DRAFT

December 1, 2000
Project M098-380

Mr. Brett Hunter
Chevron Products Company
6001 Bollinger Canyon Road
Room L4064
San Ramon, California 94583

Re: Site Conceptual Model Report
Former Chevron Service Station No. 9-8944
1323 Lee Boulevard
Richland, Washington

Dear Mr. Hunter,

Attached is a Site Conceptual Model report for the above-referenced site. Please call me at (408) 224-4724 if you have any questions.

Sincerely,

KHM Environmental Management, Inc.

R. Lee Dooley
Senior Hydrogeologist

Attachment: Site Conceptual Model Report

SITE CONCEPTUAL MODEL REPORT
FORMER CHEVRON SERVICE STATION NO. 9-8944
1323 LEE BOULEVARD
RICHLAND, WASHINGTON

KHM Environmental Management, Inc (KHM) has reviewed Chevron Products Company files located in San Ramon, California. The following Site Conceptual Model Report was based on that review. A list of documents reviewed is provided.

Put attachment in order they are mentioned.

SITE HISTORY. The former Chevron service station No. 9-8944 is located on the southeastern corner of the intersection of Lee Boulevard and Gillespie Street in Richland, Washington (AGRA Earth & Environmental, Inc. [AGRA], Figure 1 – Site Vicinity Map, 1994). According to AGRA's, *GeoProbe Assessment* report, dated September 30, 1996, two additional former service stations were previously located on the noted intersection, on the northwest and southwest corners of Lee Boulevard and Gillespie Street. An Exxon service station was located east of the site, at the intersection of Lee Boulevard and Goethals Street (AGRA, Figure 3 – Geo-Probe Exploratory Locations, 1996).

SITE INVESTIGATIONS. According to AGRA's, *Environmental Site Assessment* report, dated October 25, 1996, Phase I and Phase II Environmental Site Assessments were conducted at the site by Technico Environmental Services, in July 1994, for the site property owners.
Soil beneath the site consists of sandy silt, underlain by cobbles in a sandy matrix to the total depth explored of approximately 15 feet below grade. Depth to water was approximately six to eight feet. Boring logs and a cross section are attached. The closest water supply well (the Wellsian Way well field) is located approximately 1,500 feet southwest of the subject site (Technico Environmental Services, Inc., Figure 7 – Site Location Map, Wellsian Way Well Field, 1993).

In August 1994, AGRA, installed three monitoring wells (MW-1, MW-3, and MW-3) on the subject site. Analytical results indicated that low concentrations petroleum hydrocarbons up to 77 milligrams per kilogram (mg/kg) of total petroleum hydrocarbons as gasoline (TPH-G) were detected in soil collected from the borings for wells MW-1, MW-2, and MW-3. Groundwater samples collected from all three wells contained high concentrations of TPH-G, up to 27,000 micrograms per liter (ug/l) in MW-3. Benzene was detected at 110 ug/l in MW-2 (AGRA, Table 3 – Summary of Analytical Testing of Soils and Table 4 – Summary of Analytical Testing of Groundwater, 1994). No other groundwater data was found in the Chevron files.

In August 1996, twelve geoprobe soil borings (P-1 through P-12) were drilled both on- and offsite. Soil analytical results indicated that BTEX and TPH were all below methods detection limits in the soil samples collected from the twelve geoprobe borings. AGRA concluded that dissolved concentrations of petroleum hydrocarbons found in wells MW-1, MW-2, and MW-3 may have originated from the former Chevron pump island and the former underground storage tank (UST) complex. Groundwater samples collected form the twelve borings indicate that only

P-3, P-5, P-8, P-11 were impacted by petroleum hydrocarbons. AGRA further concluded that the groundwater analytical results from samples collected from P-3W, P-5W, and P-11W probably originated from another off-site source and is migrating onto the Chevron site (AGRA, *Geoprobe Assessment*, September 30, 1996).

It should be noted that the property owners, Sam R. and Mary Volpentest, have tried, unsuccessfully, to sell the property. Previous buyers were unable to secure loans on the property, based upon its environmental condition. Chevron has given the Volpentests indemnification for the environmental conditions of the property; however, banks have been unwilling to grant a loan on the property.

REMEDIATION ACTIVITIES. Based upon available data, no remediation of the soil or groundwater has been performed at the site.

