HerSchy Environmental, Inc.

March 18, 2004
Project A51-01.04

Mr. Barney Chan
Alameda County
Health Care Services Agency
Environmental Health Services
1131 Harbor Bay Parkway, Ste. 250
Alameda, CA 94502-6577

Re: Work Plan for Vapor Extraction Test, Alaska Gasoline Company, Oakland, California, Case #RO0000127

Dear Mr. Chan:

HerSchy Environmental is pleased to present a work plan for a soil vapor extraction test at the above-referenced site. The site is located at 6211 San Pablo Avenue, which is on the northwest corner of San Pablo Avenue and 62nd Street in Oakland, Alameda County, California (Figure 1). Previous work includes the drilling, sampling, and laboratory analysis of soil and groundwater. Details of this investigation are contained in the April 22, 1999 report titled, "*Results of Underground Storage Tank (UST) Site Assessment, Alaska Gasoline Company, Oakland, California*", prepared by HerSchy Environmental.

SOIL VAPOR EXTRACTION TEST (VET) WORK PLAN

The soil vapor extraction (SVE) process strips volatile organic constituents (VOCs) from contaminated soil by introducing an air flow through the contaminated zone. The air flow is created by a vacuum pump ("blower") through a single well or network of wells.

As the soil vapor is swept away from the voids of the vadose zone, fresh air is naturally introduced and refills the voids. This flux of fresh air will: 1) disrupt the existing partition of the contaminants among the voids, soil moisture, and soil grain surface by promoting volatilization of the absorbed and dissolved phase of contaminants; 2) provide oxygen to indigenous microorganisms for biodegradation of the contaminants, and 3) carry away the toxic metabolic by-products generated from the biodegradation process. The extracted VOC-laden air is brought to the surface by a vacuum blower. Treatment of the extracted vapor is normally required. The anticipated treatment will be

P.O. Box 229 ◆ Bass Lake, CA 93604-0229 ◆ Phone: 559 • 641-7320 ◆ Fax: 559 • 641-7340

by a thermal oxidizer using natural gas or propane as supplemental fuel to maintain proper combustion temperatures.

The major components of a typical soil venting system include vapor extraction well(s), vacuum blower(s), moisture removal device (knock-out drum), off-gas collection piping and ancillary equipment, and the off-gas treatment system. The most important parameters of the preliminary design are the extracted concentration of VOCs, air flow rate, radius of influence of the venting well, number of wells required, and the size of the vacuum blower.

Selecting the number and locations of extraction wells, sizing of blowers, and design of the vapor treatment equipment is performed by evaluating the results of a vapor extraction test (VET). The number and location of extraction wells is typically based on the radius of influence, which can be defined as the distance from the extraction well to where the pressure draw down is very small. The design of the vapor extraction and air abatement equipment is based on the practical vapor flow rates evaluated by the VET and by the concentrations of VOCs in the extracted soil vapor.

Because of the widespread contamination known to exist at the site, soil vapor extraction wells and air sparge wells have already been installed. Details of this work are included in the February 6, 2004 "*Results of Vapor Extraction, Air Sparging, and Groundwater Extraction Well Installation, Alaska Gasoline Company, Oakland, California,*" prepared by Herschy Enviromental, Inc. The soil vapor extraction well network includes 13 vapor extraction wells and 5 air sparge wells (Figure 2). HerSchy proposes that all existing vapor extraction wells (VE-1 through VE-13) be included in the VET. When extracting from one of these wells, at least four other wells will be used to monitor soil vapor pressure, which will help determine the radius of influence of the VET. The screened interval for the wells are from approximately 3 to 13 feet below surface grade, the depth range that relatively high concentrations of gasoline constituents were encountered during previous soil investigations.

A two-hour VET will be performed on each of the extraction wells using a variable speed blower with a trailer-mounted thermal oxidizer for air abatement. One soil vapor sample will be collected from each well in tedlar bags at the conclusion of each individual test and submitted to a laboratory under chain-of-custody documentation for analysis to evaluate the concentration of VOCs in the extracted air. ?

Soil vapor samples will be analyzed for gasoline-range total petroleum hydrocarbons (TPH), benzene, toluene, ethylbenzene, and xylenes (BTEX), and for methyl tertiary butyl ether (MTBE). + other oxys & Pb scavengers

The trailer-mounted vapor extraction and air abatement equipment used for the VET will be a thermal/catalytic oxidizer. The unit is equipped with a 7.5 hp positive displacement blower with a capacity of 250 cubic feet per minute with a vacuum of up to 12 inches of mercury. The maximum influent VOC concentration is 9,000 ppm with a destruction efficiency of 99 percent.

163" H_2O

~~12 inches of mercury. The maximum influent VOC concentration is 9,000 ppm with a destruction efficiency of 99 percent.~~

Parameters to be measured include relative vacuum on the extraction and observation wells, flow rates from the extraction well, and VOC concentrations in the extracted soil vapor using a photo ionization detector (PID). Concentrations of gasoline constituents will be verified by collection of gas samples in tedlar bags for submittal to the laboratory. Measurements of vacuum at the extraction and observation wells will be made at intervals of 5, 15, 30, 45, 60 and 120 minutes.

The results of the VET and laboratory analysis will be used to evaluate the design and location of any necessary additional vapor extraction wells, sizing of the blower for a vapor extraction system, and the size and type of air abatement equipment appropriate for the site. A report will be prepared presenting the results of the VET including a proposed design and schedule of implementation for the SVE system.

If you have any questions or need additional information, please contact me at the letterhead address or at (559) 641-7320.

With best regards,
HerSchy Environmental, Inc.

Joshua A. Teves
Geologist

REGISTERED GEOLOGIST
JAMES S. OLBINSKI
No. 4274
STATE OF CALIFORNIA

James S. Olbinski
Registered Geologist #4274

pc: Mr. Pritpaul Sappal
Mr. Syed Nawab, Alaska Gasoline Company
Mr. Hernan Gomez, Oakland Fire Services Agency
Mrs. Susan M. Torrence, Deputy District Attorney

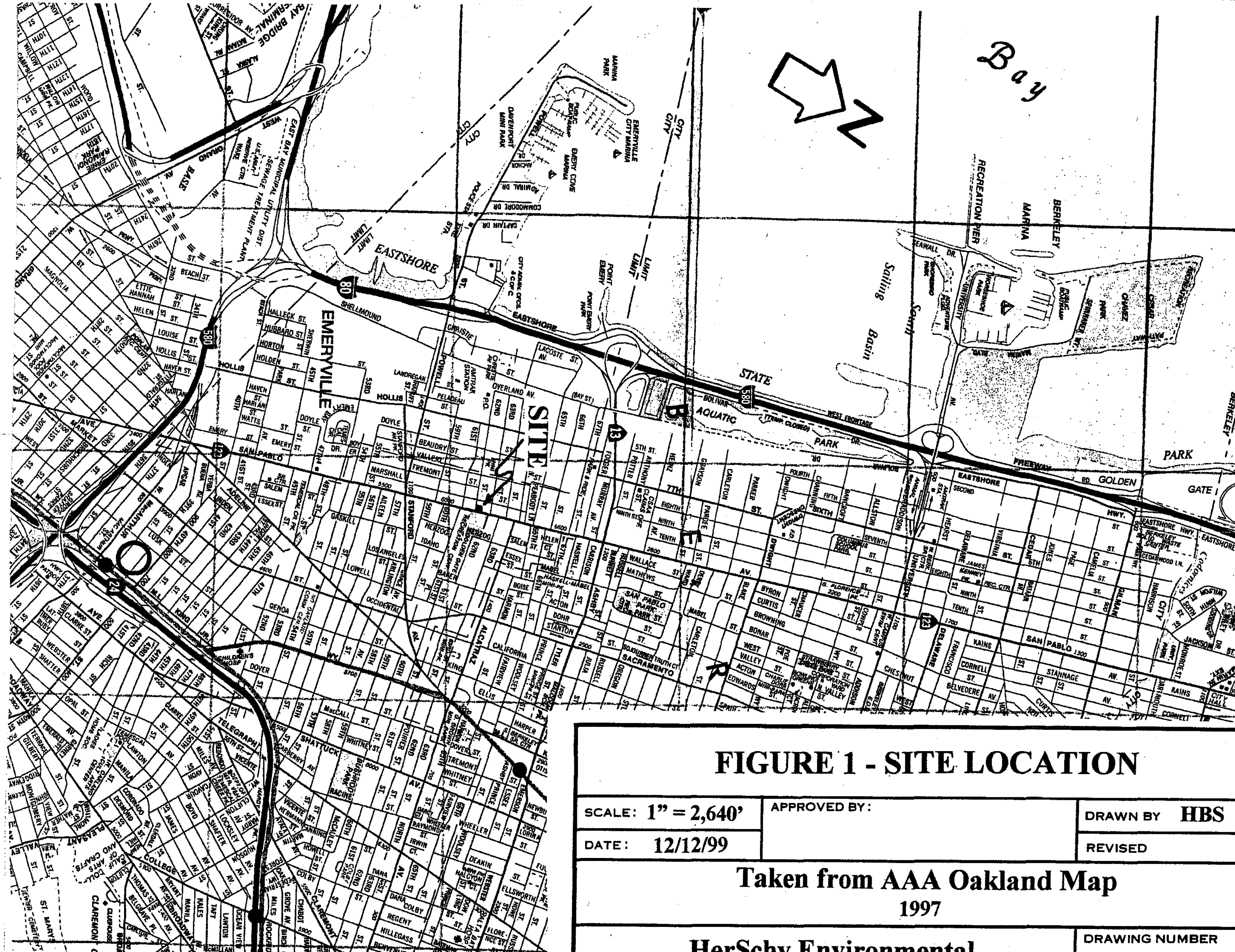


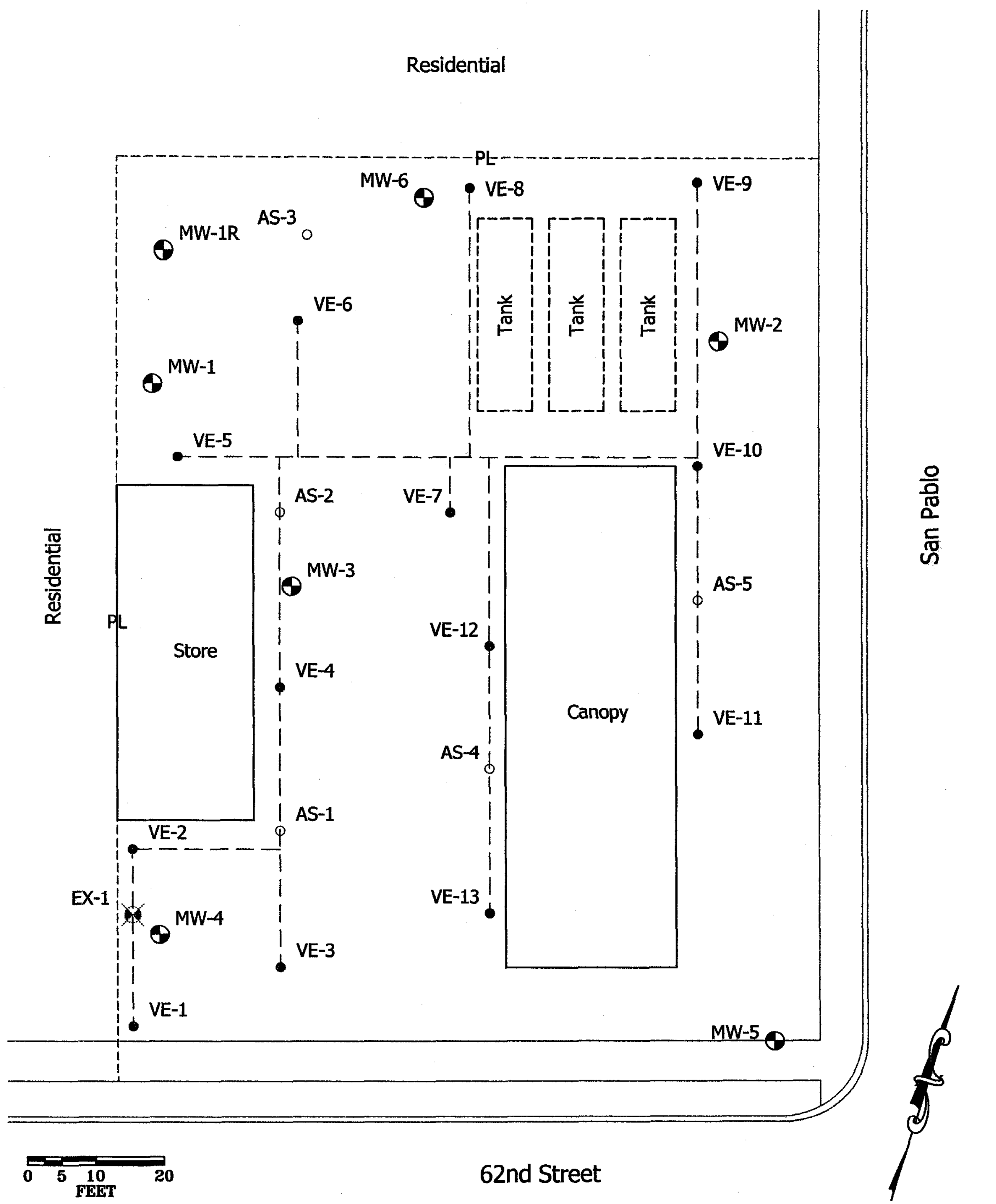
FIGURE 1 - SITE LOCATION

SCALE: 1" = 2,640'	APPROVED BY:	DRAWN BY HBS
DATE: 12/12/99		REVISED

Taken from AAA Oakland Map
1997

HerSchy Environmental

DRAWING NUMBER



HerSchy Environmental, Inc.

