingle Company	0	MON	2/90	2	35	27	168	141	0	G	0	0	D	
2S/3W 7H 2	OAK	880 Fruitvale Ave	State Shingle Company	0	MON	10/90	2	30	17	29	12	0	D	0	0	D	
2S/3W 7H 3	OAK	880 Fruitvale Ave	State Shingle Company	0	MON	10/90	2	30	17	29	12	0	D	0	0	D	
2S/3W 8A	OAK	COURTLAND AVE/THOMPSON ST	COUNTY OF ALAMEDA	0	BOR	3/86	0	32	0	0	0	0	G	0	0	L	
2S/3W 8C 1	OAK	39TH AVE/82 2ND AVE	TRUST FOR PUBLIC LAND-SF	0	IRR	7/77	4	30	18	0	0	0	D	0	0	L	
2S/3W 8C 2	OAK	39TH & FOOTHILL BLVD	PG&E	0	CAT	1/75	0	120	0	0	0	0	D	0	0	L	
2S/3W 8D 1	OAK	1466 36th Avenue	August Manufacturing	0	MON	03/90	2	35	16	0	0	0	G	1	0	D	
2S/3W 8D 2	OAK	1466 36th Avenue	August Manufacturing	0	MON	1/91	2	15	13	0	0	0	G	0	1	D	
2S/3W 8D 3	OAK	1466 36th Avenue	August Manufacturing	0	BOR*	2/91	8	11	9	17	8	0	G	0	0	D	
2S/3W 8E 1	OAK	W 37TH AVE	PG&E	0	CAT	12/73	0	120	0	0	0	0	D	0	0	L	
2S/3W 8E 2	OAK	3614 SAN LEANDRO ST.	VERNON MCILRAITH	0	MON	08/88	4	30	13	0	0	0	D	1	0	L	
2S/3W 8E 3	OAK	3616 San Leandro St.	Chevron MW-2	0	MON	2/93	2	21	8	0	0	0	G	0	0	D	
2S/3W 8E 4	OAK	3616 San Leandro St.	Chevron MW-3	0	MON	2/93	2	21	7	0	0	0	G	0	0	D	
2S/3W 8F 1	OAK	3570 East 14th Street	Shell Oil Company	0	MON	4/90	4	2	14	35	21	0	D	0	0	D	
2S/3W 8F 2	OAK	3750 East 14th Street	Shell Oil Company	0	MON	4/90	4	29	14	35	21	0	D	0	0	D	
2S/3W 8F 3	OAK	3750 East 14th Street	Shell Oil Company	0	MON	4/90	4	28	14	33	19	0	D	0	0	D	
2S/3W 8F 4	OAK	3750 East 14th Street	Shell Oil Company	0	MON	6/92	4	25	12	34	22	0	D	0	0	D	
2S/3W 8G	OAK	4265 FOOTHILL (@ HIGH ST)	CHEVRON SVCE. STA. #0076	0	BOR	8/87	8	25	0	0	0	0	G			L	
2S/3W 8G 1	OAK	499 HIGH ST	INTERGRATED ENV. SYSTEMS	0	DES	12/85	6	610	30	0	0	0	D	0	0	L	
2S/3W 8G 2	OAK	4265 FOOTHILL (@ HIGH ST)	CHEVRON SVCE. STA. #0076	0	MON	8/87	3	40	29	98	0	0	G			L	
2S/3W 8G 3	OAK	4265 FOOTHILL (@ HIGH ST)	CHEVRON SVCE. STA. #0076	0	MON	8/87	3	40	30	98	0	0	G			L	
2S/3W 8G 4	OAK	4265 FOOTHILL (@ HIGH ST)	CHEVRON SVCE. STA. #0076	0	MON	8/87	3	40	27	98	0	0	G			L	
2S/3W 8G 5	OAK	4265 FOOTHILL (@ HIGH ST)	CHEVRON SVCE. STA. #0076	0	MON	8/87	3	40	27	96	0	0	G			L	
2S/3W 8G 6	OAK	4280 FOOTHILL BLVD	MOBIL OIL CORP.	0	TES	04/89	2	32	14	0	0	0	D	0	0	L	
2S/3W 8G 7	OAK	4280 FOOTHILL BLVD	MOBIL OIL CORP.	0	TES	04/89	2	32	19	0	0	0	D	0	0	L	
2S/3W 8G 8	OAK	4280 FOOTHILL BLVD	MOBIL OIL	0	TES	03/89	2	31	14	0	0	0	D	0	0	L	
2S/3W 8G 9	OAK	4280 FOOTHILL BLVD	MOBIL OIL	0	TES	03/89	2	31	19	0	0	0	D	0	0	L	
2S/3W 8G10	OAK	4280 Foothill Blvd.	Mobil Oil Corporation	0	TES	1/90	4	32	17	0	0	0	D	0	0	D	
2S/3W 8G11	OAK	4280 Foothill Blvd.	Mobil Oil Corporation	0	TES	1/90	4	27	20	0	0	0	D	0	0	D	
2S/3W 8G12	OAK	4265 Foothill Blvd	Chevron USA	0	BOR	9/90	9	420	0	0	0	0	D	0	0	D	
2S/3W 8G13	OAK	4265 Foothill Blvd.	Chevron USA	0	MON	8/90	2	45	33	36	3	0	G	0	0	D	
2S/3W 8G14	OAK	4265 Foothill Blvd.	Chevron USA	0	MON	8/90	2	55	43	33	10	0	G	0	0	D	
2S/3W 8G15	OAK	4265 Foothill Blvd.	Chevron, USA	0	IRR	10/90	13	304	24	0	0	75	D	0	0	D	
2S/3W 8G16	OAK	4251 E 14TH STREET	UNOCAL SS #2659	0	MON	10/90	4	14	0	0	0	0	G	0	0	D	
2S/3W 8G17	OAK	4251 E 14TH STREET	UNOCAL SS #2659	0	MON	9/90	2	51	39	0	0	0	G	0	0	D	
2S/3W 8G18	OAK	4251 E 14TH STREET	UNOCAL SS #2659	0	MON	9/90	2	51	40	0	0	0	G	0	0	D	
2S/3W 8G19	OAK	4251 E 14th st	UNOCAL	0	MON	3/92	2	50	35	0	0	0	D	0	0	D	
2S/3W 8G20	OAK	4280 Foothill Blvd	BP Oil Co MW-5	0	MON	9/91	4	34	18	0	0	0	D	0	0	D	
2S/3W 8G21	OAK	4280 Foothill Blvd	BP Oil Co MW-6	0	MON	9/91	4	36	22	0	0	0	D	0	0	D	
2S/3W 8G22	OAK	4280 Foothill Blvd	BP Oil Co MW-7	0	MON	9/91	4	35	14	0	0	0	D	0	0	D	
2S/3W 8G23	OAK	4280 Foothill Blvd	BP Oil Co MW-8	0	MON	9/91	4	31	23	0	0	0	D	0	0	D	
2S/3W 8G24	OAK	4280 Foothill Blvd	BP Oil Co MW-9	0	MON	9/91	4	31	14	0	0	0	D	0	0	D	
2S/3W 8G25	OAK	4240 East 14th St.	Joseph Hess MW-4	0	MON	4/93	4	46	35	0	0	0	G	0	0	D	
2S/3W 8G26	OAK	4240 East 14th St.	Joseph Hess MW-3	0	MON	4/93	4	45	37	0	0	0	G	0	0	D	
2S/3W 8G27	OAK	4240 East 14th St.	Joseph Hess MW-2	0	MON	4/93	4	47	37	0	0	0	G	0	0	D	
2S/3W 8G28	OAK	4256 East 14th St.	Joseph Hess HC-1	0	MON	7/93	4	42	35	0	0	0	G	0	0	D	
2S/3W 8G29	OAK	4411 Foothill Blvd.	Shell Oil Co. S-2	0	MON	5/93	4	22	14	0	0	0	D	0	0	D	
2S/3W 8G30	OAK	4411 Foothill Blvd.	Shell Oil Co. S-3	0	MON	5/93	4	20	14	0	0	0	D	0	0	D	
2S/3W 8G31	OAK	4240 East 14th St.	Joseph Hess MW-1	0	MON	8/92	4	47	37	0	0	0	G	0	0	D	
2S/3W 8G32	OAK	4251 East 14th St.	Unocal #2656 VE1	0	EXT	4/93	2	13	0	0	0	0	G	0	0	D	
2S/3W 8G33	OAK	4251 East 14th St.	Unocal #2656 VE2	0	EXT	4/93	2	12	0	0	0	0	G	0	0	D	
2S/3W 8G34	OAK	4251 East 14th St.	Unocal #2656 VE3	0	EXT	4/93	2	11	0	0	0	0	G	0	0	D	
2S/3W 8G35	OAK	4411 Foothill Blvd.	Shell Oil Co. S-1	0	MON	11/92	4	25	15	0	0	0	D	0	0	D	
2S/3W 8G36	OAK	4251 East 14th St.	Unocal #2656 MW5	0	MON	11/92	2	49	35	0	0	0	G	0	0	D	
2S/3W 8G37	OAK	4251 East 14th St.	Unocal #2656 MW6	0	MON	11/92	2	49	35	0	0	0	G	0	0	D	
2S/3W 8G38	OAK	E 14th St. & High St.	Grand Auto MW-1	0	MON	8/92	2	43	37	0	0	0	G	0	0	D	
2S/3W 8K 1	OAK	1033 44TH AVE.	CRAIG LEVITT	8483722	MON	10/88	2	27	8	0	0	0	G	0	0	L	
2S/3W 8K 2	OAK	1066 47TH AVE.	PETERSON PROPERTIES	0	MON	03/89	2	25	22	0	0	0	D	0	0	L	