MCTA METHOD A CLEANUP LEVELS. None of the soil samples collected from the three borings for wells MW-1, MW-2, and MW-3, or from the twelve geoprobe soil borings exceeded the Model Toxics Control Act (MTCA) Method A Cleanup Levels set for TPH-G, benzene, toluene, ethylbenzene, and xylenes (BTEX compounds), and TPH as diesel (TPH-D) (AGRA, Table 2 – Summary of Analytical Testing – Soils, 1996). It is KHM's opinion that no further investigation of the soil is necessary.

In 1996, groundwater from on-site wells MW-1, MW-2, and MW-3 exceeded the MTCA Method A Cleanup Levels for TPH-G, benzene, ethylbenzene, and total xylenes. Groundwater from MW-3 also exceeds the MTCA Method A Cleanup Levels for toluene. Groundwater from on-site Geoprobe boring, P-11, exceeded the MTCA Method A Cleanup Levels set for benzene. Additionally, off-site Geoprobe borings P-3 and P-5 (located across the street and upgradient from the subject site) also exceeds the MTCA Method A Cleanup Levels for TPH-G (AGRA, Table 3 – Summary of Analytical Testing – Groundwater, 1996). Current concentrations of petroleum hydrocarbons in groundwater are not known. It is KHM's opinion that further investigation of groundwater contamination is warranted, to identify the horizontal extent of the groundwater plume, as well as, the origin of the groundwater plume.

DATA GAPS. The following data gaps were identified based on documents found in San Ramon:

- It is unknown if groundwater monitoring has been performed on wells MW-1, MW-2, and MW-3 after August 1996.

RECOMMENDATIONS

- Initiate groundwater monitoring of wells MW-1, MW-2, and MW-3.

- Conduct a visual review of the area surrounding the site, and a review of WDOE files to determine the location of a potential off-site source(s). Collect reports regarding nearby former service stations.

- Prepare a corrective action plan to reduce concentrations of petroleum hydrocarbons in groundwater beneath the site.

- Evaluate the affect of new regulations that are pending at the WDOE that will require methyl tert butyl ether (MTBE) analysis for sites with petroleum hydrocarbon impacted groundwater.

ATTACHMENTS.
AGRA, Figure 1 – Site Vicinity Map,
AGRA, Figure 3 – Geo-Probe exploratory Locations
Technico, Figure 7 – Site Location Map
AGRA, Table 3 – Summary of Analytical Testing of Soils
AGRA, Table 4 – Summary of Analytical Testing of Groundwater
AGRA, Summary of Analytical Testing – Soils
AGRA, Table 3 – Summary of Analytical Testing – Groundwater
Soil borings/MW construction diagrams cross section

DOCUMENTS REVIEWED.

AGRA Earth & Environmental, Inc., *Environmental Site Assessment, Former Chevron Station 9-8944, 1323 Lee Boulevard, Richland, Washington*, October 25, 1994

Technico Environmental Services, Inc., Memo: review of October 25, 1994 AGRA report, December 1, 1994

AGRA Earth & Environmental, Inc., *Geoprobe Assessment, Former Chevron Station 9-8944, 1323 Lee Boulevard, Richland, Washington*, September 30, 1996

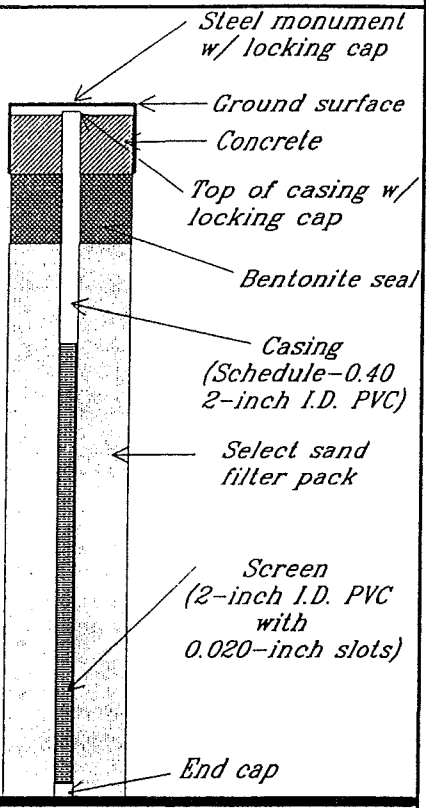
Owen, Bette, e-mail: to Daniel Barmat regarding status of site, December 5, 1997