Environmental Consulting and Remediation

P. O. Box 229
Bass Lake, California 93604-0229
Tel. (559) 641-7320, Fax (559) 641-7340

VAPOR EXTRACTION SYSTEM WELL LOCATIONS

ALASKA GASOLINE COMPANY

6211 San Pablo Avenue, Oakland, California

DATE:	January 2004
FILE NO.:	A51-01.02
DRAWN BY:	JSO
FIGURE	2

Ro 127 ✓

HerSchy Environmental, Inc.

July 21, 2004
Project A51-01

Alameda County
JUL 27 2004
Environmental Health

Mr. Barney Chan
Alameda County
Health Care Services Agency
Environmental Health Services
1131 Harbor Bay Parkway, Ste. 250
Alameda, CA 94502-6577

Re: Results of Vapor Extraction Test and Work Plan for Additional Investigation, Alaska Gasoline Company, Oakland, California, Case #RO0000127

Dear Mr. Chan:

HerSchy Environmental is pleased to present the results of a soil vapor extraction test (VET) at the above-referenced site. The site is located at 6211 San Pablo Avenue, which is on the northwest corner of San Pablo Avenue and 62nd Street in Oakland, Alameda County, California (Figure 1). Thirteen vapor extraction wells and five air sparge wells were installed at the site in January, 2004. Details of well installation are included in the February 6, 2004 "*Results of Vapor Extraction, Air Sparging, and Groundwater Extraction Well Installation, Alaska Gasoline Company, Oakland, California*" report prepared by HerSchy Environmental, Inc.

METHODS OF INVESTIGATION

A two-hour VET was performed on each of the extraction wells using a variable speed blower with a trailer-mounted thermal oxidizer for air abatement. One soil vapor sample was collected from each well in a tedlar bag at the beginning and conclusion of each individual test and submitted to a laboratory under chain-of-custody documentation for analysis to evaluate the concentration of VOCs in the extracted air.

Soil vapor samples were analyzed for gasoline-range total petroleum hydrocarbons (TPHg), benzene, toluene, ethylbenzene, and xylenes (BTEX), and for methyl tertiary butyl ether (MTBE).

The trailer-mounted vapor extraction and air abatement equipment used for the VET was a thermal oxidizer. The unit is equipped with a 7.5 hp positive displacement blower with a capacity of 250 cubic feet per minute with a vacuum of up to 12 inches of mercury. The maximum influent VOC concentration is 9,000 ppm with a destruction efficiency of 99 percent.

Table 1
(Continued)

Test #2

Time	VE-2	VE-1	VE-5	VE-7	VE-8	VE-9	VE-11	VE-12	VE-13
Initiation, vacuum 60 inches:									
5	60 (5.3 cfm)	2.8	0	0	0.01	0	0.02	0.03	0.06
10	60 (8 cfm)	2.4	0	0	0.01	0	0.02	0.03	0.06
15	60 (8 cfm)	1.2	0	0	0.01	0	0.01	0.02	0.05
30	60 (8 cfm)	0.21	0	0	0.01	0.01	0.01	0.01	0.01
45	60 (6.8 cfm)	0	0	0	0.01	0.01	0	0.01	0.01
60	60 (6.8 cfm)	0	0	0.02	0	0.02	0	0.01	0.01
90	60 (6.5 cfm)	0	0	0.01	0	0.02	0	0.01	0.01
120	60 (6.25 cfm)	0.01	0.02	0	0.03	0	0	0	0

Vacuum expressed in inches of water
cfm = cubic feet per minute

Test #3

Time	VE-3	VE-1	VE-2	VE-5	VE-9	VE-10	VE-11	VE-12	VE-13
Initiation, vacuum 60 inches:									
5	60 (6.5 cfm)	0	0	0	0	0.01	0.02	0.02	0.02
10	60 (6.8 cfm)	0	0	0.01	0	0.01	0.02	0.02	0.02
15	60 (6.9 cfm)	0	0	0.01	0	0	0.01	0.02	0.01
30	60 (6.9 cfm)	0	0	0	0	0	0.01	0	0.01
45	60 (6.8 cfm)	0	0	0.01	0	0.01	0.01	0	0.06
60	60 (7.1 cfm)	0	0	0.02	0.01	0.01	0.01	0.01	0.06
90	60 (7.5 cfm)	0.02	0	0.02	0.01	0	0.02	0.02	0.03
120	60 (7.4 cfm)	0.01	0.03	0.03	0.01	0.02	0.02	0.04	0.03

Vacuum expressed in inches of water
cfm = cubic feet per minute

Test #4

Time	VE-4	VE-1	VE-2	VE-5	VE-6	VE-8	VE-11	VE-12	VE-13
Initiation, vacuum 60 inches:									
5	60 (16.8 cfm)	0	0.05	0.02	0.01	0	0	0.04	0.01
10	60 (16.8,cfm)	0	0.04	0.02	0.01	0	0	0.03	0.01
15	60 (16.9 cfm)	0	0.04	0.01	0	0	0	0.02	0.01
30	60 (17.2 cfm)	0	0.04	0.01	0	0.01	0	0.02	0.02
45	60 (17.8 cfm)	0	0.02	0.01	0	0.06	0	0.02	0.02
60	60 (19.8 cfm)	0	0.02	0	0	0.08	0	0.02	0.05
90	60 (19.5 cfm)	0.01	0.02	0	0	0.04	0.02	0.03	0.06
120	60 (19.4 cfm)	0	0	0	0	0	0	0	0.01

Vacuum expressed in inches of water
cfm = cubic feet per minute

Table 1
(Continued)

Test #5

Time	VE-5	VE-1	VE-3	[redacted]	VE-8	VE-10	VE-11	VE-12	VE-13
Initiation, vacuum 60 inches:									
5	25 (11 cfm)	0	0	1.15	0.01	0	0	0.04	0.01
10	25 (11 cfm)	0	0	1.15	0.01	0	0	0.03	0.01
15	25 (11 cfm)	0	0	1.15	0	0	0	0.02	0.01
30	25 (10.5 cfm)	0	0	1.00	0	0.01	0	0.02	0.02
45	25 (10.5 cfm)	0	0	1.00	0	0.06	0	0.02	0.02
60	35 (15 cfm)	0	0.02	1.30	0	0.08	0	0.02	0.05
90	35 (16 cfm)	0	0	1.40	0	0.04	0.02	0.03	0.06
120	35 (17 cfm)	0	0	1.30	0	0	0	0	0.01

Vacuum expressed in inches of water
cfm = cubic feet per minute

Test #6

Time	VE-6	VE-3	VE-4	VE-5	VE-7	VE-8	VE-11	VE-12	VE-13
Initiation, vacuum 40 inches:									
5	40 (8.5 cfm)	0	0.01	0.02	0.01	0	0	0	0.01
10	40 (9 cfm)	0	0	0.02	0.01	0	0	0	0.01
15	40 (10 cfm)	0	0	0.02	0.01	0	0	0	0.01
30	40 (9.6 cfm)	0	0	0.01	0	0.01	0	0	0
45	40 (10 cfm)	0	0	0.01	0	0.01	0	0	0
60	50 (11.5 cfm)	0	0.01	0.01	0.01	0.07	0	0.03	0
90	60 (13 cfm)	0.01	0.02	0.03	0	0.04	0.01	0.01	0
120	60 (15.6 cfm)	0.01	0.01	0.01	0.01	0.01	0	0.01	0.02

Vacuum expressed in inches of water
cfm = cubic feet per minute

Test #7

Time	VE-7	VE-1	VE-3	VE-4	VE-5	VE-6	VE-8	VE-12	VE-13
Initiation, vacuum 40 inches:									
5	40 (6.7 cfm)	0.02	0	0	0	0.02	0.01	0.05	0
10	40 (6.5 cfm)	0.01	0	0	0	0.02	0.01	0.05	0
15	40 (6.8 cfm)	0.01	0.01	0	0.01	0.01	0.01	0.04	0
30	50 (9.4 cfm)	0	0.02	0.01	0.03	0.01	0.02	0.04	0.02
45	50 (9.0 cfm)	0	0.02	0.01	0.02	0.01	0.01	0.02	0.01
60	50 (8.2 cfm)	0	0.01	0.01	0.01	0	0	0	0
90	50 (8.1 cfm)	0	0.01	0.01	0	0	0	0	0.01
120	50 (8.6 cfm)	0	0.01	0.01	0.02	0.02	0	0	0.01

Vacuum expressed in inches of water
cfm = cubic feet per minute

Table 1
(Continued)

Test #8

Time	VE-8	VE-1	VE-2	VE-3	VE-4	VE-5	VE-6	VE-7	VE-11
Initiation, vacuum 40 inches:									
5	40 (5.5 cfm)	0.02	0.01	0	0.02	0.02	0.02	0.01	0.01
10	40 (5.5 cfm)	0.01	0.01	0	0.02	0.02	0.02	0.01	0.01
15	40 (4.9 cfm)	0.01	0.01	0	0.01	0.01	0.02	0.01	0.01
30	40 (4.7 cfm)	0	0.01	0.01	0	0.01	0.02	0.01	0.01
45	40 (5.1 cfm)	0	0	0.01	0	0.01	0.02	0.01	0.01
60	50 (6.5 cfm)	0	0	0.01	0.01	0.01	0.02	0.01	0
90	50 (6.0 cfm)	0	0	0.01	0.01	0.01	0.02	0.01	0.01
120	70 (8.4 cfm)	0	0	0.01	0.01	0	0.01	0.01	0

Vacuum expressed in inches of water
cfm = cubic feet per minute

Test #9

Time	VE-9	VE-1	[redacted]	VE-3	VE-4	VE-6	[redacted]	[redacted]	[redacted]
Initiation, vacuum 40 inches:									
5	40 (9.9 cfm)	0	0.19	0.03	0	0.01	0.04	0	0
10	40 (10 cfm)	0	0.15	0.02	0	0.01	0.04	0	0.06
15	40 (10.1 cfm)	0	0.05	0.01	0.01	0.01	0.06	0.50	0.10
30	60 (17.1 cfm)	0.60	0	0.01	0.01	0.01	0.11	0.95	0.16
45	60 (16.0 cfm)	0.45	0.02	0.01	0.01	0.01	0.07	0.65	0.26
60	70 (22.8 cfm)	0.25	0.03	0	0.01	0.01	0.03	0.40	0.40
90	40 (151 cfm)	0	0.04	0.01	0.01	0.01	0.06	0.25	0.60
120	40 (156 cfm)	0	0.06	0.01	0	0.01	0.03	0.25	0.80

Vacuum expressed in inches of water
cfm = cubic feet per minute

Test #10

Time	VE-10	VE-2	VE-5	VE-6	VE-7	VE-8	VE-11	[redacted]	[redacted]
Initiation, vacuum 40 inches:									
5	40 (6.7 cfm)	0.06	0	0.01	0.01	0.01	0	0	2.4
10	40 (6.2 cfm)	0.06	0	0	0.01	0.01	0.02	0.05	2.4
15	40 (6.0 cfm)	0.07	0.01	0	0.01	0.01	0.04	0.20	2.4
30	40 (5.8 cfm)	0.08	0.02	0	0.01	0.01	0.07	0.40	2.4
45	40 (5.5 cfm)	0.08	0.02	0	0	0.01	0.03	0.40	0.11
60	55 (8.8 cfm)	0.07	0.01	0	0	0.01	0.02	0.40	0.10
90	55 (8.9 cfm)	0.04	0	0.01	0	0	0.01	0.24	0.12
120	55 (11.1 cfm)	0.04	0	0.01	0	0	0.01	0.15	0.13

Vacuum expressed in inches of water
cfm = cubic feet per minute

Table 1
(Continued)

Test #11

Time	VE-11	VE-1	VE-2	VE-3	VE-4	VE-7	VE-10	[redacted]	[redacted]
Initiation, vacuum 40 inches:									
5	40 (5.4 cfm)	0	0	0	0	0	0	[redacted]	0.07
10	40 (5.6 cfm)	0	0	0	0	0	0	0.12	0.06
15	40 (5.9 cfm)	0	0	0	0	0	0	0.11	0.04
30	50 (6.7 cfm)	0	0	0	0	0	0	0.19	0.02
45	50 (7.1 cfm)	0	0	0	0	0	0	0.15	0
60	55 (8.2 cfm)	0	0	0	0	0	0	0.11	0
90	55 (8.3 cfm)	0	0	0	0	0	0	0.10	0
120	55 (8.1 cfm)	0	0.01	0.01	0	0	0	0.0	0