WELL #	CITY	ADDRESS	OWNER	PHONE	USE	DR.DATE	DIAM	TOT.DEPTH	DTW	ST.ELEV	WA.ELEV	YIELD	LOG	WQ	WL	DATAORGN	MARGIN
2S/3W 8K 3	OAK	1066 47TH AVE.	PETERSON PROPERTIES	0	MON	03/89	4	27	0	0	0	0	D	0	0		L
2S/3W 8K 4	OAK	1066 47TH AVE.	PETERSON PROPERTIES	0	MON	03/89	2	25	0	0	0	0	D	0	0		L
2S/3W 8L	OAK	4301 SAN LEANDRO ST	COMMERCIAL FUELING SYS	0	BOR	10/86	0	37	0	0	0	0	G	0	0		L
2S/3W 8L	OAK	1007 41ST AVENUE	DUNNE QUALITY PAINTS	0	BOR	01/88	0	17	6	0	0	0	G	0	0		L
2S/3W 8L	OAK	720 High St.	Exxon #7-3006 '	0	BOR	2/93	0	10	10	0	0	0	G	0	0		D
2S/3W 8L 2	OAK	860 42ND AVE	CLOROX CO.	0	DES	7/82	2	235	40	0	0	0	E	0	0		L
2S/3W 8L 3	OAK	860 42ND AVE	CLOROX CO.	0	DES	9/82	2	244	40	0	0	0	E	0	0		L
2S/3W 8L 4	OAK	860 42ND AVE	CLOROX CO.	0	DES	10/82	2	20	12	0	0	0	G	0	0		L
2S/3W 8L 5	OAK	860 42ND AVE	CLOROX CO.	0	DES	9/82	2	25	21	0	0	0	G	0	0		L
2S/3W 8L 6	OAK	860 42ND AVE	CLOROX CO.	0	MON	8/82	2	22	16	0	0	0	G	0	0		L
2S/3W 8L 7	OAK	860 42ND AVE	CLOROX CO.	0	DES	10/82	2	22	13	0	0	0	G	0	0		L
2S/3W 8L 8	OAK	860 42ND AVE	CLOROX CO.	0	DES	8/82	2	22	10	0	0	0	G	0	0		L
2S/3W 8L 9	OAK	860 42ND AVE	CLOROX CO.	0	DES	7/82	2	87	0	0	0	0	G	0	0		L
2S/3W 8L10	OAK	860 42ND AVE	CLOROX CO.	0	DES	7/82	2	87	39	0	0	0	G	0	0		L
2S/3W 8L11	OAK	860 42ND AVE	CLOROX CO.	0	DES	8/82	2	77	41	0	0	0	G	0	0		L
2S/3W 8L12	OAK	860 42ND AVE	CLOROX CO.	0	DES	8/82	2	40	15	0	0	0	G	0	0		L
2S/3W 8L13	OAK	HIGH & WATTLING STREETS	CLOROX (850 42ND AV)	0	DES	8/82	2	77	40	0	0	0	G	0	0		L
2S/3W 8L14	OAK	860 42ND AVE	CLOROX CO.	0	DES	8/82	2	87	40	0	0	0	G	0	0		L
2S/3W 8L15	OAK	860 42ND AVE	CLOROX CO.	0	MON	11/83	0	32	16	23	7	0	G	0	0		L
2S/3W 8L16	OAK	860 42ND AVE	CLOROX CO.	0	DES	10/83	0	31	11	21	10	0	G	0	0		L
2S/3W 8L17	OAK	860 42ND AVE	CLOROX CO.	0	DES	11/83	0	32	12	21	9	0	G	0	0		L
2S/3W 8L18	OAK	860 42ND AVE	CLOROX CO.	0	MON	11/83	0	34	15	21	6	0	G	0	0		L
2S/3W 8L19	OAK	860 42ND AVE	CLOROX CO.	0	MON	11/83	0	31	11	17	6	0	G	0	0		L
2S/3W 8L20	OAK	860 42ND AVE	CLOROX CO.	0	MON	11/83	0	34	11	17	6	0	G	0	0		L
2S/3W 8L21	OAK	860 42ND AVE	CLOROX CO.	0	MON	11/83	0	32	6	18	12	0	G	0	0		L
2S/3W 8L22	OAK	4301 SAN LEANDRO ST	COMMERCIAL FUELING SYS	0	MON	10/86	2	12	0	0	0	0	G	0	0		L
2S/3W 8L23	OAK	4301 SAN LEANDRO ST	COMMERCIAL FUELING SYS	0	MON	10/86	2	12	0	0	0	0	G	0	0		L
2S/3W 8L24	OAK	4301 SAN LEANDRO ST	COMMERCIAL FUELING SYS	0	MON	10/86	2	12	0	0	0	0	G	0	0		L
2S/3W 8L25	OAK	4301 SAN LEANDRO ST	COMMERCIAL FUELING SYS	0	MON	10/86	2	12	0	0	0	0	G	0	0		L
2S/3W 8L26	OAK	850-42ND AVE	CLOROX	0	MON	10/86	2	55	0	0	0	0	G	0	0		L
2S/3W 8L27	OAK	850-42ND AVE	CLOROX	0	MON	09/86	4	29	0	0	0	0	G	0	0		L
2S/3W 8L28	OAK	850-42ND AVE	CLOROX	0	MON	09/86	4	28	0	0	0	0	G	0	0		L
2S/3W 8L29	OAK	850-42ND AVE	CLOROX	0	MON	09/86	4	25	0	0	0	0	G	0	0		L
2S/3W 8L30	OAK	850 42ND AVE	CLOROX	0	MON	09/86	4	27	0	0	0	0	G	0	0		L
2S/3W 8L31	OAK	850-42ND AVE	CLOROX	0	MON	09/86	2	25	0	0	0	0	G	0	0		L
2S/3W 8L32	OAK	850-42ND AVE	CLOROX	0	MON	09/86	4	30	0	0	0	0	G	0	0		L
2S/3W 8L33	OAK	720 HIGH STREET	EXXON STATION #7-3006	0	MON	9/87	4	35	16	0	0	0	D	0	0		L
2S/3W 8L34	OAK	720 HIGH STREET	EXXON STATION #7-3006	0	MON	9/87	4	35	16	0	0	0	D	0	0		L
2S/3W 8L35	OAK	720 HIGH STREET	EXXON STATION #7-3006	0	MON	9/87	4	35	16	0	0	0	D	0	0		L
2S/3W 8L36	OAK	720 HIGH STREET	EXXON STATION #7-3006	0	MON	9/87	4	33	16	0	0	0	D	0	0		L
2S/3W 8L37	OAK	720 HIGH STREET	EXXON STATION #7-3006	0	MON	9/87	4	35	16	0	0	0	D	0	0		L
2S/3W 8L38	OAK	720 HIGH STREET	EXXON STATION #7-3006	0	MON	9/87	4	35	16	0	0	0	D	0	0		L
2S/3W 8L39	OAK	720 HIGH STREET	EXXON STATION #7-3006	0	MON	9/87	4	35	16	0	0	0	D	0	0		L
2S/3W 8L40	OAK	720 HIGH ST	EXXON STA # 7-3006	0	MON	05/88	4	29	11	0	0	0	G	0	0		L
2S/3W 8L41	OAK	720 HIGH ST	EXXON STA # 7-3006	0	MON	05/88	4	33	0	0	0	0	G	0	0		L
2S/3W 8L42	OAK	720 HIGH ST	EXXON CORP.	0	MON	5/88	4	33	10	0	0	0	D	0	0		L
2S/3W 8L43	OAK	720 High St.	Exxon #7-3006 VW1	0	MON	2/93	4	7	0	0	0	0	G	0	0		D
2S/3W 8L44	OAK	720 High St.	Exxon #7-3006 VW2	0	MON	2/93	4	10	0	0	0	0	G	0	0		D
2S/3W 8L45	OAK	720 High St.	Exxon #7-3006 VW3	0	MON	2/93	4	8	0	0	0	0	G	0	0		D
2S/3W 8M	OAK	3801 East 8th Street	American National Can Co.	0	BOR*	8/89	12	0	0	0	0	0	G	0	0		D
2S/3W 8M	OAK	3801 East 8th Street	American National Can Co.	0	BOR*	3/91	8	7	5	0	0	0	G	0	0		D
2S/3W 8M	OAK	3801 EAST 8TH AVE	AMERICAN CAN CO	0	BOR	01/86	2	30	13	0	0	0	G	0	0		L
2S/3W 8M	OAK	3801 E 8th St.	American Nat'l Can Co. TB	0	GEO	12/94	0	24	0	0	0	0	G	0	0		D
2S/3W 8M 2	OAK	3801 East 8th Street	American National Can Co.	0	MON	8/89	4	24	0	15	0	0	G	0	0		D
2S/3W 8M 3	OAK	3801 East 8th Street	American National Can Co.	0	ON	8/89	4	25	0	13	0	0	G	0	0		D
2S/3W 8M 4	OAK	3801 East 8th Street	American National Can Co.	0	MON	8/89	4	20	0	12	0	0	G	0	0		D
2S/3W 8M 5	OAK	3801 East 8th Street	American National Can Co.	0	MON	8/89	4	22	0	12	0	0	G	0	0		D
2S/3W 8M 6	OAK	3801 East 8th Street	American National Can Co.	0	MON	8/89	4	18	0	18	0	0	G	0	0		D
2S/3W 8M 7	OAK	3801 East 8th Street	American National Can Co.	0	IRR	4/91	7	180	41	0	0	0	D				D
2S/3W 8M 8	OAK	3801 East 8th Street	American National Can Co.	0	MON	3/91	0	25	11	0	0	0	G				D
2S/3W 8M 9	OAK	3801 East 8th Street	American National Can Co.	0	MON	4/91	4	20	12	16	4	0	G				D
2S/3W 8M10	OAK	3801 East 8th Street	American National Can Co.	0	MON	3/91	4	20	12	15	4	0	G				D