PROJECT *Former Chevron Station No. 9-8944* W.O. *12-1203-00* WELL NO. *MW-1*

Elevation reference:
Ground surface elevation: *94.60* Casing elevation: *93.98*

DEPTH (feet)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	BLOW COUNTS	OVM READING (ppm)	GROUND WATER
0	*0-2" Asphalt* *Gravel FILL*					
5	*Medium stiff, moist, brown fine sandy SILT (LOESS)*		S-1	5	0.0	
						ATD
10	*Medium dense, saturated, brown sandy GRAVEL with slight hydrocarbon-like odor (glaciofluvial)*		S-2	32	3.9	
	--stained soil, aged gas/diesel odor					
15	*Very dense, saturated, brown/black medium to coarse sandy GRAVEL with hydrocarbon-like odor*		S-3	74	368	
	Boring terminated at approximately 15 feet					
20						
25						
30						

AS-BUILT DESIGN



TESTING

LEGEND

I 2-inch O.D. split-spoon sample (pushed)

ATD Observed groundwater level (ATD = at time of drilling)

AGRA
Earth & Environmental
W. 539 Sharp, Suite D
Spokane, Washington 99201

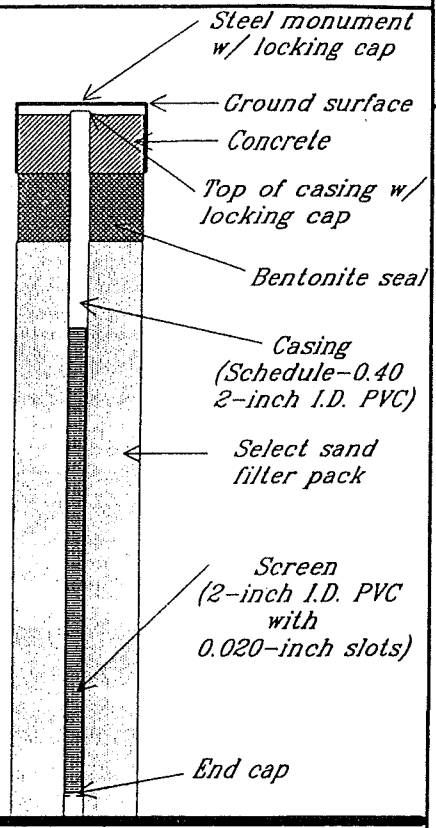
Drilling started: *10 September 1994* Drilling completed: *10 September 1994* Logged by: *ENIS*

PROJECT *Former Chevron Station No. 9-8944* W.O. *12-1203-00* WELL NO. *MW-2*

Elevation reference:
Ground surface elevation: *93.86* Casing elevation: *93.21*

DEPTH (feet)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	BLOW COUNTS	OVM READING (ppm)	GROUND WATER
0	*0-2" Asphalt* *Gravel FILL*					
5	*Soft, moist to wet, brown fine sandy SILT (LOESS)*		S-1	2	1.3	ATD
10	*Dense, saturated, brownish black sandy GRAVEL (glaciofluvial)* *-- aged gas/diesel odor*		S-2	34	0.0	
15	*Medium dense, saturated, brownish black sandy GRAVEL*		S-3	21	365	
	Boring terminated at approximately 15.5 feet					
20						
25						
30						

AS-BUILT DESIGN



TESTING

LEGEND

2-inch O.D. split-spoon sample (pushed)

Observed groundwater level (ATD = at time of drilling)