Vacuum expressed in inches of water
cfm = cubic feet per minute

Test #12

Time	VE-12	VE-1	VE-2	VE-3	VE-4	[redacted]	VE-10	VE-11	VE-13
Initiation, vacuum 40 inches:									
5	40 (5.8 cfm)	0	0	0	0	1.45	0	0	0
10	40 (5.6 cfm)	0	0	0	0	1.0	0	0	0
15	40 (5.9 cfm)	0	0	0	0	0.50	0	0	0
30	40 (3.36 cfm)	0	0	0	0	0.03	0	0	0
45	40 (3.0 cfm)	0	0	0	0	0	0	0	0
60	20 (2.4 cfm)	0	0	0	0	0	0	0	0
90	40 (4.8 cfm)	0	0	0	0	0	0	0	0
120	40 (4.7 cfm)	0	0	0	0	0	0	0	0

Vacuum expressed in inches of water
cfm = cubic feet per minute

Test #13

Time	VE-13	VE-1	VE-2	VE-3	VE-4	VE-6	VE-10	VE-11	VE-12
Initiation, vacuum 40 inches:									
5	40 (4.9 cfm)	0	0	0	0.01	0	0	0	0.02
10	40 (4.8 cfm)	0	0	0	0	0	0	0	0
15	40 (4.8 cfm)	0	0	0	0	0	0	0	0
30	50 (4.8 cfm)	0	0	0	0	0	0	0	0
45	50 (8.4 cfm)	0	0	0	0	0	0	0	0
60	50 (12.7 cfm)	0	0.01	0.01	0	0.01	0	0	0
90	50 (13.4 cfm)	0	0	0	0	0	0	0	0
120	50 (5.45 cfm)	0	0	0	0	0	0	0	0

Vacuum expressed in inches of water
cfm = cubic feet per minute

A soil vapor sample was collected in a tedlar bag at the initiation and again at the conclusion of each test. Certified analytical reports are presented in Appendix A and summarized in Table 2 below:

Table 2
Laboratory Analytical Results, Vapor Extraction Test

Well No.	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE
VE-1 (start)	ND	ND	ND	0.13	0.71	ND
VE-1 (end)	37	0.45	ND	ND	0.78	ND
VE-2 (start)	1,300	64	60	13	56	2,100
VE-2 (end)	320	10	11	2.6	11	88
VE-3 (start)	11,000	160	14	ND	ND	1,700
VE-3 (end)	10,000	270	ND	ND	ND	ND
VE-4 (start)	12	0.53	0.17	ND	0.52	16
VE-4 (end)	ND	ND	ND	ND	0.14	2.7
VE-5 (start)	26,000	1,041	1,300	62	200	ND
VE-5 (end)	14,000	550	720	ND	160	ND
VE-6 (start)	38	1.2	5.5	0.89	5.1	1.5
VE-6 (end)	11	0.28	2.1	0.36	2.2	ND
VE-7 (start)	20	0.82	4.3	0.62	3.5	ND
VE-7 (end)	16	0.44	3.0	0.55	3.3	ND
VE-8 (start)	21	0.77	3.8	0.57	3.3	ND
VE-8 (end)	89	1.7	9.7	1.6	9.4	ND
VE-9 (start)	460	11	9.8	1.4	6.9	ND
VE-9 (end)	81	1.9	4.6	0.86	4.6	ND
VE-10 (start)	NA	NA	NA	NA	NA	NA
VE-10 (end)	58	1.6	5.4	1.1	6.2	ND
VE-11 (start)	510	1.9	7.0	1.2	6.8	ND
VE-11 (end)	78	0.89	1.6	0.29	1.7	ND
VE-12 (start)	260	0.54	3.4	0.56	3.7	0.90
VE-12 (end)	20	0.26	2.0	0.40	2.5	ND
VE-13 (start)	120	2.9	2.5	0.39	3.3	13
VE-13 (end)	36	0.86	4.5	0.84	4.8	0.93

All results presented in parts per million volume (ppmv)
ND = below detectable concentrations
NA = no analysis

The bag sample collected at the beginning of the VE-10 test (VE-10 start) was accidentally punctured and deflated during transport to the laboratory, and therefore no analysis was performed on this sample. The results of the VET indicate that relatively low flow rates (2 to 29 cfm) can be extracted at modest vacuums (40 to 70 inches of water) typical of most vapor extraction systems. The test performed while extracting from VE-9 may have yielded misleading flow rates. After over an hour of extraction, the measured flow rate increased from approximately 20 cfm to over 150 cfm. VE-9 is located on the northeast corner of the UST excavation, which remains open. Based on the location of this well, it is probable that extraction in VE-9 was influenced by atmospheric air due to the proximity of the open UST excavation. Many factors at the site influenced the results of this VET. For example, the site has not been paved over, and dispenser and UST excavations remain open. Therefore the results of the VET provide us with only a low-end estimate of the effectiveness of the soil vapor extraction system (SVES).

Limited radii of influence were created during the test, reflecting the tightness of the subsurface soil. Soil beneath the site is very moist, and it is possible that the longer the SVES operates, the dryer shallow soil will become. The dehydration of soil should gradually increase the radii of influence, resulting in a more effective SVES. Based on previous drilling, massive clay constitutes the majority of the lithology within the extraction zone. Another factor that may influence test results is the shallow groundwater table. Groundwater elevation at the site ranges from approximately five to nine feet below ground surface (bgs). With screened intervals at approximately 3 to 13 feet bgs, moderate vacuums can draw groundwater up high enough to essentially drown the screened interval. Typically, relatively tight soil is treated with a higher vacuum than sandier soils. However, if a high-vacuum unit is used at this site, groundwater would rise even higher within the wells and again drown the screened intervals. Very little influence was created in the observation wells. Due to the short duration of each individual VET, we were unable to determine if radii of influence increase as shallow soil is dehydrated by extraction. However, as intended, the VET did provide us with low-end estimates of contaminant removal rates.

The method of air abatement is evaluated based on the operating costs of thermal oxidation versus granular activated carbon (GAC) filters. It appears that vapor extraction is effective in removing high concentrations of contamination. The highest concentration of VOCs at the conclusion of any of the tests was 14,000 ppmv (74,000 ug/l). Taking this concentration observed in VE-5, and a flow rate of 17 cfm, we can calculate a low-end estimate of VOC removal rate. To calculate pounds per day (lbs/day) of VOCs, the formula is as follows:

(ug/l)(gm/1,000,000)(kg/1,000 gm)(2.2 lbs/kg) = lbs/l VOCs

Converting lbs/l to lbs/day:

(lbs/l)(l/.03513 cf)(cfm)(1440 min/day) = lbs/day VOCs

Using the values stated above, an approximate average of 113 lbs of VOCs will be extracted from soil pore air in VE-5 on a daily basis. This is the equivalent of approximately 17 gallons of gasoline per day.

The cost of thermal oxidation is based on the following assumptions:

Monthly rental of equipment	$3,000
Cost of electricity/supplemental fuel	$5,000
Costs for monthly monitoring/O&M	$250
Total monthly O&M	**$8,250**

The cost for GAC filters is based on a loading rate of 20% and carbon costs of $400 per 180 lb drum, including disposal. Using the loading rate and an input of 113 lbs per day, the cost for GAC is as follows:

Monthly rental rate of equipment	$500
Monthly cost of GAC	$37,666
Cost of electricity	$300
Costs for weekly monitoring/O&M, per month	$1,000
Total monthly O&M	**$39,466**

Based on the significant concentrations of gasoline constituents in soil pore air extracted from the site extraction wells, it appears that the use of thermal oxidation for air abatement is appropriate for the site. However, a SVES with this many extraction points must take several factors into consideration before initiation.

None of the two-hour tests revealed any significant radius of influence. Also, concentrations of petroleum hydrocarbons were not detected in amounts anticipated based on previous analysis in many of the wells. For example, we know that free product is present in the southwest corner of the site. Based on the VET, the highest concentrations appear to be present just north of the store. This allows for the possibility that extraction was not efficient in removing contaminants from some of the wells within each two-hour test.

The VET was successful in providing information regarding vacuums and flow rates. As expected, only low air flow rates were produced during extraction. Also, we learned that vacuums over 40 inches of water do not induce greater radii of influence. Considering the limited screened intervals and the relatively shallow water table, higher vacuums decrease the amount of screen open for soil vapor extraction. The highest amounts of contamination were removed from VE-3 and VE-5, although concentrations are lower in the samples collected at the end of each test.

After reviewing the data produced throughout the VET, several issues must be addressed before the initiation of the SVES:

1. Concentrations of contaminants appear to decrease at a relatively rapid rate according to the results of the VET. However, it is not known whether this trend will continue over a longer period of time.

2. No effective radius of influence was induced during the VET. However, as shallow soil is gradually dehydrated by extraction, it is possible that greater influence within the network can be achieved.

3. Based on proximity to the known plume of free product, VE-1 was anticipated to have the highest concentrations of contaminants within the extraction network. It is not known whether or not this extraction point will produce the anticipated amount of contamination if extraction continues for a longer period of time.

In order to address issues that remain after the VET, it is recommended that an additional VET be performed at the site. A work plan for the additional VET is presented below:

WORK PLAN FOR ADDITIONAL VET

Extended Vapor Extraction Test

Although the initial VET was successful in providing data necessary for preliminary estimates, the duration of the VET was not sufficient in addressing the issues listed above. For that reason, we propose to perform a four-day vapor extraction test.

Methods of Investigation

Four wells (VE-1 through VE-3, and VE-5) will be extracted from during the extended VET. Extraction wells VE-2, 3, and 5, were the most effective in terms of removing contamination during the initial VET. VE-1 was not effective in removing contamination during the initial VET, but based on location of this well, it is anticipated that relatively high amounts of contamination may be produced during an extended VET.

The same equipment will be used in the extended VET as in the initial test, and thermal oxidation will remain the method of air abatement. Each extraction well will be extracted from for a period of 24 hours. Monitoring for air flow rate, influent concentrations, and vacuum will be performed using the appropriate equipment. Monitoring will occur immediately after initiation of each test, hourly during the first twelve hours, and then again prior to the conclusion of each test. At least four wells not being extracted from will be used as observation wells during each test. Samples will be collected in tedlar bags at the initiation, midpoint, and just prior to conclusion of each test and submitted to the laboratory for analysis. Immediately after sample collection, the tedlar bags will be labeled and stored in an ice chest until delivered to the laboratory. All samples will be delivered under chain-of-custody documentation. Each well will be extracted at a vacuum of no greater than 50 inches of water.

Laboratory Analysis

Soil vapor samples will be analyzed for gasoline-range total petroleum hydrocarbons (TPHg), benzene, toluene, ethylbenzene, and xylenes (BTEX), and for methyl tertiary butyl ether (MTBE). Analysis for these constituents will be performed using EPA method 8020 at a laboratory certified for those methodologies.

Report Preparation

A report detailing the findings of this investigation will be prepared within two-weeks of receiving laboratory analytical data. This report will include recommendations for the initiation of remedial activities at the site.

Parameters measured include relative vacuum on the extraction and observation wells, flow rates from the extraction well, and VOC concentrations in the extracted soil vapor using a photo ionization detector (PID). Concentrations of gasoline constituents were verified by collection of gas samples in tedlar bags for submittal to the laboratory. Measurements of vacuum at the extraction and observation wells were made at intervals of 5, 15, 30, 45, 60 and 120 minutes.

RESULTS OF INVESTIGATION

Vapor Extraction Test (VET) Results

The VET was approved in correspondence from your office dated March 25, 2004. The VET was performed on June 28-30, 2004 by extracting soil pore vapors from the thirteen previously installed two-inch vapor extraction wells (VE-1 through VE-13; Figure 2). The vapor extraction wells not being extracted from were used as observation wells during each test.

The VET was performed at an average vacuum of 25 to 60 inches of water initially, which was increased to as high as 70 inches of water at times to evaluate the effect of vacuum on test data. Initially, concentrations of volatile organic compounds (VOCs) were measured using a portable photoionization detector (PID). However, some wells with distinct gasoline odors were producing very low concentrations based on the PID. This situation, along with the short duration of the tests, resulted in the decision to discontinue PID readings and rely solely on the more accurate bag samples for concentration data. The vacuum in the extraction and observation wells, along with the air flow rates, are presented below in Table 1. For the sake of brevity, some wells that experienced no influence (vacuum = 0 inches of water) during a test are not included in that table.

Table 1
Vacuum in Wells, Alaska Gasoline Co.

Test #1:

Time	VE-1	VE-2	VE-3	VE-4	VE-7	VE-8	VE-12	VE-13
Initiation, vacuum 40 inches:								
5	40 (7.9 cfm)	0.01	0	0	0	0	0	0.01
10	52 (7.8 cfm)	0.01	0	0.01	0	0	0	0.02
15	50 (7.7 cfm)	0	0	0.01	0	0	0	0
30	50 (7.3 cfm)	0	0	0.01	0	0	0	0
45	50 (7.8 cfm)	0	0	0.01	0	0	0	0
60	50 (6.4 cfm)	0	0	0.01	0	0	0	0
90	60 (8.5 cfm)	0	0	0	0	0	0	0.01
120	60 (8.1 cfm)	0.01	0.01	0.01	0.01	0.01	0.02	0.03

Vacuum expressed in inches of water
cfm = cubic feet per minute

If you have any questions or need additional information, please contact me at the letterhead address or at (559) 641-7320.