WELL #	CITY	ADDRESS	OWNER	PHONE	USE	DR.DATE	DIAM	TOT.DEPTH	DTW	ST.ELEV	WA.ELEV	YIELD	LOG	WQ	WL	DATAORGN	MARGIN
2S/3W 8M11	OAK	3801 East 8th Street	American National Can Co.	0	MON	3/91	4	19	9	15	6	0	G				D
2S/3W 8M12	OAK	3801 East 8th Street	American National Can Co.	0	MON	3/91	4	19	13	16	3	0	G				D
2S/3W 8M13	OAK	3801 East 8th Street	American National Can Co.	0	MON	3/91	4	19	12	15	3	0	G				D
2S/3W 8M14	OAK	3801 East 8th Street	American National Can Co.	0	MON	3/91	4	22	10	13	3	0	G				D
2S/3W 8M15	OAK	3801 East 8th Street	American National Can Co.	0	MON	3/91	4	18	13	16	3	0	G				D
2S/3W 8M16	OAK	3801 East 8th Street	American National Can Co.	0	MON	3/91	4	18	10	13	3	0	G				D
2S/3W 8M17	OAK	3801 East 8th Street	American National Can Co.	0	MON	3/91	4	23	10	12	2	0	G				D
2S/3W 8M18	OAK	3801 East 8th Street	American National Can Co.	0	MON	3/91	4	18	10	13	3	0	G				D
2S/3W 8M19	OAK	3801 East 8th Street	American National Can Co.	0	MON	3/91	4	19	11	15	4	0	G				D
2S/3W 8M20	OAK	3801 E 8th ST	American National CanMW17	0	MON	1/92	2	15	4	10	6	0	G	0	0		D
2S/3W 8M21	OAK	3801 E 8th ST	American National CanMW18	0	MON	1/92	2	19	4	13	9	0	G	0	0		D
2S/3W 8M22	OAK	3801 E 8th ST	American National CanMW19	0	MON	1/92	2	20	4	13	9	0	G	0	0		D
2S/3W 8M23	OAK	3801 E 8th ST	American National CanMW20	0	MON	1/92	2	19	4	14	10	0	G	0	0		D
2S/3W 8M24	OAK	3801 E 8th ST	American National CanMW21	0	MON	1/92	2	19	4	13	9	0	G	0	0		D
2S/3W 8M25	OAK	3801 East 8th St	American National Can TW1	0	TES	10/91	6	23	5	18	13	0	G	0	0		D
2S/3W 8M26	OAK	3801 East 8th St	American Natl Can MW14	0	MON	10/91	4	19	2	12	10	0	G	0	0		D
2S/3W 8M27	OAK	3801 East 8th St	American Natl Can MW15	0	MON	10/91	4	21	5	18	13	0	G	0	0		D
2S/3W 8M28	OAK	3801 East 8th St	American Natl Can MW16	0	MON	10/91	4	19	2	13	11	0	G	0	0		D
2S/3W 8N	OAK	410 High Street	Unocal Corporation	0	MON	9/89	2	25	15	8	-7	0	G	0	0		D
2S/3W 8N	OAK	410 High Street	Unocal Corporation	0	BOR*	8/89	4	0	8	8	0	0	G	0	0		D
2S/3W 8N	OAK	301 - 411 High Street	Arco Products Co	0	BOR	1/91	2	6	2	5	3	0	G	1	1		D
2S/3W 8N	OAK	401 HIGH STREET	UNOCAL CHEMICAL	0	BOR	8/88	6	18	0	0	0	0	G	0	0		L
2S/3W 8N	OAK	630 High Street	Shell Oil Company	0	BOR	8/89	8	10	0	0	0	0	G	0	0		D
2S/3W 8N	OAK	630 High Street	Shell Oil Company	0	BOR	11/89	8	9	0	0	0	0	G	0	0		D
2S/3W 8N	OAK	630 HIGH ST	SHELL OIL	0	BOR*	04/89	8	10	0	0	0	0	G	0	0		L
2S/3W 8N 1	OAK	ALAMEDA AVE	AMERICAN CAN CO	0	DES	7/87	2	31	9	0	0	0	G	0	0		L
2S/3W 8N 2	OAK	ALAMEDA AVE	AMERICAN CAN CO	0	DES	7/87	2	31	9	0	0	0	G	0	0		L
2S/3W 8N 3	OAK	ALAMEDA AVE	AMERICAN CAN CO	0	DES	7/87	2	31	9	0	0	0	G	0	0		L
2S/3W 8N 4	OAK	ALAMEDA AVE	AMERICAN CAN CO	0	DES	7/87	2	31	9	0	0	0	G	0	0		L
2S/3W 8N 5	OAK	630 HIGH ST	SHELL OIL	0	MON	04/89	4	14	10	0	0	0	G	0	0		L
2S/3W 8N 6	OAK	630 HIGH ST	SHELL OIL	0	MON	04/89	4	20	14	0	0	0	G	0	0		L
2S/3W 8N 7	OAK	630 HIGH ST	SHELL OIL	0	MON	04/89	4	17	14	0	0	0	G	0	0		L
2S/3W 8N 8	OAK	630 HIGH ST	SHELL OIL	0	MON	04/89	4	17	10	0	0	0	G	0	0		L
2S/3W 8N 9	OAK	630 High Street	Shell Oil Company	0	MON	8/89	4	18	12	100	88	0	G	0	0		D
2S/3W 8N10	OAK	630 High Street	Shell Oil Company	0	MON	8/89	4	20	15	99	84	0	G	0	0		D
2S/3W 8N11	OAK	630 High Street	Shell Oil Company	0	MON	8/89	4	20	18	98	80	0	G	0	0		D
2S/3W 8N12	OAK	630 High Street	Shell Oil Company	0	MON	8/89	4	21	9	97	88	0	G	0	0		D
2S/3W 8N13	OAK	630 High Street	Shell Oil Company	0	MON	11/89	2	12	10	0	0	0	G	0	0		D
2S/3W 8N14	OAK	630 High Street	Shell Oil Company	0	MON	11/89	2	13	11	0	0	0	G	0	0		D
2S/3W 8N15	OAK	410 High Street	Unocal Corporation	0	MON	9/90	4	98	19	0	0	0	D	0	0		D
2S/3W 8N16	OAK	410 High Street	Unocal Corporation	0	BOR*	9/89	4	0	10	11	1	0	G	0	0		D
2S/3W 8N17	OAK	410 High Street	Unocal Corporation	0	MON	9/89	2	25	15	9	-6	0	G	0	0		D
2S/3W 8N18	OAK	410 High Street	Unocal Corporation	0	MON	9/89	2	25	15	8	-7	0	G	0	0		D
2S/3W 8N19	OAK	410 High Street	Unocal Corporation	0	MON	9/89	2	27	15	9	-6	0	G	0	0		D
2S/3W 8N20	OAK	410 High Street	Unocal Corporation	0	MON	9/89	2	30	15	8	-7	0	G	0	0		D
2S/3W 8N21	OAK	410 High Street	Unocal Corporation	0	MON	9/89	2	26	15	8	-7	0	G	0	0		D
2S/3W 8N22	OAK	410 High Street	Unocal Corporation	0	MON	9/89	2	23	15	8	-7	0	G	0	0		D
2S/3W 8N23	OAK	410 High Street	Unocal Corporation	0	MON	9/89	2	26	15	8	-7	0	G	0	0		D
2S/3W 8N24	OAK	410 High Street	Unocal Corporation	0	MON	9/89	2	26	15	7	-8	0	G	0	0		D
2S/3W 8N25	OAK	410 High Street	Unocal Corporation	0	MON	9/89	2	24	15	8	-7	0	G	0	0		D
2S/3W 8N26	OAK	410 High Street	Unocal Corporation	0	MON	9/89	2	26	15	8	-7	0	G	0	0		D
2S/3W 8N27	OAK	410 High Street	Unocal Corporation	0	MON	9/89	2	25	15	8	-7	0	G	0	0		D
2S/3W 8N28	OAK	410 High Street	Unocal Corporation	0	MON	9/89	2	22	15	8	-7	0	G	0	0		D
2S/3W 8N29	OAK	410 High Street	Unocal Corporation	0	MON	9/89	2	24	15	8	-7	0	G	0	0		D
2S/3W 8N30	OAK	410 High Street	Unocal Corporation	0	MON	9/89	2	22	15	7	-8	0	G	0	0		D
2S/3W 8N31	OAK	410 High Street	Unocal Corporation	0	MON	9/89	2	24	15	9	-6	0	G	0	0		D
2S/3W 8N32	OAK	410 High Street	Unocal Corporation	0	MON	9/89	2	29	15	7	-8	0	G	0	0		D
2S/3W 8N33	OAK	410 High Street	Unocal Corporation	0	MON	9/89	2	27	15	7	-8	0	G	0	0		D
2S/3W 8N34	OAK	301 - 411 High Street	Arco Products Co	0	MON	10/90	1	14	0	0	0	0	G	0	0		D
2S/3W 8N35	OAK	301 - 411 High Street	Arco Products Co	0	BOR*	11/89	6	0	8	0	0	0	G	0	0		D
2S/3W 8N36	OAK	301 - 411 High Street	Arco Products Co MW1B	0	MON	1/91	2	23	10	8	-2	0	G	1	1		D
2S/3W 8N37	OAK	301 - 411 High Street	Arco Products Co MW2B	0	MON	1/91	2	23	10	7	-3	0	G	1	1		D