AGRA
Earth & Environmental
W. 539 Sharp, Suite D
Spokane, Washington 99201

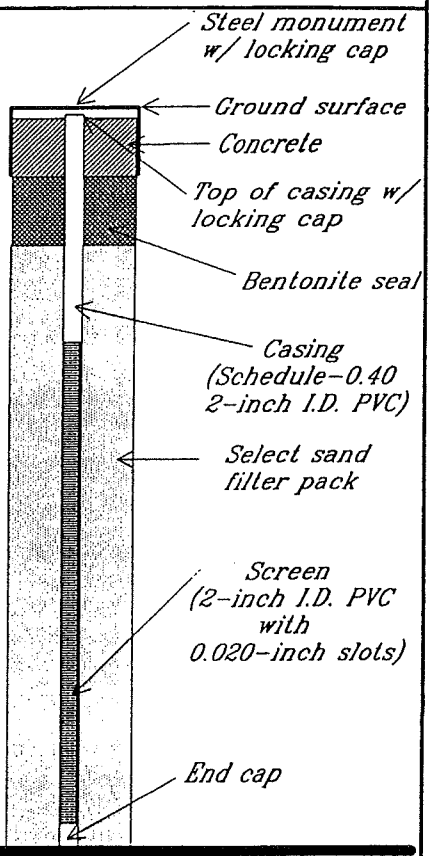
Drilling started: *11 September 1994* Drilling completed: *11 September 1994* Logged by: *ENJS*

PROJECT *Former Chevron Station No. 9-8944* W.O. *12-1203-00* WELL NO. *MW-3*

Elevation reference:
Ground surface elevation: *95.13* Casing elevation: *94.57*

DEPTH (feet)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	BLOW COUNTS	OVM READING (ppm)	GROUND WATER
0	*Silt with debris (FILL)*					
	Brown fine to medium SAND with some gravel and silt (FILL)					
5	*Medium stiff, dry, brown to tan fine sandy SILT (Loess)*		S-1	7	0.0	
						ATD
10	*Dense, saturated, grayish brown, sandy GRAVEL with slight hydrocarbon-like odor*		S-2	47	27.6	
	--Stained soil, sandy GRAVEL with hydrocarbon-like odor, possible aged gasoline/diesel					
15	*Dense, saturated, brown sandy GRAVEL with some cobbles and hydrocarbon-like odor*		S-3	21	40.7	
	Boring terminated at approximately 16 feet					
20						
25						
30						