With best regards,

Joshua A. Teves
Geologist

REGISTERED GEOLOGIST
JAMES S. OLBINSKI
No. 4274
STATE OF CALIFORNIA

James S. Olbinski
Registered Geologist #4274

pc: Mr. Pritpaul Sappal
Mr. Syed Nawab, Alaska Gasoline Company
Mr. Hernan Gomez, Oakland Fire Services Agency
Mrs. Susan M. Torrence, Deputy District Attorney

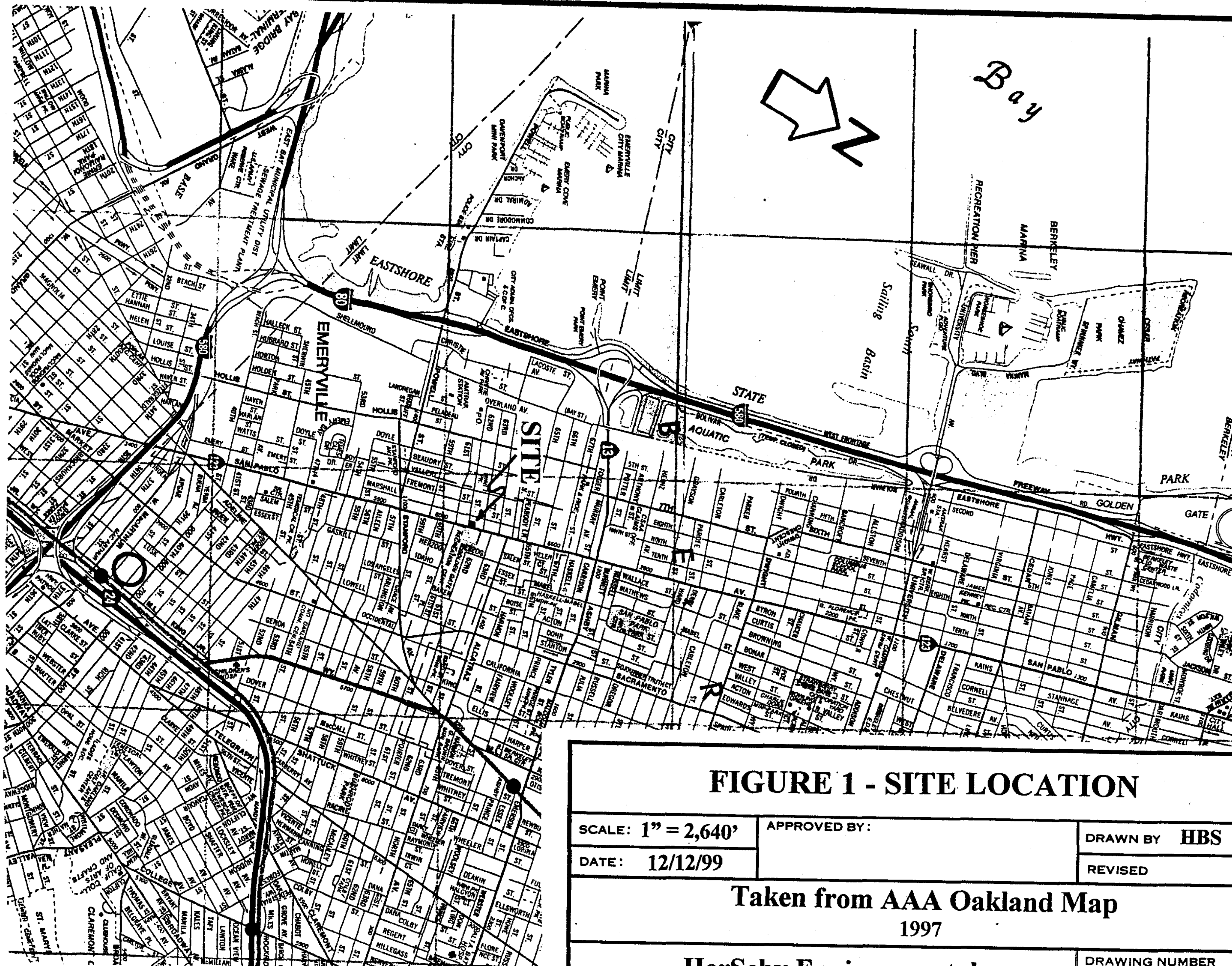
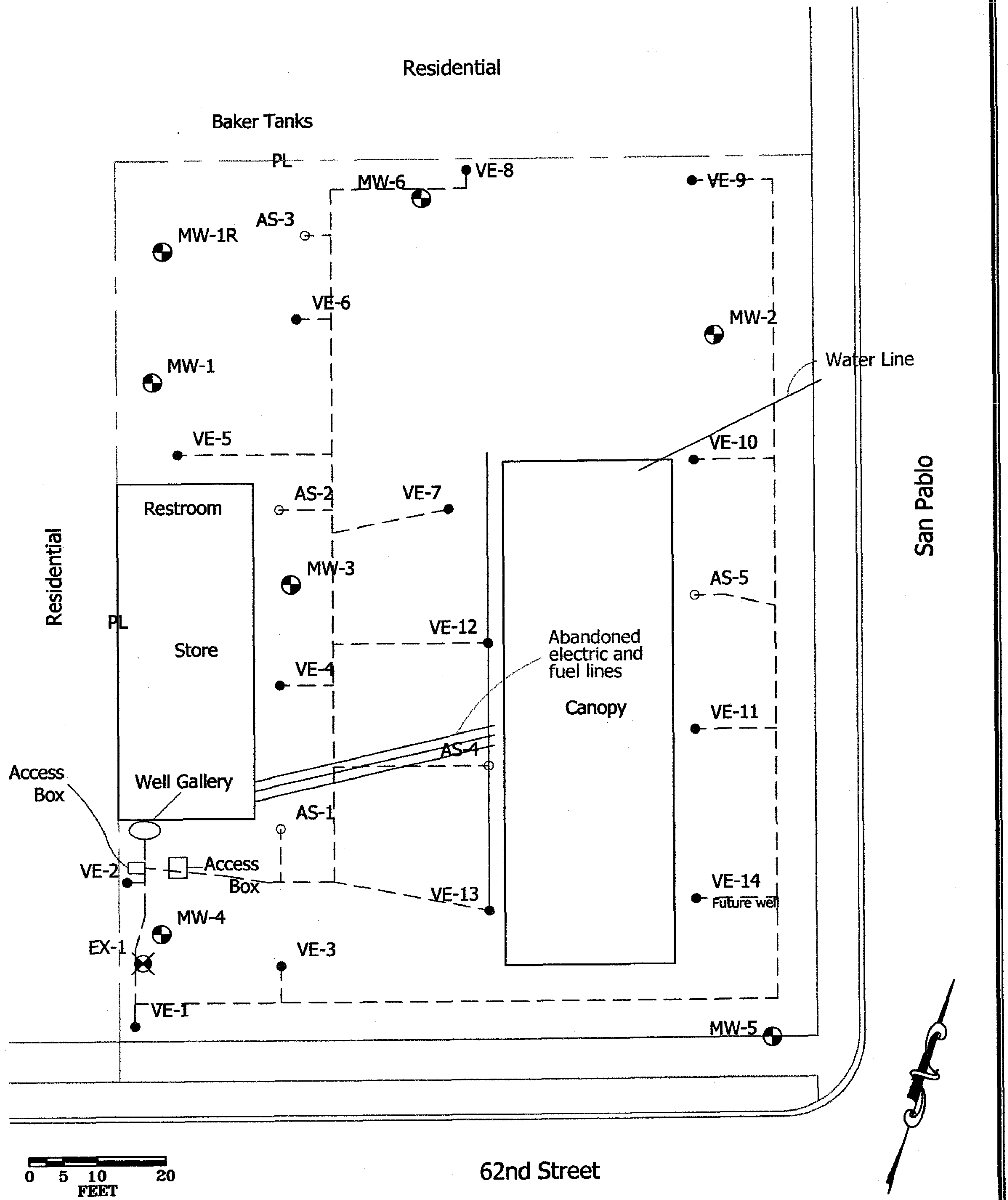


FIGURE 1 - SITE LOCATION

SCALE: 1" = 2,640'	APPROVED BY:	DRAWN BY HBS
DATE: 12/12/99		REVISED

Taken from AAA Oakland Map
1997

HerSchy Environmental	DRAWING NUMBER



HerSchy Environmental, Inc.

Environmental Consulting and Remediation

P. O. Box 229
Bass Lake, California 93604-0229
Tel. (559) 641-7320, Fax (559) 641-7340

VAPOR EXTRACTION SYSTEM LAYOUT

ALASKA GASOLINE COMPANY

6211 San Pablo Avenue, Oakland, California

DATE: July 2004

FILE NO.: A51-01.02

DRAWN BY: JSO

FIGURE 2

Appendix A

Certified Laboratory Analytical Results

With Chain of Custody

CASTLE ANALYTICAL LABORATORY

Environmental Testing Services
Certificate # 2480
2333 Shuttle Drive, Atwater, CA 95301
(209) 384-2930
(209) 384-1507

HerSchy Environmental
P.O. Box 229
Bass Lake, CA 93604
Attn: Joshua Teves

Client Project ID: Alaska Gasoline - Oakland
Reference Number: 7112
Sample Description: Air
Sample Prep/Analysis Method: 5030/8015M, 8020
Lab Number: 7112-1V
Sample ID: VE-1 Start

Sampled: 06-28-04
Received: 06-30-04
Analyzed: 06-30-04
Reported: 07-12-04

TOTAL PETROLEUM HYDROCARBONS - GASOLINE RANGE WITH BTEX DISTINCTION

ANALYTE	PQL* (ug/L)	PQL* (ppmv)	AMOUNT (ug/L)	AMOUNT (ppmv)
MTBE	0.50	0.14	ND	ND
BENZENE	0.50	0.16	ND	ND
TOLUENE	0.50	0.13	ND	ND
ETHYL BENZENE	0.50	0.11	0.57	0.13
TOTAL XYLENES	0.50	0.11	3.1	0.71
GASOLINE RANGE HYDROCARBONS	50	9.7	ND	ND
Dilution Factor:	1			

Instrument ID: VAR-GC1

*PQL - Practical Quantitation Limit
Analytes reported as ND were not detected or below the Practical Quantitation Limit

APPROVED BY: Clari J. Cone
Clari J. Cone
Laboratory Manager

APPROVED BY:
James C. Phillips
Laboratory Director

CASTLE ANALYTICAL LABORATORY

Environmental Testing Services
Certificate # 2480

2333 Shuttle Drive, Atwater, CA 95301

(209) 384-2030
(209) 384-1507

HerSchy Environmental
P.O. Box 229
Bass Lake, CA 93604
Attn: Joshua Teves

Client Project ID: Alaska Gasoline - Oakland
Reference Number: 7112
Sample Description: Air
Sample Prep/Analysis Method: 5030/8015M, 8020
Lab Number: 7112-2V
Sample ID: VE-1 End

Sampled: 06-28-04
Received: 06-30-04
Analyzed: 06-30-04
Reported: 07-12-04

TOTAL PETROLEUM HYDROCARBONS - GASOLINE RANGE WITH BTEX DISTINCTION

ANALYTE	PQL* (ug/L)	PQL* (ppmv)	AMOUNT (ug/L)	AMOUNT (ppmv)
MTBE	20*	5.5*	ND	ND
BENZENE	0.50	0.16	1.4	0.45
TOLUENE	0.50	0.13	ND	ND
ETHYL BENZENE	0.50	0.11	ND	ND
TOTAL XYLENES	0.50	0.11	3.4	0.78
GASOLINE RANGE HYDROCARBONS	50	9.7	190	37
Dilution Factor:	1			

Increased PQL due to interferent peak

Instrument ID:	VAR-GC1

*PQL - Practical Quantitation Limit
Analytes reported as ND were not detected or below the Practical Quantitation Limit

APPROVED BY: Clan J. Cone
Laboratory Manager

APPROVED BY: James C. Phillips
Laboratory Director

CASTLE ANALYTICAL LABORATORY

Environmental Testing Services
Certificate # 2480
2333 Shuttle Drive, Atwater, CA 95301
(209) 384-2930
(209) 384-1507

HerSchy Environmental
P.O. Box 229
Bass Lake, CA 93604
Attn: Joshua Teves

Client Project ID: Alaska Gasoline - Oakland
Reference Number: 7112
Sample Description: Air
Sample Prep/Analysis Method: 5030/8015M, 8020
Lab Number: 7112-3V
Sample ID: VE-2 Start

Sampled: 06-28-04
Received: 06-30-04
Analyzed: 06-30-04
Reported: 07-12-04

TOTAL PETROLEUM HYDROCARBONS - GASOLINE RANGE WITH BTEX DISTINCTION

ANALYTE	PQL* (ug/L)	PQL* (ppmv)	AMOUNT (ug/L)	AMOUNT (ppmv)
MTBE	250	69	7600	2100
BENZENE	10	3.1	200	64
TOLUENE	10	2.6	230	60
ETHYL BENZENE	10	2.3	59	13
TOTAL XYLENES	10	2.3	240	56
GASOLINE RANGE HYDROCARBONS	1000	190	6800	1300
Dilution Factor:	20			
Dilution Factor for MTBE only:	500			

Instrument ID:	VAR-GC1

*PQL - Practical Quantitation Limit
Analytes reported as ND were not detected or below the Practical Quantitation Limit