WELL #		CITY	ADDRESS	OWNER		PHONE	USE	DR.DATE	DIAM	TOT.DEPTH	DTW	ST.ELEV	WA.ELEV	YIELD	LOG	WQ	WL	DATAORGN	MARGIN
2S/3W	8N38	OAK	301 - 411 High Street	Arco Products Co	MW3B	0	MON	1/91	2	23	10	9	-1	0	G	1	1	D	
2S/3W	8N39	OAK	301 - 411 High Street	Arco Products Co	MW4B	0	MON	1/91	2	23	10	8	-2	0	G	1	1	D	
2S/3W	8N40	OAK	301 - 411 High Street	Arco Products Co	MW5B	0	MON	1/91	2	23	10	6	-4	0	G	1	1	D	
2S/3W	8N41	OAK	301 - 411 High Street	Arco Products Co	MW6B	0	MON	1/91	2	25	9	7	-2	0	G	1	1	D	
2S/3W	8N42	OAK	301 - 411 High Street	Arco Products Co	MW1A	0	MON	1/91	2	8	4	8	4	0	G	1	1	D	
2S/3W	8N43	OAK	301 - 411 High Street	Arco Products Co	MW2A	0	MON	1/91	2	8	4	7	3	0	G	1	1	D	
2S/3W	8N44	OAK	301 - 411 High Street	Arco Products Co	MW3A	0	MON	1/91	2	8	0	9	0	0	G	1	1	D	
2S/3W	8N45	OAK	301 - 411 High Street	Arco Products Co	MW4A	0	MON	1/91	2	7	4	8	4	0	G	1	1	D	
2S/3W	8N46	OAK	411 High Street	Unocal Chemicals Division		0	MON	4/91	2	15	5	11	6	0	G			D	
2S/3W	8N47	OAK	411 High Street	Unocal Chemicals Division		0	BOR*	3/91	8	16	15	180	165	0	G			D	
2S/3W	8N48	OAK	411 High Street	Unocal Chemicals Division		0	MON	4/91	2	8	4	9	5	0	G			D	
2S/3W	8N49	OAK	411 High Street	Unocal Chemicals Division		0	MON	4/91	2	29	10	9	-1	0	G			D	
2S/3W	8N50	OAK	411 High Street	Unocal Chemicals Division		0	MON	4/91	2	9	4	9	5	0	G			D	
2S/3W	8N51	OAK	411 High Street	Unocal Chemicals Division		0	MON	4/91	2	29	10	9	-1	0	G			D	
2S/3W	8N52	OAK	500 High St	Uecker and Associates		0	MON	3/91	4	18	5	7	2	0	G			D	
2S/3W	8N53	OAK	500 High St	Uecker and Associates		0	DOM	3/91	5	127	70	0	0	0	D			D	
2S/3W	8N54	OAK	500 High St	Uecker and Associates		0	MON	3/91	4	24	5	0	0	0	D			D	
2S/3W	8N55	OAK	500 High St	Uecker and Associates		0	MON	3/91	4	25	4	0	0	0	D			D	
2S/3W	8N59	OAK	411 High St	Former Arco Prod.	11B	0	MON	7/91	2	24	9	7	-2	0	G	0	0	D	
2S/3W	8N60	OAK	411 High St	Former Arco Prod.	10B	0	MON	7/91	2	27	9	7	-2	0	G	0	0	D	
2S/3W	8N61	OAK	411 High St	Former Arco Prod.	9B	0	MON	7/91	2	24	7	5	-2	0	G	0	0	D	
2S/3W	8N62	OAK	411 High St	Former Arco Prod.	7B	0	MON	7/91	2	24	11	10	-1	0	G	0	0	D	
2S/3W	8N63	OAK	411 High St	Former Arco Prod.	1B	0	MON	7/91	4	32	9	6	-3	0	G	0	0	D	
2S/3W	8N64	OAK	500 High St	Sectras Corp	MW-6	0	MON	3/92	4	25	6	0	0	0	D	0	0	D	
2S/3W	8N67	OAK	500 High St	Security Pacific	MW-4	0	DES	11/91	0	20	0	0	0	0	D	0	0	D	
2S/3W	8N68	OAK	500 High St	Security Pacific	MW-5	0	MON	11/91	4	22	10	0	0	0	D	0	0	D	
2S/3W	8N69	OAK	301 - 411 High St	ARCO Products Co	MW5A	0	MON	1/91	2	5	0	5	0	0				D	
2S/3W	8N70	OAK	301 411 High St	ARCO Products Co	MW6A	0	MON	1/91	2	8	0	7	0	0				D	
2S/3W	8N71	OAK	301 - 411 High St	ARCO Products Co	MW12B	0	MON	7/91	2	24	0	6	0	0	G	0	0	D	
2S/3W	8N72	OAK	301 - 411 High St	ARCO Products Co	ARW1B	0	OTH	7/91	4	32	9	6	-3	0	G	0	0	D	
2S/3W	8P	OAK	720 High St.	Exxon		0	DES	12/90	12	22	0	0	0	0	D	0	0	D	
2S/3W	8P	OAK	720 High Street	Exxon Corporation		0	BOR*	11/89	8	13	10	0	0	0	G	0	0	D	
2S/3W	8P	OAK	744 High Street	Southern Pacific Railroad		0	BOR*	11/89	6	7	0	0	0	0	G	0	0	D	
2S/3W	8P 1	OAK	720 High Street	Exxon Corporation		0	MON	5/88	4	29	10	0	0	0	D	0	0	D	
2S/3W	8P 2	OAK	720 High Street	Exxon Corporation		0	MON	9/88	4	35	13	0	0	0	D	0	0	D	
2S/3W	8P 3	OAK	720 High Street	Exxon Corporation		0	MON	9/88	4	35	11	0	0	0	D	0	0	D	
2S/3W	8P 4	OAK	720 High Street	Exoon Corporation		0	MON	9/88	4	35	12	0	0	0	D	0	0	D	
2S/3W	8P 5	OAK	720 High Street	Exxon Corporation		0	MON	9/88	4	33	13	0	0	0	D	0	0	D	
2S/3W	8P 6	OAK	720 High Street	Exxon Corporation		0	MON	9/88	4	35	13	0	0	0	D	0	0	D	
2S/3W	8P 7	OAK	720 High Street	Exxon Corporation		0	MON	9/88	4	35	13	0	0	0	D	0	0	D	
2S/3W	8P 8	OAK	720 High Street	Exxon Corporation		0	MON	9/88	4	35	12	0	0	0	D	0	0	D	
2S/3W	8P 9	OAK	Coliseum Wy & 45th Ave	PG&E		0	CAT	12/90	2	120	0	0	0	0	D	0	0	D	
2S/3W	8P 9	OAK	720 High Street	Exxon Corporation		0	MON	5/89	4	32	10	0	0	0	D	0	0	D	
2S/3W	8P10	OAK	720 High Street	Exxon Corporation		0	MON	11/89	4	25	9	0	0	0	D	0	0	D	
2S/3W	8P11	OAK	720 High Street	Exxon Corporation		0	MON	11/89	4	15	8	0	0	0	D	0	0	D	
2S/3W	8P12	OAK	720 High Street	Exxon Corporation		0	MON	11/89	4	30	11	0	0	0	D	0	0	D	
2S/3W	8P13	OAK	720 High Street	Exxon Corporation		0	MON	11/89	4	15	9	0	0	0	D	0	0	D	
2S/3W	8P14	OAK	744 High Street	Southern Pacific Railroad		0	MON	11/89	2	25	9	0	0	0	G	0	0	D	
2S/3W	8P15	OAK	744 High Street	Southern Pacific Railroad		0	MON	11/89	2	19	9	0	0	0	G	0	0	D	
2S/3W	8P16	OAK	744 High Street	Southern Pacific Railroad		0	MON	11/89	2	24	9	0	0	0	G	0	0	D	
2S/3W	8P17	OAK	720 High St.	Exxon		0	MON	12/90	2	45	19	0	0	0	D	0	0	D	
2S/3W	8P18	OAK	720 High St.	Exxon		0	TES	10/90	4	17	9	0	0	0	D	0	0	D	
2S/3W	8Q	OAK	744 HIGH ST.	SOUTHERN PACIFIC TRANS.		0	BOR	09/89	8	15	7	0	0	0	G	0	0	L	
2S/3W	8Q 1	OAK	4701 SAN LEANDRO BLVD	NAT'L LEAD CO		0	IND	/23	10	756	87	16	-71	85	D	7	2	L	Yes
2S/3W	9D	OAK	COURTLAND AVE/TYRELL ST	COUNTY OF ALAMEDA		0	BOR	3/86	0	30	26	0	0	0	G	0	0	L	