AS-BUILT DESIGN



TESTING

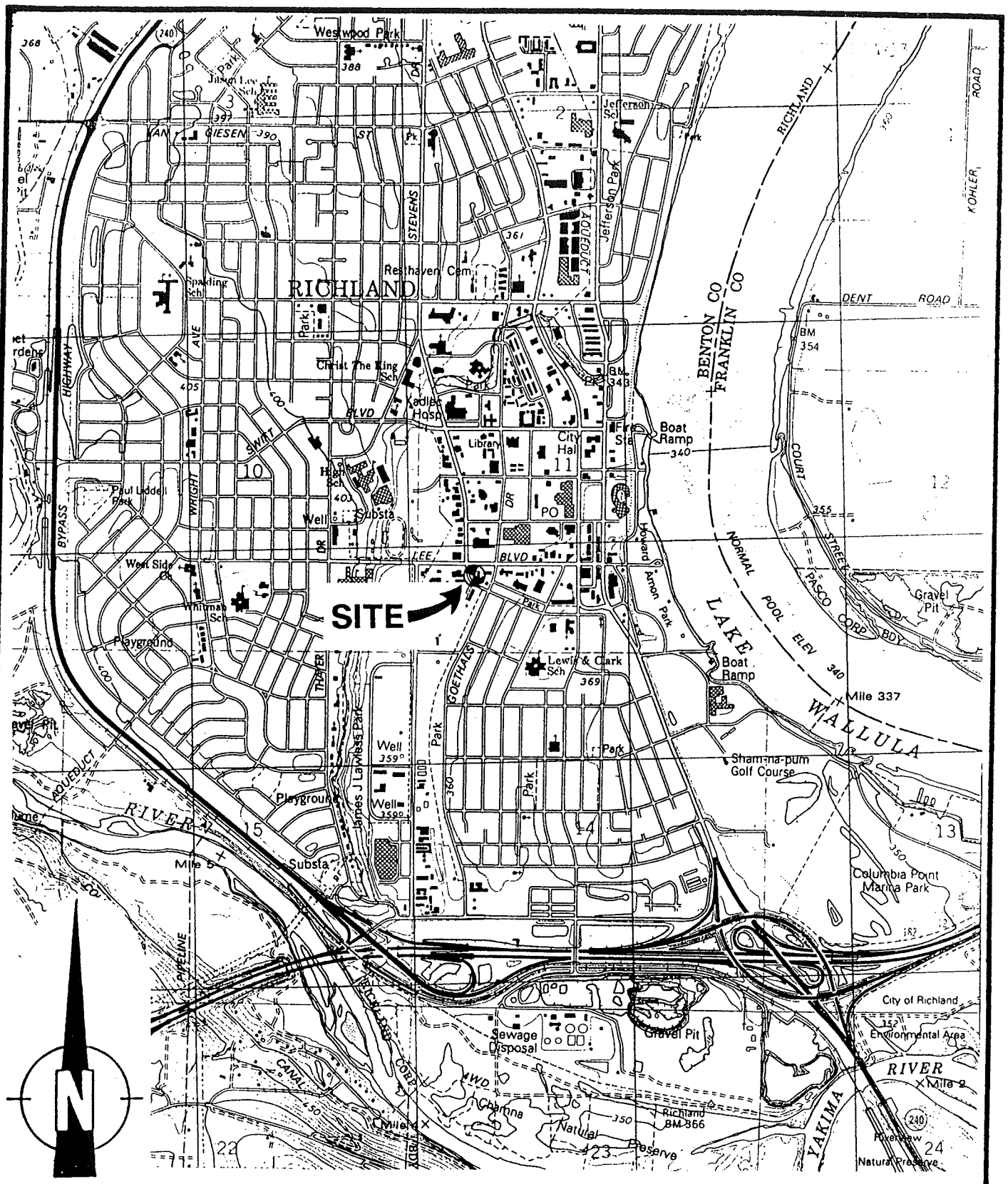
LEGEND

I 2-inch O.D. split-spoon sample (pushed)

ATD Observed groundwater level (ATD = at time of drilling)

AGRA
Earth & Environmental
W. 539 Sharp, Suite D
Spokane, Washington 99201

Drilling started: *10 September 1994* Drilling completed: *10 September 1994* Logged by: *ENJS*



RZA AGRA, INC.
ngineering & Environmental Services

Georgetown Office Building
539 West Sharp
Suite D
Spokane, WA 99201

W.O.	S-1203-0
DESIGN	ENJS
DRAWN	ENJS
DATE	SEPT 1994
SCALE	1" = 2,000'

FIGURE 1
SITE VICINITY MAP
FORMER CHEVRON STATION NO. 9-8944
RICHLAND, WASHINGTON

1b1293
GENDRON'S

12-1203-00
ENVOIRONEMNTAL SITE ASSESSMENT
FORMER CHEVRON SERVICE STATION NO. 9-8944
RICHLAND, WASHINGTON

TABLE 3: SUMMARY OF ANALYTICAL TESTING OF SOILS

SAMPLE NO.	DATE	DEPTH (FT)	BENZENE (PPM)	TOLUENE (PPM)	ETHYLBENZENE (PPM)	XYLENES (PPM)	WTPH-G (PPM)	*WTPH-D (PPM)
MW-1 S-1	8/10/94	4.5-6.0	ND	ND	ND	ND	ND	ND
MW-1 S-3	8/10/94	13.5 - 15.0	ND	ND	0.067	0.12	35.0	ND
MW-2 S-1	8/11/94	4.0 - 5.5	ND	ND	ND	ND	ND	ND
MW-2 S-3	8/11/94	14.5 - 16.0	ND	0.07	0.14	0.37	77.0	13.0
MW-3 S-1	8/10/94	4.5 - 6.0	ND	ND	ND	ND	ND	54.0
MW-3 S-3	8/10/94	8.5 - 10.0	ND	ND	ND	ND	ND	ND
MTCA METHOD A CCL'S			**0.5**	**40.0**	**20.0**	**20.0**	**100.0**	**200.0**

WTPH-D quantitative results are indicative of an aged/weathered gasoline and are not diesel range hydrocarbons

TABLE 4: SUMMARY OF ANALYTICAL TESTING OF GROUNDWATER

SAMPLE NO.	DATE	BENZENE (ug/l)	TOLUENE (ug/l)	ETHYLBENZENE (ug/l)	XYLENES (ug/l)	WTPH-G (ug/l)	*WTPH-D (mg/l)
MW-1	8/11/94	7.2	6.3	50.0	250.0	5800	2.4
MW-2	8/11/94	110.0	69.0	290.0	970.0	20000	5.8
MW-3	8/11/94	22.0	90.0	520.0	2400.0	27000	3.0
MTCA METHOD A CCL'S		**5.0**	**40.0**	**30.0**	**20.0**	**1000**	**1.0**