APPROVED BY: Clari J. Cone
Clari J. Cone
Laboratory Manager

APPROVED BY: James C. Phillips
James C. Phillips
Laboratory Director

CASTLE ANALYTICAL LABORATORY
Environmental Testing Services
Certificate # 2480
2333 Shuttle Drive, Atwater, CA 95301
(209) 384-2930
(209) 384-1507

HerSchy Environmental
P.O. Box 229
Bass Lake, CA 93604
Attn: Joshua Teves

Client Project ID: Alaska Gasoline - Oakland
Reference Number: 7112
Sample Description: Air
Sample Prep/Analysis Method: 5030/8015M, 8020
Lab Number: 7112-4V
Sample ID: VE-2 End

Sampled: 06-28-04
Received: 06-30-04
Analyzed: 06-30-04
Reported: 07-12-04

TOTAL PETROLEUM HYDROCARBONS - GASOLINE RANGE WITH BTEX DISTINCTION

ANALYTE	PQL* (ug/L)	PQL* (ppmv)	AMOUNT (ug/L)	AMOUNT (ppmv)
MTBE	5.0	1.4	320	88
BENZENE	5.0	1.6	32	10
TOLUENE	5.0	1.3	43	11
ETHYL BENZENE	5.0	1.1	11	2.6
TOTAL XYLENES	5.0	1.1	49	11
GASOLINE RANGE HYDROCARBONS	500	97	1700	320
Dilution Factor:	10			

Instrument ID: VAR-GC1

*PQL - Practical Quantitation Limit
Analytes reported as ND were not detected or below the Practical Quantitation Limit

APPROVED BY: Clari J. Cone
Clari J. Cone
Laboratory Manager

APPROVED BY: James C. Phillips
James C. Phillips
Laboratory Director

CASTLE ANALYTICAL LABORATORY

Environmental Testing Services
Certificate # 2480

2333 Shuttle Drive, Atwater, CA 95301

(209) 384-2930
(209) 384-1507

HerSchy Environmental
P.O. Box 229
Bass Lake, CA 93604
Attn: Joshua Teves

Client Project ID: Alaska Gasoline - Oakland
Reference Number: 7112
Sample Description: Air
Sample Prep/Analysis Method: 5030/8015M, 8020
Lab Number: 7112-5V
Sample ID: VE-3 Start

Sampled: 06-28-04
Received: 06-30-04
Analyzed: 06-30-04
Reported: 07-12-04

TOTAL PETROLEUM HYDROCARBONS - GASOLINE RANGE WITH BTEX DISTINCTION

ANALYTE	PQL* (ug/L)	PQL* (ppmv)	AMOUNT (ug/L)	AMOUNT (ppmv)
MTBE	1000	280	6100	1700
BENZENE	25	7.8	520	160
TOLUENE	25	6.6	53	14
ETHYL BENZENE	25	5.7	ND	ND
TOTAL XYLENES	25	5.7	ND	ND
GASOLINE RANGE HYDROCARBONS	2500	480	57000	11000
Dilution Factor:	50			
Dilution Factor for MTBE only:	2000			

Instrument ID:	VAR-GC1

*PQL - Practical Quantitation Limit
Analytes reported as ND were not detected or below the Practical Quantitation Limit

APPROVED BY: Clark J. Cone
Laboratory Manager

APPROVED BY: James C. Phillips
Laboratory Director

CASTLE ANALYTICAL LABORATORY

Environmental Testing Services
Certificate # 2480

2333 Shuttle Drive, Atwater, CA 95301

(209) 384-2930
(209) 384-1507

HerSchy Environmental
P.O. Box 229
Bass Lake, CA 93604
Attn: Joshua Tovos

Client Project ID: Alaska Gasoline - Oakland
Reference Number: 7112
Sample Description: Air
Sample Prep/Analysis Method: 5030/8015M, 8020
Lab Number: 7112-6V
Sample ID: VE-3 End

Sampled: 06-28-04
Received: 06-30-04
Analyzed: 06-30-04
Reported: 07-12-04

TOTAL PETROLEUM HYDROCARBONS - GASOLINE RANGE WITH BTEX DISTINCTION

ANALYTE	PQL* (ug/L)	PQL* (ppmv)	AMOUNT (ug/L)	AMOUNT (ppmv)
MTBE	800*	220*	ND	ND
BENZENE	100	31	870	270
TOLUENE	100	26	ND	ND
ETHYL BENZENE	100	23	ND	ND
TOTAL XYLENES	100	23	ND	ND
GASOLINE RANGE HYDROCARBONS	10000	1900	53000	10000
Dilution Factor:	200			

*Increased PQL due to interferent peak.

Instrument ID:	VAR-GC1

*PQL - Practical Quantitation Limit
Analytes reported as ND were not detected or below the Practical Quantitation Limit

APPROVED BY: Clari J. Cone, Laboratory Manager

APPROVED BY: James C. Phillips, Laboratory Director

CASTLE ANALYTICAL LABORATORY

Environmental Testing Services
Certificate # 2480
2333 Shuttle Drive, Atwater, CA 95301
(209) 384-2930
(209) 384-1507

HerSchy Environmental
P.O. Box 229
Bass Lake, CA 93604
Attn: Joshua Teves

Client Project ID: Alaska Gasoline - Oakland
Reference Number: 7112
Sample Description: Air
Sample Prep/Analysis Method: 5030/8015M, 8020
Lab Number: 7112-7V
Sample ID: VE-4 Start

Sampled: 06-28-04
Received: 06-30-04
Analyzed: 06-30-04
Reported: 07-12-04

TOTAL PETROLEUM HYDROCARBONS - GASOLINE RANGE WITH BTEX DISTINCTION

ANALYTE	PQL* (ug/L)	PQL* (ppmv)	AMOUNT (ug/L)	AMOUNT (ppmv)
MTBE	1.0	0.28	59	16
BENZENE	0.50	0.16	1.7	0.53
TOLUENE	0.50	0.13	0.65	0.17
ETHYL BENZENE	0.50	0.11	ND	ND
TOTAL XYLENES	0.50	0.11	2.2	0.52
GASOLINE RANGE HYDROCARBONS	50	9.7	62	12
Dilution Factor:	1			
Dilution Factor for MTBE only:	2			

Instrument ID: VAR-GC1

*PQL - Practical Quantitation Limit
Analytes reported as ND were not detected or below the Practical Quantitation Limit

APPROVED BY: Clari J. Cone
Clari J. Cone
Laboratory Manager

APPROVED BY:
James C. Phillips
Laboratory Director

CASTLE ANALYTICAL LABORATORY

Environmental Testing Services
Certificate # 2480
2333 Shuttle Drive, Atwater, CA 95301
(209) 384-2930
(209) 384-1507

HorSchy Environmental
P.O. Box 229
Bass Lake, CA 93604
Attn: Joshua Teves

Client Project ID: Alaska Gasoline - Oakland
Reference Number: 7112
Sample Description: Air
Sample Prep/Analysis Method: 5030/8015M, 8020
Lab Number: 7112-8V
Sample ID: VE-4 End

Sampled: 06-28-04
Received: 06-30-04
Analyzed: 06-30-04
Reported: 07-12-04

TOTAL PETROLEUM HYDROCARBONS - GASOLINE RANGE WITH BTEX DISTINCTION

ANALYTE	PQL* (ug/L)	PQL* (ppmv)	AMOUNT (ug/L)	AMOUNT (ppmv)
MTBE	0.50	0.14	9.8	2.7
BENZENE	0.50	0.16	ND	ND
TOLUENE	0.50	0.13	ND	ND
ETHYL BENZENE	0.50	0.11	ND	ND
TOTAL XYLENES	0.50	0.11	0.60	0.14
GASOLINE RANGE HYDROCARBONS	50	9.7	ND	ND
Dilution Factor:	1			

Instrument ID:	VAR-GC1

*PQL - Practical Quantitation Limit
Analytes reported as ND were not detected or below the Practical Quantitation Limit

APPROVED BY:
Clari J. Cone
Laboratory Manager

APPROVED BY:
James C. Phillips
Laboratory Director

CASTLE ANALYTICAL LABORATORY

Environmental Testing Services
Certificate # 2480
2333 Shuttle Drive, Atwater, CA 95301
(209) 384-2930
(209) 384-1507

HerSchy Environmental P.O. Box 229 Bass Lake, CA 93604 Attn: Joshua Teves	Client Project ID: Alaska Gasoline - Oakland Reference Number: 7112 Sample Description: Air Sample Prep/Analysis Method: 5030/8015M, 8020 Lab Number: 7112-9V Sample ID: VE-5 Start	Sampled: 06-29-04 Received: 06-30-04 Analyzed: 06-30-04 Reported: 07-12-04

TOTAL PETROLEUM HYDROCARBONS - GASOLINE RANGE WITH BTEX DISTINCTION

ANALYTE	PQL* (ug/L)	PQL* (ppmv)	AMOUNT (ug/L)	AMOUNT (ppmv)
MTBE	20000*	5500*	ND	ND
BENZENE	250	78	3300	1041
TOLUENE	250	66	4900	1300
ETHYL BENZENE	250	57	270	62
TOTAL XYLENES	250	57	860	200
GASOLINE RANGE HYDROCARBONS	25000	4800	140000	26000
Dilution Factor:	500			

Increased PQL due to interferent peak

Instrument ID:	VAR-GC1

*PQL - Practical Quantitation Limit
Analytes reported as ND were not detected or below the Practical Quantitation Limit

APPROVED BY: ____________
Clari J. Cone
Laboratory Manager

APPROVED BY: ____________
James C. Phillips
Laboratory Director

CASTLE ANALYTICAL LABORATORY

Environmental Testing Services
Certificate # 2480

2333 Shuttle Drive, Atwater, CA 95301

(209) 384-2930
(209) 384-1507

HorSchy Environmental P.O. Box 229 Bass Lake, CA 93604 Attn: Joshua Teves	Client Project ID: Alaska Gasoline - Oakland Reference Number: 7112 Sample Description: Air Sample Prep/Analysis Method: 5030/8015M, 8020 Lab Number: 7112-10V Sample ID: VE-5 End	Sampled: 06-29-04 Received: 06-30-04 Analyzed: 06-30-04 Reported: 07-12-04

TOTAL PETROLEUM HYDROCARBONS - GASOLINE RANGE WITH BTEX DISTINCTION

ANALYTE	PQL* (ug/L)	PQL* (ppmv)	AMOUNT (ug/L)	AMOUNT (ppmv)
MTBE	8500*	2400*	ND	ND
BENZENE	250	78	1800	550
TOLUENE	250	66	2700	720
ETHYL BENZENE	250	57	ND	ND
TOTAL XYLENES	250	57	680	160
GASOLINE RANGE HYDROCARBONS	25000	4800	74000	14000
Dilution Factor:	500			

Increased PQL due to interferent peak

Instrument ID:	VAR-GC1

*PQL - Practical Quantitation Limit
Analytes reported as ND were not detected or below the Practical Quantitation Limit

APPROVED BY: *Clari J. Cone*
Laboratory Manager

APPROVED BY: *James C. Phillips*
Laboratory Director

CASTLE ANALYTICAL LABORATORY

Environmental Testing Services
Certificate # 2480

2333 Shuttle Drive. Atwater, CA 95301

(209) 384-2930
(209) 384-1507

HerSchy Environmental P.O. Box 229 Bass Lake, CA 93604 Attn: Joshua Teves	Client Project ID: Alaska Gasoline - Oakland Reference Number: 7112 Sample Description: Air Sample Prep/Analysis Method: 5030/8015M, 8020 Lab Number: 7112-11V Sample ID: VE-6 Start	Sampled: 06-29-04 Received: 06-30-04 Analyzed: 06-30-04 Reported: 07-12-04

TOTAL PETROLEUM HYDROCARBONS - GASOLINE RANGE WITH BTEX DISTINCTION

ANALYTE	PQL* (ug/L)	PQL* (ppmv)	AMOUNT (ug/L)	AMOUNT (ppmv)
MTBE	0.50	0.14	5.6	1.6
BENZENE	0.50	0.16	3.8	1.2
TOLUENE	0.50	0.13	21	5.6
ETHYL BENZENE	0.50	0.11	3.9	0.89
TOTAL XYLENES	0.50	0.11	22	5.1
GASOLINE RANGE HYDROCARBONS	50	9.7	200	38
Dilution Factor:	1			

Instrument ID:	VAR-GC1

*PQL - Practical Quantitation Limit
Analytes reported as ND were not detected or below the Practical Quantitation Limit

APPROVED BY: Clari J. Cone
Laboratory Manager

APPROVED BY: James C. Phillips
Laboratory Director

CASTLE ANALYTICAL LABORATORY

Environmental Testing Services
Certificate # 2480

2333 Shuttle Drive, Atwater, CA 95301

(209) 384-2930
(209) 384-1507

HerSchy Environmental
P.O. Box 229
Bass Lake, CA 93604
Attn: Joshua Teves

Client Project ID: Alaska Gasoline - Oakland
Reference Number: 7112
Sample Description: Air
Sample Prep/Analysis Method: 5030/8015M, 8020
Lab Number: 7112-12V
Sample ID: VE-6 End