APPENDIX B
Tier 1 Results


Total Risk for Each Pathway
1.0E-03
9.0E-04
8.0E-04
7.0E-04
6.0E-04
5.0E-04
4.0E-04
3.0E-04
2.0E-04
1.0E-04
0.0E+00
Carcinogenic Risk
3.5E-01
3.0E-01
2.5E-01
2.0E-01
1.5E-01
1.0E-01
5.0E-02
0.0E+00
Hazard Index
Carcinogenic Risk
Hazard Index
Air
Groundwater
Soil
Exposure Pathway

RBCA TIER 1/TIER 2 EVALUATION

Output Table 1

Site Name: Motor Partners
Site Location: 1234 40th Ave.

Job Identification: 1004.95
Date Completed: 8/13/97
Completed By: Gary Rogers

Software: GSI RBCA Spreadsheet
Version: v 1.0

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

DEFAULT PARAMETERS

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
EF	Exposure Frequency (days/yr)	350			250	180
EF Derm	Exposure Frequency for dermal exposure	350			250	
IRgw	Ingestion Rate of Water (l/day)	2			1	
IRs	Ingestion Rate of Soil (mg/day)	100	200		50	100
IRadj	Adjusted soil ing rate (mg-yr/kg-d)	1.1E+02			9.4E+01	
IRa in	Inhalation rate indoor (m^3/day)	15			20	
IRa out	Inhalation rate outdoor (m^3/day)	20			20	10
SA	Skin surface area (dermal) (cm^2)	5.8E+03		2.0E+03	5.8E+03	5.8E+03
SAadj	Adjusted dermal area (cm^2-yr/kg)	2.1E+03			1.7E+03	
M	Soil to Skin adherence factor	1				
AAFs	Age adjustment on soil ingestion	FALSE			FALSE	
AAFd	Age adjustment on skin surface area	FALSE			FALSE	
tox	Use EPA tox data for air (or PEL based)	***FALSE***				
gwMCL?	Use MCL as exposure limit in groundwater?	TRUE				

Matrix of Exposed Persons to Complete Exposure Pathways		Residential	Commercial/Industrial Chronic	Commercial/Industrial Constrctn
Groundwater Pathways				
GW i	Groundwater Ingestion	FALSE	~~TRUE~~ FALSE	
GW v	Volatilization to Outdoor Air	FALSE	TRUE	
GW b	Vapor Intrusion to Buildings	FALSE	TRUE	
Soil Pathways				
S v	Volatiles from Subsurface Soils	FALSE	TRUE	
SS v	Volatiles and Particulate Inhalation	FALSE	TRUE	TRUE
SS d	Direct Ingestion and Dermal Contact	FALSE	TRUE	TRUE
S l	Leaching to Groundwater from all Soils	FALSE	TRUE	
S b	Intrusion to Buildings - Subsurface Soils	FALSE	TRUE	