*WTPH-D quantitative results are indicative of an aged/weathered gasoline and are not diesel range hydrocarbons

TABLE 2: SUMMARY OF ANALYTICAL TESTING - SOILS

Former Chevron Service Station No. 9-8944
1323 Lee Boulevard
Richland, Washington

Sample Number	Date Collected	Depth (feet)	TPH-G (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylene (mg/kg)
P-1 S-1	8/12/96	6-8	ND	ND	ND	ND	ND
P-2 S-1	8/12/96	5-7	ND	ND	ND	ND	ND
P-3 S-1	8/12/96	5-7	ND	ND	ND	ND	ND
P-4 S-1	8/12/96	5-7	ND	ND	ND	ND	ND
P-5 S-1	8/12/96	5-7	ND	ND	ND	ND	ND
P-6 S-1	8/12/96	5-7	ND	ND	ND	ND	ND
P-7 S-1	8/12/96	5-7	ND	ND	ND	ND	ND
P-8 S-1	8/12/96	5-7	ND	ND	ND	ND	ND
P-9 S-1	8/12/96	5-7	ND	ND	ND	ND	ND
P-10 S-1	8/12/96	5-7	ND	ND	ND	ND	ND
P-11 S-1	8/12/96	5-7	ND	ND	ND	ND	ND
P-12 S-1	8/12/96	5-7	ND	ND	ND	ND	ND
Laboratory Method A Detection Limit			1.0	0.05	0.05	0.05	0.1
MTCA Method Cleanup Level			100	0.5	40.0	20.0	20.0

TABLE 3: SUMMARY OF ANALYTICAL TESTING - GROUNDWATER
GEOPROBE INVESTIGATION
Former Chevron Service Station No. 9-8944
1323 Lee Boulevard
Richland, Washington

Sample Number	Date Collected	TPH-G (ug/l)	Benzene (ug/l)	Toluene (ug/l)	Ethylbenzene (ug/l)	Xylene (ug/l)
P-1W	8/12/96	ND	ND	ND	ND	ND
P-2W	8/12/96	ND	ND	ND	ND	ND
P-3W	8/12/96	13600	2270	2.53	10.9	1.07
P-4W	8/12/96	ND	ND	ND	ND	ND
P-5W	8/12/96	176	7.23	ND	ND	ND
P-6W	8/12/96	ND	ND	ND	ND	ND
P-7W	8/12/96	ND	ND	ND	ND	ND
P-8W	8/12/96	ND	0.933	ND	ND	ND
P-9W	8/12/96	ND	ND	ND	ND	ND
P-10W	8/12/96	ND	ND	ND	ND	ND
P-11W	8/12/96	733	27.4	1.33	9.4	6.54
P-12W	8/12/96	ND	ND	ND	ND	ND
MW-1	8/12/96	14400	94.4	15.5	325	978
MW-2	8/12/96	17400	152	39.2	306	1120
MW-3	8/12/96	33700	84.6	77.1	1190	3800
Laboratory Method Detection Limit		50.0	0.5	0.5	0.5	1.0
MTCA Method A Cleanup Level		1000	5.0	40.0	30.0	20.0

FORMER SERVICE STATION

P-4

STEVENS

P-2

P-1

LEE BOULEVARD

g/b P-3

g/b P-11

g/b MW-1

MW-3

g/b MW-2

P-12

EXXON SERVICE STATION

SERVICE STATION

GAS STATION

P-5

SUBJECT SITE

STREET

P-6

P-10

GROUNDWATER FLOW DIRECTION

GILLESPIE STREET

GOETHALS

P-7

HARDING ST.