Sampled: 06-29-04
Received: 06-30-04
Analyzed: 06-30-04
Reported: 07-12-04

TOTAL PETROLEUM HYDROCARBONS - GASOLINE RANGE WITH BTEX DISTINCTION

ANALYTE	PQL* (ug/L)	PQL* (ppmv)	AMOUNT (ug/L)	AMOUNT (ppmv)
MTBE	0.50	0.14	ND	ND
BENZENE	0.50	0.16	0.91	0.28
TOLUENE	0.50	0.13	7.9	2.1
ETHYL BENZENE	0.50	0.11	1.6	0.36
TOTAL XYLENES	0.50	0.11	9.4	2.2
GASOLINE RANGE HYDROCARBONS	50	9.7	55	11
Dilution Factor:	1			

Instrument ID: VAR-GC1

*PQL - Practical Quantitation Limit
Analytes reported as ND were not detected or below the Practical Quantitation Limit

APPROVED BY: Clari J. Cone
Clari J. Cone
Laboratory Manager

APPROVED BY:
James E. Phillips
Laboratory Director

CASTLE ANALYTICAL LABORATORY

Environmental Testing Services
Certificate # 2480
2333 Shuttle Drive, Atwater, CA 95301
(209) 384-2930
(209) 384-1507

HerSchy Environmental P.O. Box 229 Bass Lake, CA 93604 Attn: Joshua Teves	Client Project ID: Alaska Gasoline - Oakland Reference Number: 7112 Sample Description: Air Sample Prep/Analysis Method: 5030/8015M, 8020 Lab Number: 7112-13V Sample ID: VE-7 Start	Sampled: 06-29-04 Received: 06-30-04 Analyzed: 06-30-04 Reported: 07-12-04

TOTAL PETROLEUM HYDROCARBONS - GASOLINE RANGE WITH BTEX DISTINCTION

ANALYTE	PQL* (ug/L)	PQL* (ppmv)	AMOUNT (ug/L)	AMOUNT (ppmv)
MTBE	0.50	0.14	ND	ND
BENZENE	0.50	0.16	2.6	0.82
TOLUENE	0.50	0.13	16	4.3
ETHYL BENZENE	0.50	0.11	2.7	0.62
TOTAL XYLENES	0.50	0.11	15	3.5
GASOLINE RANGE HYDROCARBONS	50	9.7	110	20
Dilution Factor:	1			

Instrument ID: VAR-GC1

*PQL - Practical Quantitation Limit
Analytes reported as ND were not detected or below the Practical Quantitation Limit

APPROVED BY: Clari J. Cone
Clari J. Cone
Laboratory Manager

APPROVED BY:
James C. Phillips
Laboratory Director

CASTLE ANALYTICAL LABORATORY

Environmental Testing Services
Certificate # 2480
2333 Shuttle Drive, Atwater, CA 95301
(209) 384-2930
(209) 384-1507

HerSchy Environmental
P.O. Box 229
Bass Lake, CA 93604
Attn: Joshua Teves

Client Project ID: Alaska Gasoline - Oakland
Reference Number: 7112
Sample Description: Air
Sample Prep/Analysis Method: 5030/8015M, 8020
Lab Number: 7112-14V
Sample ID: VE-7 End

Sampled: 06-29-04
Received: 06-30-04
Analyzed: 06-30-04
Reported: 07-12-04

TOTAL PETROLEUM HYDROCARBONS - GASOLINE RANGE WITH BTEX DISTINCTION

ANALYTE	PQL* (ug/L)	PQL* (ppmv)	AMOUNT (ug/L)	AMOUNT (ppmv)
MTBE	0.50	0.14	ND	ND
BENZENE	0.50	0.16	1.4	0.44
TOLUENE	0.50	0.13	12	3.0
ETHYL BENZENE	0.50	0.11	2.4	0.55
TOTAL XYLENES	0.50	0.11	14	3.3
GASOLINE RANGE HYDROCARBONS	50	9.7	84	16
Dilution Factor:	1			

Instrument ID:	VAR-GC1

*PQL - Practical Quantitation Limit
Analytes reported as ND were not detected or below the Practical Quantitation Limit

APPROVED BY: Clan J. Cone
Clari J. Cone
Laboratory Manager

APPROVED BY:
James C. Phillips
Laboratory Director

CASTLE ANALYTICAL LABORATORY

Environmental Testing Services
Certificate # 2480
2333 Shuttle Drive, Atwater, CA 95301
(209) 384-2930
(209) 384-1507

HerSchy Environmental P.O. Box 229 Bass Lake, CA 93604 Attn: Joshua Teves	Client Project ID: Alaska Gasoline - Oakland Reference Number: 7112 Sample Description: Air Sample Prep/Analysis Method: 5030/8015M, 8020 Lab Number: 7112-15V Sample ID: VE-8 Start	Sampled: 06-29-04 Received: 06-30-04 Analyzed: 06-30-04 Reported: 07-12-04

TOTAL PETROLEUM HYDROCARBONS - GASOLINE RANGE WITH BTEX DISTINCTION

ANALYTE	PQL* (ug/L)	PQL* (ppmv)	AMOUNT (ug/L)	AMOUNT (ppmv)
MTBE	0.50	0.14	ND	ND
BENZENE	0.50	0.16	2.5	0.77
TOLUENE	0.50	0.13	14	3.8
ETHYL BENZENE	0.50	0.11	2.5	0.57
TOTAL XYLENES	0.50	0.11	14	3.3
GASOLINE RANGE HYDROCARBONS	50	9.7	110	21
Dilution Factor:	1			

Instrument ID:	VAR-GC1

*PQL - Practical Quantitation Limit
Analytes reported as ND were not detected or below the Practical Quantitation Limit

APPROVED BY: Clari J. Cone
Clari J. Cone
Laboratory Manager

APPROVED BY: James C. Phillips
James C. Phillips
Laboratory Director

CASTLE ANALYTICAL LABORATORY

Environmental Testing Services
Certificate # 2480
2333 Shuttle Drive, Atwater, CA 95301
(209) 384-2930
(209) 384-1507

HerSchy Environmental
P.O. Box 229
Bass Lake, CA 93604
Attn: Joshua Teves

Client Project ID: Alaska Gasoline - Oakland
Reference Number: 7112
Sample Description: Air
Sample Prep/Analysis Method: 5030/8015M, 8020
Lab Number: 7112-16V
Sample ID: VE-8 End

Sampled: 06-29-04
Received: 06-30-04
Analyzed: 06-30-04
Reported: 07-12-04

TOTAL PETROLEUM HYDROCARBONS - GASOLINE RANGE WITH BTEX DISTINCTION

ANALYTE	PQL* (ug/L)	PQL* (ppmv)	AMOUNT (ug/L)	AMOUNT (ppmv)
MTBE	5.0*	1.4*	ND	ND
BENZENE	1.0	0.31	5.5	1.7
TOLUENE	1.0	0.26	37	9.7
ETHYL BENZENE	1.0	0.23	7.1	1.6
TOTAL XYLENES	1.0	0.23	41	9.4
GASOLINE RANGE HYDROCARBONS	100	19	460	89
Dilution Factor:	2			

Increased PQL due to interferent peak

Instrument ID:	VAR-GC1

*PQL - Practical Quantitation Limit
Analytes reported as ND were not detected or below the Practical Quantitation Limit

APPROVED BY: Clan J. Cone
Clan J. Cone
Laboratory Manager

APPROVED BY:
James C. Phillips
Laboratory Director

CASTLE ANALYTICAL LABORATORY

Environmental Testing Services
Certificate # 2480
2333 Shuttle Drive, Atwater, CA 95301
(209) 384-2930
(209) 384-1507

HerSchy Environmental
P.O. Box 229
Bass Lake, CA 93604
Attn: Joshua Tevas

Client Project ID: Alaska Gasoline - Oakland
Reference Number: 7112
Sample Description: Air
Sample Prep/Analysis Method: 5030/8015M, 8020
Lab Number: 7112-17V
Sample ID: VE-9 Start

Sampled: 06-29-04
Received: 06-30-04
Analyzed: 06-30-04
Reported: 07-12-04

TOTAL PETROLEUM HYDROCARBONS - GASOLINE RANGE WITH BTEX DISTINCTION

ANALYTE	PQL* (ug/L)	PQL* (ppmv)	AMOUNT (ug/L)	AMOUNT (ppmv)
MTBE	400*	110*	ND	ND
BENZENE	2.5	0.78	34	11
TOLUENE	2.5	0.66	37	9.8
ETHYL BENZENE	2.5	0.57	6.1	1.4
TOTAL XYLENES	2.5	0.57	30	6.9
GASOLINE RANGE HYDROCARBONS	250	48	2400	460
Dilution Factor:	5			

Increase PQL due to interferent peak

Instrument ID: VAR-GC1

*PQL - Practical Quantitation Limit
Analytes reported as ND were not detected or below the Practical Quantitation Limit

APPROVED BY:
Clari J. Cone
Laboratory Manager

APPROVED BY:
James C. Phillips
Laboratory Director

CASTLE ANALYTICAL LABORATORY

Environmental Testing Services
Certificate # 2480
2333 Shuttle Drive, Atwater, CA 95301
(209) 384-2930
(209) 384-1507

HerSchy Environmental
P.O. Box 229
Bass Lake, CA 93604
Attn: Joshua Teves

Client Project ID: Alaska Gasoline - Oakland
Reference Number: 7112
Sample Description: Air
Sample Prep/Analysis Method: 5030/8015M, 8020
Lab Number: 7112-18V
Sample ID: VE-9 End

Sampled: 06-29-04
Received: 06-30-04
Analyzed: 06-30-04
Reported: 07-12-04

TOTAL PETROLEUM HYDROCARBONS - GASOLINE RANGE WITH BTEX DISTINCTION

ANALYTE	PQL* (ug/L)	PQL* (ppmv)	AMOUNT (ug/L)	AMOUNT (ppmv)
MTBE	45*	12*	ND	ND
BENZENE	0.50	0.16	6.2	1.9
TOLUENE	0.50	0.13	17	4.6
ETHYL BENZENE	0.50	0.11	3.8	0.86
TOTAL XYLENES	0.50	0.11	21	4.6
GASOLINE RANGE HYDROCARBONS	50	9.7	420	81
Dilution Factor:	1			

*Increased PQL limit due to interferent peak

Instrument ID:	VAR-GC1

*PQL - Practical Quantitation Limit
Analytes reported as ND were not detected or below the Practical Quantitation Limit

APPROVED BY: Clark J. Cone
Laboratory Manager

APPROVED BY: James C. Phillips
Laboratory Director

CASTLE ANALYTICAL LABORATORY

Environmental Testing Services
Certificate # 2480
2333 Shuttle Drive, Atwater, CA 95301
(209) 384-2930
(209) 384-1507

HerSchy Environmental
P.O. Box 229
Bass Lake, CA 93604
Attn: Joshua Teves

Client Project ID: Alaska Gasoline - Oakland
Reference Number: 7112
Sample Description: Air
Sample Prep/Analysis Method: 5030/8015M, 8020
Lab Number: 7112-20V
Sample ID: VE-10 End

Sampled: 06-29-04
Received: 06-30-04
Analyzed: 06-30-04
Reported: 07-12-04

TOTAL PETROLEUM HYDROCARBONS - GASOLINE RANGE WITH BTEX DISTINCTION

ANALYTE	PQL* (ug/L)	PQL* (ppmv)	AMOUNT (ug/L)	AMOUNT (ppmv)
MTBE	15*	4.2*	ND	ND
BENZENE	0.50	0.16	5.0	1.6
TOLUENE	0.50	0.13	21	5.4
ETHYL BENZENE	0.50	0.11	4.9	1.1
TOTAL XYLENES	0.50	0.11	27	6.2
GASOLINE RANGE HYDROCARBONS	50	9.7	300	58
Dilution Factor:	1			

Increased PQL limit due to interferent peak

Instrument ID:	VAR-GC1

*PQL - Practical Quantitation Limit
Analytes reported as ND were not detected or below the Practical Quantitation Limit

APPROVED BY: ____________
Clari J. Cone
Laboratory Manager

APPROVED BY: ____________
James C. Phillips
Laboratory Director

CASTLE ANALYTICAL LABORATORY

Environmental Testing Services
Certificate # 2480
2333 Shuttle Drive, Atwater, CA 95301
(209) 384-2930
(209) 384-1507

HerSchy Environmental
P.O. Box 229
Bass Lake, CA 93604
Attn: Joshua Teves

Client Project ID: Alaska Gasoline - Oakland
Reference Number: 7112
Sample Description: Air
Sample Prep/Analysis Method: 5030/8015M, 8020
Lab Number: 7112-21V
Sample ID: VE-11 Start

Sampled: 06-30-04
Received: 06-30-04
Analyzed: 06-30-04
Reported: 07-12-04

TOTAL PETROLEUM HYDROCARBONS - GASOLINE RANGE WITH BTEX DISTINCTION

ANALYTE	PQL* (ug/L)	PQL* (ppmv)	AMOUNT (ug/L)	AMOUNT (ppmv)
MTBE	20*	5.5*	ND	ND
BENZENE	2.5	0.78	6.0	1.9
TOLUENE	2.5	0.66	26	7.0
ETHYL BENZENE	2.5	0.57	5.4	1.2
TOTAL XYLENES	2.5	0.57	29	6.8
GASOLINE RANGE HYDROCARBONS	250	48	2600	510
Dilution Factor:	5			

Increased PQL limit due to interferent peak

Instrument ID: VAR-GC1

*PQL - Practical Quantitation Limit
Analytes reported as ND were not detected or below the Practical Quantitation Limit

APPROVED BY: *Cheri J. Cone*, *Laboratory Manager*

APPROVED BY: *James C. Phillips*, *Laboratory Director*

CASTLE ANALYTICAL LABORATORY

Environmental Testing Services
Certificate # 2480
2333 Shuttle Drive, Atwater, CA 95301
(209) 384-2930
(209) 384-1507

HerSchy Environmental
P.O. Box 229
Bass Lake, CA 93604
Attn: Joshua Teves

Client Project ID: Alaska Gasoline - Oakland
Reference Number: 7112
Sample Description: Air
Sample Prep/Analysis Method: 5030/8015M, 8020
Lab Number: 7112-22V
Sample ID: VE-11 End

Sampled: 06-30-04
Received: 06-30-04
Analyzed: 06-30-04
Reported: 07-12-04

TOTAL PETROLEUM HYDROCARBONS - GASOLINE RANGE WITH BTEX DISTINCTION

ANALYTE	PQL* (ug/L)	PQL* (ppmv)	AMOUNT (ug/L)	AMOUNT (ppmv)
MTBE	20*	5.5*	ND	ND
BENZENE	0.50	0.16	2.8	0.89
TOLUENE	0.50	0.13	6.2	1.6
ETHYL BENZENE	0.50	0.11	1.3	0.29
TOTAL XYLENES	0.50	0.11	7.2	1.7
GASOLINE RANGE HYDROCARBONS	50	9.7	400	78
Dilution Factor:	1			

Increased PQL limit due to interferent peak

Instrument ID:	VAR-GC1

*PQL - Practical Quantitation Limit
Analytes reported as ND were not detected or below the Practical Quantitation Limit

APPROVED BY: Clari J. Cone
Clari J. Cone
Laboratory Manager

APPROVED BY:
James C. Phillips
Laboratory Director

CASTLE ANALYTICAL LABORATORY

Environmental Testing Services
Certificate # 2480
2333 Shuttle Drive, Atwater, CA 95301
(209) 384-2930
(209) 384-1507

HerSchy Environmental P.O. Box 229 Bass Lake, CA 93604 Attn: Joshua Toves	Client Project ID: Alaska Gasoline - Oakland Reference Number: 7112 Sample Description: Air Sample Prep/Analysis Method: 5030/8015M, 8020 Lab Number: 7112-23V Sample ID: VE-12 Start	Sampled: 06-30-04 Received: 06-30-04 Analyzed: 06-30-04 Reported: 07-12-04

TOTAL PETROLEUM HYDROCARBONS - GASOLINE RANGE WITH BTEX DISTINCTION

ANALYTE	PQL* (ug/L)	PQL* (ppmv)	AMOUNT (ug/L)	AMOUNT (ppmv)
MTBE	1.0	0.28	3.3	0.90
BENZENE	1.0	0.31	1.7	0.54
TOLUENE	1.0	0.26	13	3.4
ETHYL BENZENE	1.0	0.23	2.4	0.55
TOTAL XYLENES	1.0	0.23	16	3.7
GASOLINE RANGE HYDROCARBONS	100	19	1300	260
Dilution Factor:	2			

Instrument ID:	VAR-GC1

*PQL - Practical Quantitation Limit
Analytes reported as ND were not detected or below the Practical Quantitation Limit

APPROVED BY: Clari J. Cone
Clari J. Cone
Laboratory Manager

APPROVED BY:
James C. Phillips
Laboratory Director

CASTLE ANALYTICAL LABORATORY

Environmental Testing Services
Certificate # 2480

2333 Shuttle Drive, Atwater, CA 95301

(209) 384-2930
(209) 384-1507

HerSchy Environmental
P.O. Box 229
Bass Lake, CA 93604
Attn: Joshua Tovas

Client Project ID: Alaska Gasoline - Oakland
Reference Number: 7112
Sample Description: Air
Sample Prep/Analysis Method: 5030/8015M, 8020
Lab Number: 7112-24V
Sample ID: VE-12 End

Sampled: 06-30-04
Received: 06-30-04
Analyzed: 06-30-04
Reported: 07-12-04

TOTAL PETROLEUM HYDROCARBONS - GASOLINE RANGE WITH BTEX DISTINCTION

ANALYTE	PQL* (ug/L)	PQL* (ppmv)	AMOUNT (ug/L)	AMOUNT (ppmv)
MTBE	0.50	0.14	ND	ND
BENZENE	0.50	0.16	0.80	0.25
TOLUENE	0.50	0.13	7.6	2.0
ETHYL BENZENE	0.50	0.11	1.8	0.40
TOTAL XYLENES	0.50	0.11	11	2.5
GASOLINE RANGE HYDROCARBONS	50	9.7	110	20
Dilution Factor:	1			

Instrument ID: VAR-GC1

*PQL - Practical Quantitation Limit
Analytes reported as ND were not detected or below the Practical Quantitation Limit

APPROVED BY: Clara Cone
Clari J. Cone
Laboratory Manager

APPROVED BY:
James C. Phillips
Laboratory Director

CASTLE ANALYTICAL LABORATORY

Environmental Testing Services
Certificate # 2480

2333 Shuttle Drive, Atwater, CA 95301

(209) 384-2930
(209) 384-1507

HerSchy Environmental P.O. Box 229 Bass Lake, CA 93604 Attn: Joshua Teves	Client Project ID: Alaska Gasoline - Oakland Reference Number: 7112 Sample Description: Air Sample Prep/Analysis Method: 5030/8015M, 8020 Lab Number: 7112-25V Sample ID: VE-13 Start	Sampled: 06-30-04 Received: 06-30-04 Analyzed: 06-30-04 Reported: 07-12-04

TOTAL PETROLEUM HYDROCARBONS - GASOLINE RANGE WITH BTEX DISTINCTION

ANALYTE	PQL* (ug/L)	PQL* (ppmv)	AMOUNT (ug/L)	AMOUNT (ppmv)
MTBE	0.50	0.14	46	13
BENZENE	0.50	0.16	9.4	2.9
TOLUENE	0.50	0.13	9.6	2.5
ETHYL BENZENE	0.50	0.11	1.7	0.39
TOTAL XYLENES	0.50	0.11	14	3.3
GASOLINE RANGE HYDROCARBONS	50	9.7	630	120
Dilution Factor:	1			

Instrument ID:	VAR-GC1

*PQL - Practical Quantitation Limit
Analytes reported as ND were not detected or below the Practical Quantitation Limit

APPROVED BY: Clari J. Cone
Laboratory Manager

APPROVED BY: James C. Phillips
Laboratory Director

CASTLE ANALYTICAL LABORATORY

Environmental Testing Services
Certificate # 2480

2333 Shuttle Drive, Atwater, CA 95301

(209) 384-2930
(209) 384-1507

HerSchy Environmental P.O. Box 229 Bass Lake, CA 93604 Attn: Joshua Teves	Client Project ID: Alaska Gasoline - Oakland Reference Number: 7112 Sample Description: Air Sample Prep/Analysis Method: 5030/8015M, 8020 Lab Number: 7112-26V Sample ID: VE-13 End	Sampled: 06-30-04 Received: 06-30-04 Analyzed: 06-30-04 Reported: 07-12-04

TOTAL PETROLEUM HYDROCARBONS - GASOLINE RANGE WITH BTEX DISTINCTION

ANALYTE	PQL* (ug/L)	PQL* (ppmv)	AMOUNT (ug/L)	AMOUNT (ppmv)
MTBE	0.50	0.14	3.3	0.93
BENZENE	0.50	0.16	2.7	0.86
TOLUENE	0.50	0.13	17	4.5
ETHYL BENZENE	0.50	0.11	3.7	0.84
TOTAL XYLENES	0.50	0.11	21	4.8
GASOLINE RANGE HYDROCARBONS	50	9.7	190	36
Dilution Factor:	1			

Instrument ID:	VAR-GC1

*PQL - Practical Quantitation Limit
Analytes reported as ND were not detected or below the Practical Quantitation Limit

APPROVED BY: Clari J. Cone
Clari J. Cone
Laboratory Manager

APPROVED BY: James C. Phillips
James C. Phillips
Laboratory Director

Facsimile Transmission Fac[illegible]heet

City of Oakland
FIRE DEPARTMENT
OFFICE OF EMERGENCY SERVICES

TO: Don Hwang FAX: 337-9335

FROM: H. Gómez PHONE: 238-[illegible]

NOTES: Work Plan for Alaska Gas.

NO. PAGES INCLUDING THIS: 5 DATE: 4/21/99 TIME: 10:22 a.m.

CITY OF OAKLAND
FIRE DEPARTMENT
OFFICE OF EMERGENCY SERVICES DIVISION
505 14th Street, 5th Floor
Oakland, CA 94612

PHONE (510) 238-3938
FAX (510) 238-7761

April 14, 1999
Project A51-01.01

Mr. Heman Gomez
Oakland Fire Services Agency
Hazardous Materials Division
Oakland, CA 94801

Re: Work Plan for Underground Storage Tank (UST) Assessment, Alaska Gasoline,
Richmond, California

Dear Mr. Gomez:

HerSchy Environmental is pleased to present the following proposal and cost estimate to perform a hydrogeologic assessment at the above-referenced property. The following scope of work has been compiled from information obtained during our conversations regarding the site, a site visit, and familiarity with City of Oakland, Alameda County, and Regional Water Quality Control Board (RWQCB) guidelines. The site is located at 6211 San Pablo Avenue, which is on the northwest corner of San Pablo Avenue and 62nd Street in Oakland, Alameda County, California. The purpose of this work is to evaluate soil and groundwater conditions in the vicinity of three 10,000-gallon underground storage tanks (USTs), which are used to store gasoline. The work is being performed in preparation of upgrading the USTs in place.

SCOPE OF WORK:

1.0 Background:

Three 10,000-gallon USTs used to store gasoline are present at the site. Six soil borings will be drilled at an approximate angle of 30 degrees to collect soil samples from beneath each end of the USTs. Due to site restrictions or shallow groundwater that is above the bottom of the USTs, some or all of the borings will be drilled vertically adjacent to the USTs. Soil samples will be collected from the capillary fringe above groundwater if shallow groundwater conditions are present.

2.0 Drilling Methods and Soil Sampling Procedures:

Drilling will be performed using hollow stem auger drilling equipment with minimum six-inch diameter augers. Augers will be steam cleaned prior to arriving on site.

A soil sample will be collected using a California modified split spoon sampler equipped with brass or stainless steel liners from a depth of 20 feet, or from the capillary fringe above groundwater if shallow. The split spoon sampler will be cleaned between sampling events.

The soil sample will be field screened using a portable organic vapor analyzer (OVA). A portion of the sample retrieved from each sampling interval will be placed in a plastic zip-lock bag, sealed in the bag for a minimum of ten minutes at 70 degrees Fahrenheit or more, and the OVA probe inserted into the bag to evaluate concentrations of volatile organic compounds (VOCs) in soil. Soil and groundwater samples will be analyzed for gasoline-range total petroleum hydrocarbons (TPHg), benzene, toluene, ethylbenzene, and xylenes (BTEX), and methyl tertiary butyl ether (MTBE). Analysis for TPHg and BTEX/MTBE will be performed using EPA methods 8015M and 8020.

Samples will be maintained in a cooler chest with frozen gel packs ("blue ice"), and maintained at a minimum of four degrees Celsius until delivered to the laboratory. Soil samples and drill cuttings will be described in accordance with the Unified Soil Classification System under the direction of a California Registered Geologist.

Drill cuttings will be placed on and covered with plastic sheeting on site as directed by the client. Borings will be abandoned by filling with a sand-cement or bentonite grout.

3.0 Laboratory Analysis:

Laboratory analysis of soil and groundwater samples will be performed using the methods described above. A total of one soil and three groundwater samples will be analyzed for TPHg, BTEX, and MTBE using approved methods (EPA method 8015/8020).

4.0 Preparation of an Assessment Report

A report will be prepared describing methods used, field activities, and results of the investigation. Recommendations regarding future assessment and remediation of the site will be included as part of the final report. The report will be certified by a California Registered Geologist.

SCHEDULE

Drilling and sampling will require approximately one day, and will be performed on April 16, 1999. Laboratory analytical results will be available approximately two weeks after delivery of samples to the laboratory. The final report will be completed within two weeks of receipt of laboratory analytical results. This schedule can be expedited on request.

If you have any questions or need additional information, please contact me at the letterhead address or at (559) 641-7320.

With best regards,

Herman Schymiczek
Registered Geologist #4165

pc: Mr. Pritpaul Sappal, Alaska Gasoline Company

HerSchy Environmental, Inc.

December 19, 2003
Project A51-01.02

Alameda County
DEC 2 3 2003
Environmental Health

Mr. Barney Chan
Alameda County
Health Care Services Agency
Environmental Health Services
1131 Harbor Bay Parkway, Ste. 250
Alameda, CA 94502-6577

Re: Work Plan for Interim Remedial Action Related to Underground Storage Tank (UST) Removal Activities, Alaska Gasoline Company, Oakland, California, Case #RO0000127

Dear Mr. Chan:

HerSchy Environmental is pleased to present the work plan for the characterization and disposal of excavated soil and encountered groundwater related to the removal and replacement of existing on-site underground storage tanks (USTs). The site is located at 6211 San Pablo Avenue, which is on the northwest corner of San Pablo Avenue and 62nd Street in Oakland, Alameda County, California (Figure 1). The property is the site of an ongoing investigation of petroleum hydrocarbon-impacted soil and groundwater. A previously approved work plan for the installation of a soil vapor extraction system (SVES) will be implemented in conjunction with the UST removal and replacement activities. Excavation activities related to UST removal, and the anticipated presence of shallow groundwater represents an opportunity for removal of impacted soil and groundwater as part of a cost effective interim remedial action.

Scope of Work

Currently, three 10,000-gallon USTs exist near the northeast corner of the site (Figure 2). The existing USTs will be removed and replaced with two new USTs. The anticipated dimensions of the excavation are approximately 36 feet wide by 44 feet long by 13.5 feet deep. This equates to roughly 640 cubic yards of excavated soil, taking into account the displacement of the existing USTs. Groundwater is currently present at an average of approximately eight feet beneath the site. Therefore, the excavation will extend 5.5 feet below the top of the groundwater table. Since groundwater will be encountered, it must be removed before the installation of the new USTs. For estimation purposes, if groundwater is allowed to completely fill the bottom five and a half feet of the excavated area, then approximately 65,000 gallons of groundwater may be removed ??? - UST

8712 ft^3 × 7.48 = 65165

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before the new USTs are installed. However, other factors such as the recharge rate of groundwater in soil, will contribute to the actual amount of groundwater needing removal. Of course, the ultimate amount of groundwater needing removal may be greater than that estimated above.

Characterization and Disposal Methods

Soil Sampling and Disposal

Before the disposal of excavated soil is possible, it must first be properly characterized. Therefore, one soil sample will be collected for every 100 cubic yards of excavated soil. Soil samples will be collected in brass liners and sealed with end caps and Teflon tape. Soil samples will be maintained in a cooler chest with frozen gel packs ("blue ice"), and maintained at or below four degrees Celsius until delivered to a local laboratory under chain-of-custody documentation.

All soil samples will be analyzed for gasoline constituents on a rush basis. Soil samples will be analyzed for gasoline-range total petroleum hydrocarbons (TPHg), for benzene, toluene, ethylbenzene, and xylenes (BTEX), and for methyl tertiary butyl ether (MTBE). Laboratory analysis will be performed using EPA method 8015M for TPHg, and EPA method 8020 for BTEX and MTBE. The two most contaminated samples will also be analyzed for total lead (Pb) content. 8260 ?

The excavated soil will be removed from the site by a licensed contractor and disposed of properly based on the laboratory analytical results and in accordance with California regulations.

Groundwater Sampling and Disposal

Upon removal of the existing USTs, any groundwater that has filled the bottom of the excavation must be removed prior to the installation of the new USTs. The groundwater will be pumped out of the excavation and into 20,000-gallon storage tanks until the open hole is pumped dry. Once groundwater has ceased to enter the excavation, the USTs will be installed and the excavation backfilled.

Before the extracted water can be disposed of, it must first be properly characterized. Therefore, upon completion of groundwater extraction, one sample will be collected from each of the 20,000-gallon groundwater storage tanks. The water samples will be collected by using a new bailer for each tank. Samples will be contained in paired 40-milliliter vials. Each of the sample containers will be filled completely to form a positive meniscus, capped, and checked to ensure no air bubbles are present.

Groundwater sampling containers will be sealed in a zip lock bag and placed in a cooler chest with frozen gel packs ("blue ice") immediately after sampling. Samples will be maintained at or below four degrees Celsius until delivered to the laboratory.

Groundwater samples will be handled under chain-of-custody documentation until delivered to a California certified laboratory where they will be analyzed on a rush basis.

Groundwater samples will be analyzed for TPHg, BTEX, and for MTBE. Laboratory analysis will be performed using EPA method 8015M for TPHg, and EPA method 8020 for BTEX and MTBE.

Based on the laboratory analytical results, a decision will be made as to the best method of disposal for the extracted groundwater. Based on discussions with the East Bay Municipal Utility District (East Bay MUD), it is anticipated that groundwater will have to be treated via carbon adsorption prior to discharge to the municipal sewer system and water treatment plant. This method of disposal will only be implemented if all regulatory requirements are met.

If you have any questions or need additional information, please contact me at the letterhead address or at (559) 641-7320.

REGISTERED GEOLOGIST
HERMAN B. SCHYMICZEK
4165
STATE OF CALIFORNIA

With best regards,
HerSchy Environmental, Inc.

Joshua A. Teves
Geologist

Herman Schymiczek
Registered Geologist #4165

pc: Mr. Pritpaul Sappal
Mr. Syed Nawab, Alaska Gasoline Company
Mr. Hernan Gomez, Oakland Fire Services Agency
Mrs. Susan M. Torrance, Deputy District Attorney

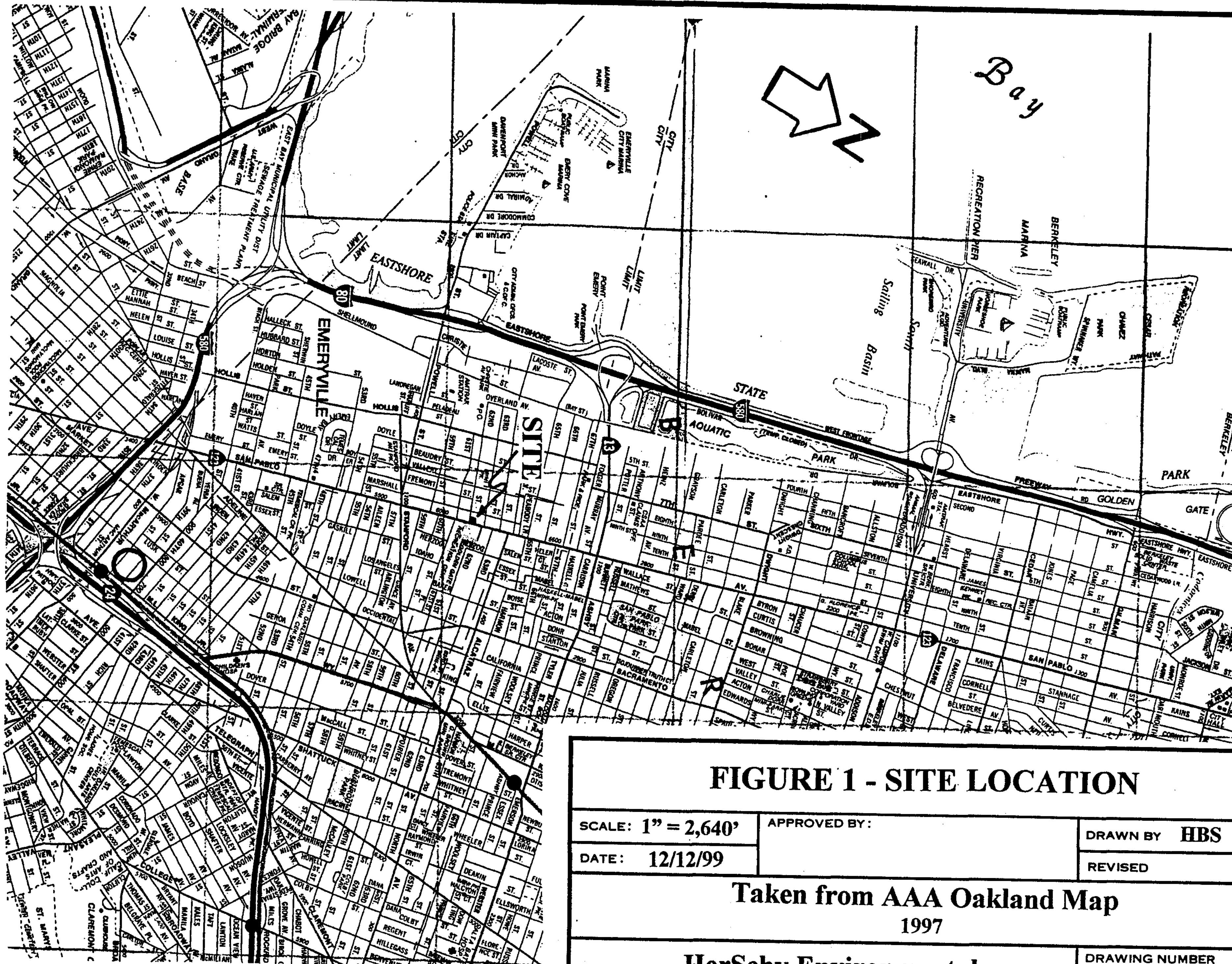


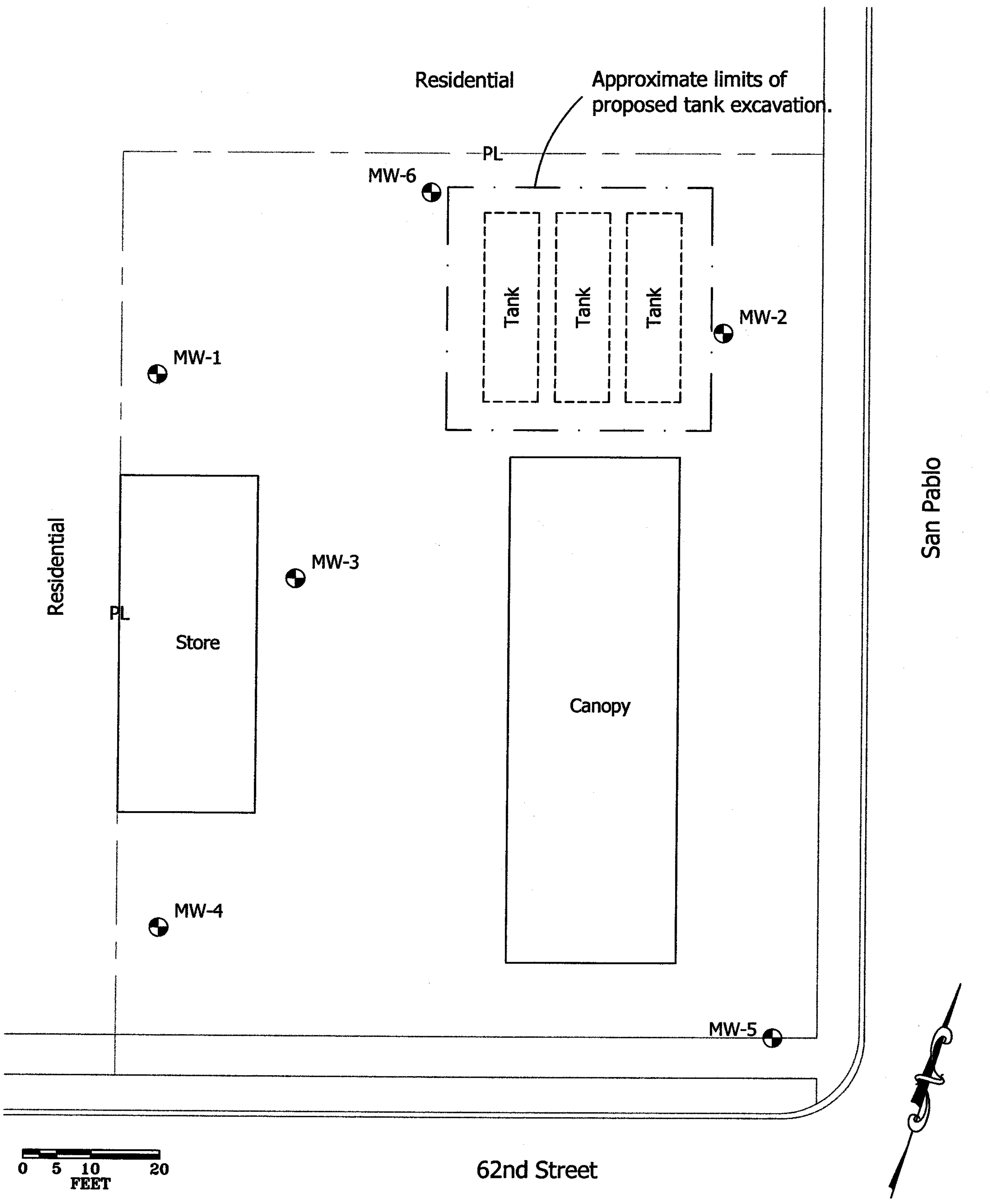
FIGURE 1 - SITE LOCATION

SCALE: 1" = 2,640'	APPROVED BY:	DRAWN BY HBS
DATE: 12/12/99		REVISED

Taken from AAA Oakland Map
1997

HerSchy Environmental

DRAWING NUMBER



HerSchy Environmental, Inc.
Environmental Consulting and Remediation
P. O. Box 229
Bass Lake, California 93604-0229
Tel. (559) 641-7320, Fax (559) 641-7340

APPROXIMATE LIMITS OF TANK REMOVAL

ALASKA GASOLINE COMPANY

6211 San Pablo Avenue, Oakland, California

DATE: December, 2003	FIGURE 2
FILE NO.: A51-01.02	
DRAWN BY: JSO	