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)		TRUE		TRUE
S	Inhalation receptor (cm)		TRUE		TRUE

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)	1	
Tier	RBCA Tier	1	

Surface Parameters	Definition (Units)	Residential	Commercial/Industrial Chronic	Commercial/Industrial Construction
t	Exposure duration (yr)	30	25	1
A	Contaminated soil area (cm^2)	***1.9E+06***		1.0E+06
W	Length of affected soil parallel to wind (cm)	***1.5E+03***		1.0E+03
W gw	Length of affected soil parallel to groundwater (c	***1.5E+03***		
Uair	Ambient air velocity in mixing zone (cm/s)	2.3E+02		
delta	Air mixing zone height (cm)	2.0E+02		
Lss	Definition of surficial soils (cm)	***9.1E+01*** (3')		
Pe	Particulate areal emission rate (g/cm^2/s)	2.2E-10		

Groundwater	Definition (Units)	Value
delta.gw	Groundwater mixing zone depth (cm)	2.0E+02
I	Groundwater infiltration rate (cm/yr)	3.0E+01
Ugw	Groundwater Darcy velocity (cm/yr)	2.5E+03
Ugw.tr	Groundwater Transport velocity (cm/yr)	8.6E+03
Ks	Saturated Hydraulic Conductivity(cm/s)	
grad	Groundwater Gradient (cm/cm)	
Sw	Width of groundwater source zone (cm)	
Sd	Depth of groundwater source zone (cm)	
BC	Biodegradation Capacity (mg/L)	
BIO?	Is Bioattenuation Considered	FALSE
phi eff	Effective Porosity in Water-Bearing Unit	3.8E-01
foc.sat	Fraction organic carbon in water-bearing unit	1.0E-03

Soil	Definition (Units)	Value		
hc	Capillary zone thickness (cm)	5.0E+00		
hv	Vadose zone thickness (cm)	3.0E+02		
rho	Soil density (g/cm^3)	1.7		
foc	Fraction of organic carbon in vadose zone	0.01		
phi	Soil porosity in vadose zone	0.38		
Lgw	Depth to groundwater (cm)	3.0E+02		
Ls	Depth to top of affected soil (cm)	***6.1E+01***		
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	Foundation crack fraction	0.01	

Dispersive Transport Parameters	Definition (Units)	Residential	Commercial
Groundwater			
ax	Longitudinal dispersion coefficient (cm)		
ay	Transverse dispersion coefficient (cm)		
az	Vertical dispersion coefficient (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	re	in water (cm2/s) Dwat	re	log (Koc) or log(Kd) (@ 20 - 25 C) (l/kg) Koc	ref	Henry's Law Constant (@ 20 - 25 C) (atm-m3/mol)	(unitless)	re	Vapor Pressure (@ 20 - 25 C) (mm Hg) Pure Component	ref	Solubility (@ 20 - 25 C) (mg/l) Pure Component	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: Motor Partners Site Location: 1234 40th Ave. Completed By: Gary Rogers Date Completed: 8/13/1997

Software version v 1 0

CAS Number	Constituent	Reference Dose (mg/kg/day) Oral RfD_oral	ref	Inhalation RfD_Inhal	re	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	-	R	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	-	R	-	R	D	FALSE
108-88-3	Toluene	2.00E-01	A,R	1.14E-01	,	-	R	-	R	D	FALSE
1330-20-7	Xylene (mixed isomers)	2.00E+00	A,R	2.00E+00	A	-	R	-	R	D	FALSE

Site Name. Motor Partners Site Location: 1234 40th Ave. Completed By: Gary Rogers Date Completed: 8/13/1997

Software version v 1 0

RBCA CHEMICAL DATABASE

Miscellaneous Chemical Data

CAS Number	Constituent	Maximum Contaminant Level MCL (mg/L)	Maximum Contaminant Level reference	Permissible Exposure Limit PEL/TLV (mg/m3)	PEL/TLV ref	Relative Absorption Factors Oral	Relative Absorption Factors Dermal	Detection Limits Groundwater (mg/L)	Groundwater ref	Detection Limits Soil (mg/kg)	Soil re	Half Life (First-Order Decay) (days) Saturated	Half Life (First-Order Decay) (days) Unsaturated	Half Life 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	6 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	6 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	6 FR 3526 (30 Jan 91	4.34E+02	ACGIH	1	0.5	0.005	C	0.005	S	360	360	H

Site Name Motor Partners Site Location: 1234 40th Ave. Completed By: Gary Rogers Date Completed: 8/13/1997

Software version v 1 0

RBCA SITE ASSESSMENT | **Input Screen 7**

REPRESENTATIVE COC CONCENTRATIONS IN SOURCE MEDIA

(Complete the following table)

CONSTITUENT	Representative COC Concentration in Groundwater value (mg/L)	note	in Surface Soil value (mg/kg	note	in Subsurface Soil alue (mg/kg	note
Benzene 110 ppb	1.1E-1		1.0E-2		1.5E+1	
Ethylbenzene	3.7E-1		2.4E-1		3.6E+1	
Toluene	1.5E-2				8.4E+0	
Xylene (mixed isomers)	8.7E-1		3.8E-2		7.1E+1	

1.5 mg/kg

Site Name: Motor Partners
Site Location: 1234 40th Ave.

Completed By: Gary Rogers
Date Completed: 8/13/1997

RBCA SITE ASSESSMENT

Tier 1 Worksheet 6.1

Site Name Motor Partners

Site Location 1234 40th Ave

Completed By: Gary Rogers

Date Completed: 8/13/1997

SURFACE SOIL **RBSL 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: 1

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

CONSTITUENTS OF CONCERN		Representative Concentration	X	Soil Leaching to Groundwater			X	Ingestion, Inhalation and Dermal Contact		X	Construction Worker	Applicable RBSL	RBSL Exceeded ?	Required CRF
CAS No.	Name	(mg/kg)		Residential: (on-site)	Commercial: (on-site)	Regulatory(MCL): (on-site)		Residential (on-site)	Commercial: (PEL) (on-site)		Commercial: (on-site) (PEL)	(mg/kg)	"■" If yes	Only if "yes" left
71-43-2	Benzene	1.0E-2		NA	5.7E-2	2.9E-2		NA	3.3E+0		1.1E+2	2.9E-2	☐	<1
100-41-4	Ethylbenzene	2.4E-1		NA	1.3E+2	9.0E+0		NA	>Res		>Res	9.0E+0	☐	<1
108-88-3	Toluene	0.0E+0		NA	3.6E+2	1.7E+1		NA	>Res		>Res	1.7E+1	☐	<1
1330-20-7	Xylene (mixed isomers)	3.8E-2		NA	>Res	3.0E+2		NA	>Res		>Res	3.0E+2	☐	<1

RBCA SITE ASSESSMENT | **Tier 1 Worksheet 6.2**

Site Name Motor Partners
Site Location 1234 40th Ave

Completed By: Gary Rogers
Date Completed: 8/13/1997

SUBSURFACE SOIL RBSL 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: 1

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

CONSTITUENTS OF CONCERN		Representative Concentration	X	Soil Leaching to Groundwater			X	Soil Volatilization to Indoor Air		X	Soil Volatilization to Outdoor Air		Applicable RBSL	RBSL Exceeded ?	Required CRF
CAS No.	Name	(mg/kg)		Residential: (on-site)	Commercial: (on-site)	Regulatory(MCL): (on-site)		Residential. (on-site)	Commercial. (on-site) (PEL)		Residential: (on-site)	Commercial: (PEL) (on-site)	(mg/kg)	"■" if yes	Only if "yes" left
71-43-2	Benzene	1.5E+1		NA	5.7E-2	2.9E-2		NA	2.6E+2		NA	>Res	2.9E-2	■	5.2E+02
100-41-4	Ethylbenzene	3.6E+1		NA	1.3E+2	9.0E+0		NA	>Res		NA	>Res	9.0E+0	■	4.0E+00
108-88-3	Toluene	8.4E+0		NA	3.6E+2	1.7E+1		NA	>Res		NA	>Res	1.7E+1	□	<1
1330-20-7	Xylene (mixed isomers)	7.1E+1		NA	>Res	3.0E+2		NA	>Res		NA	>Res	3.0E+2	□	<1

Software: GSI RBCA Spreadsheet Serial: 0
Version: v 1.0

RBCA SITE ASSESSMENT

Tier 1 Worksheet 6.3

Site Name: Motor Partners
Site Location: 1234 40th Ave.

Completed By: Gary Rogers
Date Completed: 8/13/1997

GROUNDWATER RBSL 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: 1

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

CONSTITUENTS OF CONCERN		Representative Concentration	X	Groundwater Ingestion			X	Groundwater Volatilization to Indoor Air		X	Groundwater Volatilization to Outdoor Air		Applicable RBSL	RBSL Exceeded ?	Required CRF
CAS No.	Name	(mg/L)		Residential: (on-site)	Commercial: (on-site)	Regulatory(MCL): (on-site)		Residential. (on-site)	Commercial: (on-site) (PEL)		Residential (on-site)	Commercial (on-site) (PEL)	(mg/L	"■" If yes	Only if "yes" left
71-43-2	Benzene	1.1E-1		NA	9.9E-3	5.0E-3		NA	4.8E+2		NA	>Sol	5.0E-3	■	2.2E+01
100-41-4	Ethylbenzene	3.7E-1		NA	1.0E+1	7.0E-1		NA	>Sol		NA	>Sol	7.0E-1	☐	<1
108-88-3	Toluene	1.5E-2		NA	2.0E+1	1.0E+0		NA	>Sol		NA	>Sol	1.0E+0	☐	<1
1330-20-7	Xylene (mixed isomers)	8.7E-1		NA	>Sol	1.0E+1		NA	>Sol		NA	>Sol	1.0E+1	☐	<1

Not correct

Software: GSI RBCA Spreadsheet
Version: v 1.0

Serial: 0

Site Name Motor Partners | Site Location: 1234 40th Ave. | Completed By: Gary Rogers | Date Completed: 8/13/1997 | 1 OF 6

TIER 1 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

AIR EXPOSURE PATHWAYS ■ (CHECKED IF PATHWAY IS ACTIVE)

SURFACE SOILS VAPOR AND DUST INHALATION

Exposure Concentration

Constituents of Concern	1) Source Medium	2) NAF Value (m^3/kg) Receptor		3) Exposure Medium Air: POE Conc. (mg/m^3) (1) / (2)		4) Exposure Multiplier (IRxETxEFxED)/(BWxAT) (m^3/kg-day)		5) Average Daily Intake Rate (mg/kg-day) (3) X (4)	
	Surface Soil Conc. (mg/kg)	On-Site Commercial		On-Site Commercial		On-Site Commercial		On-Site Commercial	
Benzene	1.0E-2	1.5E+5		6.7E-8		7.0E-2		4.7E-9	
Ethylbenzene	2.4E-1	1.5E+5		1.6E-6		2.0E-1		3.1E-7	
Toluene	0.0E+0	1.5E+5		0.0E+0		2.0E-1		0.0E+0	
Xylene (mixed isomers)	3.8E-2	1.5E+5		2.5E-7		2.0E-1		5.0E-8	

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

Site Name: Motor Partners | Site Location: 1234 40th Ave. | Completed By: Gary Rogers | Date Completed: 8/13/1997 | 2 OF 6

TIER 1 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

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 Commercial		3) Exposure Medium — Air POE Conc. (mg/m^3) (1) / (2) — On-Site Commercial		4) Exposure Multiplier (IRxETxEFxED)/(BWxAT) (m^3/kg-day) — On-Site Commercial		5) Average Daily Intake Rate (mg/kg-day) (3) X (4) — On-Site Commercial		TOTAL PATHWAY INTAKE (mg/kg-day) (Sum intake values from surface & subsurface routes.) — On-Site Commercial	
Benzene	1.5E+1	3.5E+4		4.3E-4		7.0E-2		3.0E-5		3.0E-5	
Ethylbenzene	3.6E+1	3.5E+4		1.0E-3		2.0E-1		2.0E-4		2.0E-4	
Toluene	8.4E+0	3.5E+4		2.4E-4		2.0E-1		4.8E-5		4.8E-5	
Xylene (mixed isomers)	7.1E+1	3.5E+4		2.1E-3		2.0E-1		4.0E-4		4.0E-4	

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

Site Name Motor Partners | Site Location: 1234 40th Ave. | Completed By: Gary Rogers | Date Completed: 8/13/1997 | *3 OF 6*

TIER 1 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

SOIL EXPOSURE PATHWAYS ■ (CHECKED IF PATHWAY IS ACTIVE)

SURFACE SOILS OR SEDIMENTS

DERMAL CONTACT

Constituents of Concern	Exposure Concentration 1) Source Medium: Surface Soil Conc (mg/kg)	4) Exposure Multiplier (SAxAFxABSxCFxEFxED)/(BWxAT) (1/day): On-Site Residential	4) Exposure Multiplier: On-Site Commercial	5) Average Daily Intake Rate (mg/kg-day): On-Site Residential	5) Average Daily Intake Rate: On-Site Commercial
Benzene	1.0E-2		1.0E-5		1.0E-7
Ethylbenzene	2.4E-1		2.8E-5		6.8E-6
Toluene	0.0E+0		2.8E-5		0.0E+0
Xylene (mixed isomers)	3.8E-2		2.8E-5		1.1E-6

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

RBCA SITE ASSESSMENT | Tier 1 Worksheet 8.1

Site Name Motor Partners | Site Location: 1234 40th Ave. | Completed By: Gary Rogers | Date Completed: 8/13/1997 | *4 OF 6*

TIER 1 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

SOIL EXPOSURE PATHWAYS ■ (CHECKED IF PATHWAY IS ACTIVE)

SURFACE SOILS OR SEDIMENTS: INGESTION

Constituents of Concern	Exposure Concentration 1) Source Medium: Surface Soil Conc. (mg/kg)	4) Exposure Multiplier (IRxCxEFxED)/(BWxAT) (1/day): On-Site Residential	4) Exposure Multiplier (IRxCxEFxED)/(BWxAT) (1/day): On-Site Commercial	5) Average Daily Intake Rate (mg/kg-day): On-Site Residential	5) Average Daily Intake Rate (mg/kg-day): On-Site Commercial	TOTAL PATHWAY INTAKE (mg/kg-day) (Sum intake values from dermal & ingestion routes.): On-Site Residential	TOTAL PATHWAY INTAKE (mg/kg-day) (Sum intake values from dermal & ingestion routes.): On-Site Commercial
Benzene	1.0E-2		1.7E-7		1.7E-9		1.0E-7
Ethylbenzene	2.4E-1		4.9E-7		1.2E-7		6.9E-6
Toluene	0.0E+0		4.9E-7		0.0E+0		0.0E+0
Xylene (mixed isomers)	3.8E-2		4.9E-7		1.9E-8		1.1E-6

NOTE

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

Serial: G-437-LKX-266

Software: GSI RBCA Spreadsheet
Version: v 1.0

Site Name: Motor Partners | Site Location: 1234 40th Ave. | Completed By: Gary Rogers | Date Completed: 8/13/1997 | 5 OF 6

TIER 1 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

GROUNDWATER EXPOSURE PATHWAYS ■ (CHECKED IF PATHWAY IS ACTIVE)

SOIL LEACHING TO GROUNDWATER/ INGESTION

Constituents of Concern	Exposure Concentration 1) Source Medium: Soil Concentration (mg/kg)	2) NAF Value (L/kg) Receptor: On-Site Commercial		3) Exposure Medium: Groundwater Conc. (mg/L) (1)/(2) On-Site Commercial		4) Exposure Multiplier (IRxEFxED)/(BWxAT) (L/kg-day) On-Site Commercial		5) Average Daily Intake Rate (mg/kg-day) On-Site Commercial	
Benzene	1.5E+1	5.8E+0		2.6E+0		3.5E-3		9.1E-3	
Ethylbenzene	3.6E+1	1.3E+1		2.8E+0		9.8E-3		2.7E-2	
Toluene	8.4E+0	1.7E+1		4.8E-1		9.8E-3		4.7E-3	
Xylene (mixed isomers)	7.1E+1	3.0E+1		2.4E+0		9.8E-3		2.3E-2	

NOTE: AT = Averaging time (days) | BW = Body Weight (kg) | CF = Units conversion factor | ED = Exp. duration (yrs) | EF = Exposure frequencey (days/yr) | IR = Intake rate (L/day) | POE = Point of exposure

Site Name. Motor Partners | Site Location: 1234 40th Ave. | Completed By: Gary Rogers | Date Completed: 8/13/1997 | 6 OF 6

TIER 1 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

GROUNDWATER EXPOSURE PATHWAYS ■ (CHECKED IF PATHWAY IS ACTIVE)

GROUNDWATER INGESTION

Constituents of Concern	Exposure Concentration 1) Source Medium: Groundwater Concentration (mg/L)	2) NAF Value (dim) Receptor: On-Site Commercial		3) Exposure Medium: Groundwater POE Conc. (mg/L) (1)/(2) On-Site Commercial		4) Exposure Multiplier (IRxEFxED)/(BWxAT) (L/kg-day): On-Site Commercial		5) Average Daily Intake Rate (mg/kg-day): On-Site Commercial		MAX. PATHWAY INTAKE (mg/kg-day) (Maximum intake of active pathways soil leaching & groundwater routes.): On-Site Commercial	
Benzene	1.1E-1	1.0E+0		1.1E-1		3.5E-3		3.8E-4		9.1E-3	
Ethylbenzene	3.7E-1	1.0E+0		3.7E-1		9.8E-3		3.6E-3		2.7E-2	
Toluene	1.5E-2	1.0E+0		1.5E-2		9.8E-3		1.5E-4		4.7E-3	
Xylene (mixed isomers)	8.7E-1	1.0E+0		8.7E-1		9.8E-3		8.5E-3		2.3E-2	

NOTE AT = Averaging time (days) | BW = Body Weight (kg) | CF = Units conversion factor | ED = Exp. duration (yrs) | EF = Exposure frequency (days/yr) | IR = Intake rate (L/day or mg/day) | POE = Point of exposure

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TIER 1 PATHWAY RISK CALCULATION

AIR EXPOSURE PATHWAY ■ (CHECKED IF PATHWAYS ARE ACTIVE)

Constituents of Concern	(1) EPA Carcinogenic Classification	CARCINOGENIC RISK: (2) Total Carcinogenic Intake Rate (mg/kg/day) On-Site Commercial		(3) Inhalation Slope Factor (mg/kg-day)^-1	(4) Individual COC Risk (2) x (3) On-Site Commercial		TOXIC EFFECTS: (5) Total Toxicant Intake Rate (mg/kg/day) On-Site Commercial		(6) Inhalation Reference Dose (mg/kg-day)	(7) Individual COC Hazard Quotient (5) / (6) On-Site Commercial	
Benzene	A	3.0E-5		2.9E-2	8.8E-7		8.5E-5		1.7E-3	5.0E-2	
Ethylbenzene	D						2.0E-4		2.9E-1	7.1E-4	
Toluene	D						4.8E-5		1.1E-1	4.2E-4	
Xylene (mixed isomers)	D						4.0E-4		2.0E+0	2.0E-4	

Total Pathway Carcinogenic Risk = 8.8E-7 | 0.0E+0

Total Pathway Hazard Index = 5.1E-2 | 0.0E+0

Site Name Motor Partners | Site Location: 1234 40th Ave. | Completed By: Gary Rogers | Date Completed: 8/13/1997 | 2 OF 3

TIER 1 PATHWAY RISK CALCULATION

SOIL EXPOSURE PATHWAYS ■ (CHECKED IF PATHWAYS ARE ACTIVE)

Constituents of Concern	(1) EPA Carcinogenic Classification	(2) Total Carcinogenic Intake Rate (mg/kg/day) On-Site Residential	(2) Total Carcinogenic Intake Rate (mg/kg/day) On-Site Commercial	(3) Oral Slope Factor (mg/kg-day)^-1	(4) Individual COC Risk (2) x (3) On-Site Residential	(4) Individual COC Risk (2) x (3) On-Site Commercial	(5) Total Toxicant Intake Rate (mg/kg/day) On-Site Residential	(5) Total Toxicant Intake Rate (mg/kg/day) On-Site Commercial	(6) Oral Reference Dose (mg/kg-day)	(7) Individual COC Hazard Quotient (5) / (6) On-Site Residential	(7) Individual COC Hazard Quotient (5) / (6) On-Site Commercial
		CARCINOGENIC RISK					TOXIC EFFECTS				
Benzene	A		1.0E-7	2.9E-2		3.0E-9					
Ethylbenzene	D							6.9E-6	1.0E-1		6.9E-5
Toluene	D							0.0E+0	2.0E-1		0.0E+0
Xylene (mixed isomers)	D							1.1E-6	2.0E+0		5.5E-7
Total Pathway Carcinogenic Risk =					0.0E+0	3.0E-9	***Total Pathway Hazard Index =***			0.0E+0	7.0E-5

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TIER 1 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) On-Site Commercial		(3) Oral Slope Factor (mg/kg-day)^-1	(4) Individual COC Risk (2) x (3) On-Site Commercial		(5) Total Toxicant Intake Rate (mg/kg/day) On-Site Commercial		(6) Oral Reference Dose (mg/kg-day)	(7) Individual COC Hazard Quotient (5) / (6) On-Site Commercial	
Benzene	A	9.1E-3		2.9E-2	2.6E-4						
Ethylbenzene	D						2.7E-2		1.0E-1	2.7E-1	
Toluene	D						4.7E-3		2.0E-1	2.4E-2	
Xylene (mixed isomers)	D						2.3E-2		2.0E+0	1.2E-2	
Total Pathway Carcinogenic Risk =					2.6E-4	0.0E+0	***Total Pathway Hazard Index =***			3.1E-1	0.0E+0

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TIER 1 BASELINE RISK SUMMARY TABLE

EXPOSURE PATHWAY	BASELINE CARCINOGENIC RISK: Individual COC Risk – Maximum Value	Individual COC Risk – Target Risk	Cumulative COC Risk – Total Value	Cumulative COC Risk – Target Risk	Risk Limit(s) Exceeded?	BASELINE TOXIC EFFECTS: Hazard Quotient – Maximum Value	Hazard Quotient – Applicable Limit	Hazard Index – Total Value	Hazard Index – Applicable Limit	Toxicity Limit(s) Exceeded?
AIR EXPOSURE PATHWAYS										
Complete:	8.8E-7	1.0E-6	8.8E-7	N/A	☐	5.0E-2	1.0E+0	5.1E-2	N/A	☐
GROUNDWATER EXPOSURE PATHWAYS										
Complete:	2.6E-4	1.0E-6	2.6E-4	N/A	■	2.7E-1	1.0E+0	3.1E-1	N/A	☐
SOIL EXPOSURE PATHWAYS										
Complete:	3.0E-9	1.0E-6	3.0E-9	N/A	☐	6.9E-5	1.0E+0	7.0E-5	N/A	☐
CRITICAL EXPOSURE PATHWAY (Select Maximum Values From Complete Pathways)										
	2.6E-4	1.0E-6	2.6E-4	N/A	■	2.7E-1	1.0E+0	3.1E-1	N/A	☐

RBCA SITE ASSESSMENT

EXPOSURE LIMITS IN GROUNDWATER AND AIR

CONSTITUENT	Exposure Limits Applied to Receptors	
	Groundwater (MCL) (mg/L)	Air (Comm. only) (PEL/TLV) (mg/m^3)
Benzene	5.0E-3	3.2E+0
Ethylbenzene	7.0E-1	4.3E+2
Toluene	1.0E+0	1.5E+2
Xylene (mixed isomers)	1.0E+1	4.3E+2

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