P-9

RAILROAD STREET

P-8

N

0 60 120

SCALE IN FEET

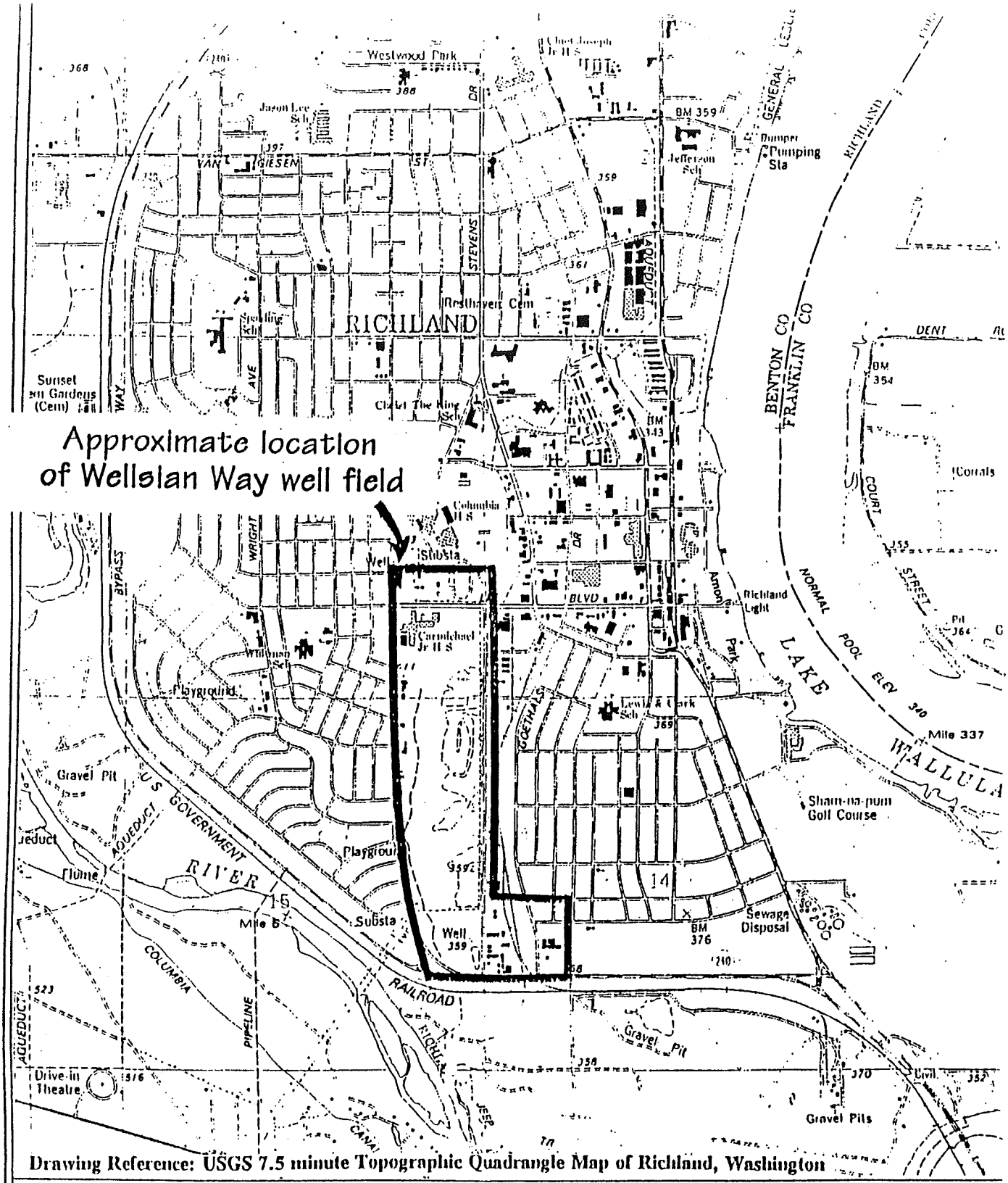
AGRA Earth & Environmental, Inc

AGRA
Earth & Environmental
E. 520 North Foothills Drive, Suite 600
Spokane, Washington, U.S.A. 99207

W.O.	6924-01422-0
DESIGN	ENJS
DRAWN	ENJS
DATE	AUG 1996
SCALE	NOTED

FIGURE 3

GEO-PROBE EXPLORATORY LOCATIONS
RICHLAND CHEVRON STATION No. 9-8944



Drawing Reference: USGS 7.5 minute Topographic Quadrangle Map of Richland, Washington

Scale

0 4000

Feet

CHEN-NORTHERN, INC.

FIGURE 7
SITE LOCATION MAP
WELLSIAN WAY WELL FIELD
RICHLAND, WASHINGTON

DRAWN BY: m.b.	CHECKED BY: d.u.	PROJECT NO. 192-2104-3	DATE: 5/93	FIGURE NO: