HerSchy Environmental

June 17, 2002
Project A51-01.02

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

JUN 19 2002

Re: Results of Well Installation, Quarterly Groundwater Monitoring, and Interim Remedial Action Plan, Alaska Gasoline Company, Oakland, California

Dear Mr. Hwang:

HerSchy Environmental is pleased to present the results of the most recent phase of monitoring well installation, two rounds of quarterly groundwater monitoring, and a proposed interim remedial action plan (RAP) and additional off site investigation. 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). This work was performed in accordance with the May 2, 2001 *"Results of Groundwater Monitoring and Work Plan for Additional Investigation, Alaska Gasoline Company, Oakland, California"* and the June 30, 2001 work plan addendum, both prepared by HerSchy Environmental. This work was subsequently approved in the July 10, 2001 correspondence from your office regarding the site.

PREVIOUS INVESTIGATIONS

Previous work included the drilling, sampling, and laboratory analysis of soil and groundwater from three soil borings (B-1 through B-3) using hollow stem auger drilling equipment (Figure 2). Details of this investigation are contained in the April 22, 1999 *"Results of Underground Storage Tank (UST) Site Assessment, Alaska Gasoline Company, Oakland, California"* prepared by HerSchy Environmental. Significant concentrations of gasoline constituents were encountered in soil during this initial investigation. Groundwater was encountered during this investigation at an approximate depth of ten feet, and a groundwater sample was collected from boring B-1. Boring locations are presented in Figure 2 and summarized in Table 1 on the following page:

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

Table 1
Laboratory Analytical Results, April 16, 1999, Alaska Gasoline, Oakland

Sample	TPH	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE
B-1 @ 10'	440	2.3	4.8	7.4	31	3.7
B-1 @ 15'	74	1.4	1.6	1.6	6.3	4.8
B-2 @ 10'	290	3.6	9.0	5.8	24	2.0
B-3 @ 10'	460	3.8	18	7.6	37	86
B-1, GW	99,000	10,000	4,300	3,100	11,000	48,000

All results expressed in parts per million (ppm)
GW results expressed in parts per billion (ppb)
TPH = gasoline-range total petroleum hydrocarbons
MTBE = methyl tertiary butyl ether

Based on the results of this initial investigation, five additional borings (B-4 through B-5) were drilled and sampled using direct push drilling equipment (Figure 2). Results of this work are contained in the July 19, 1999 *"Results of Phase II Soil Investigation, Alaska Gasoline Company, Oakland, California"* prepared by HerSchy Environmental. Laboratory analytical results of this work are summarized in Table 2 below:

Table 2
Laboratory Analytical Results, Alaska Gasoline, Oakland, June 29, 1999

Sample	TPH	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE
B-4 @ 5'	100	0.68	1.4	1.5	7.8	2.2
B-4 @ 10'	14	0.71	ND	0.23	0.11	9.3
B-5 @ 5'	5.7	0.068	0.0061	0.033	0.065	3.5
B-5 @ 10'	34	0.37	0.079	0.17	0.57	2.0
B-6 @ 5'	92	2.3	5.4	1.5	7.0	23
B-6 @ 10'	30	1.3	ND	ND	0.060	46
B-7 @ 5'	3.2	0.12	ND	0.073	0.14	0.023
B-7 @ 10'	280	0.57	0.56	2.8	14	ND
B-8 @ 5'	ND	ND	ND	ND	ND	ND
B-8 @ 10'	270	0.93	2.9	4.6	20	2.7

All results presented in ppm
ND = below detectable concentrations

Based on the results of the soil investigations described above and the relatively shallow depth to groundwater, a preliminary hydrogeologic investigation was performed. This investigation consisted of the drilling and installation of three groundwater monitoring wells (MW-1 through MW-3). Details of this work are contained in the December 13, 1999 *"Results of Drilling, Sampling, and Monitoring Well Installation, Alaska Gasoline Company, Oakland, California"* prepared by HerSchy Environmental.

Soil samples were collected from each of the monitoring wells and submitted for laboratory analysis. Monitoring well locations are presented in Figure 3. Laboratory analytical results for soil are summarized in Table 3 below:

Table 3
Laboratory Analytical Results for Soil, October, 1999, Alaska Gasoline, Oakland

Sample	TPH	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE
MW-1 @ 5'	1.1	0.14	ND	0.017	0.016	0.065
MW-1 @ 10'	570	4.6	18	10	47	10
MW-2 @ 5'	16	0.25	ND	0.26	0.30	1.2
MW-2 @ 10'	22	0.79	0.38	0.52	2.1	1.4
MW-3 @ 5'	2,200	11	63	35	170	48
MW-3 @ 10'	14	0.12	0.80	ND	0.087	28

All results presented in parts per million (ppm)

Drill cuttings and soil samples from each of the monitoring well locations were described in accordance with the Unified Soil Classification System by a California Registered Geologist. Soil consists entirely of silty clay (CL) from surface grade to an approximate depth of 20 feet in each boring. Groundwater conditions from this investigation and the most recent monitoring events are presented in subsequent sections of this report.

METHODS OF INVESTIGATION

Drilling and Soil Sampling:

Drilling was performed using a truck-mounted drill rig equipped with eight-inch hollow stem augers. Augers were steam cleaned prior to arriving on site. Three monitoring wells (MW-4 through MW-6) and six soil borings (B-9 through B-12) were drilled and sampled at the site (Figure 3). Monitoring wells were installed to a depth of 20 to 25 feet, whereas borings were drilled and sampled to a depth of 10 feet except for boring B-13 where the steel auger plug was lost.

Soil samples were collected using a California modified split spoon sampler equipped with brass liners. The samples were collected at five and ten feet from each of the borings. Samples were collected by driving the sampler ahead of the drill bit. The sampler and liners were cleaned between sampling events.

Soil samples were field screened using a portable organic vapor analyzer (OVA) for the presence of volatile organic compounds (VOCs). All of the soil samples were submitted to the laboratory for analysis.

Samples were placed in a cooler chest with frozen gel packs ("blue ice") and maintained at a temperature of four degrees Celsius or less until delivered to the laboratory. All samples were maintained, transported, and delivered to the laboratory under chain of custody documentation. Soil samples and drill cuttings were described in

accordance with the Unified Soil Classification System by a California Registered Geologist. Drill cuttings were contained in DOT-approved 55-gallon drums and stored on site as directed by the property owner. Soil sampling was discontinued below a depth of ten feet due to the presence of shallow groundwater. Boring logs and well construction details are presented in Appendix A.

Monitoring Well Installation, Development, and Sampling Procedures:

Well construction and annular materials were installed through the hollow stem augers. Groundwater monitoring wells were constructed with two-inch schedule 40 PVC well casing with screw joints. The screened intervals were constructed with 15 to 20 feet of 0.020-inch factory slotted screen such that 10 to 15 feet of the screened interval is below first encountered groundwater in each of the monitoring wells. Blank casing was installed from the top of the screened interval to surface grade. The monitoring wells were completed flush with surface grade in a traffic rated well cover with a locking well cap. Soil borings were filled with a sand-cement slurry from the bottom of the boring to surface grade.

Annular materials consist of #3 sand from the bottom of the borings to approximately two feet above the screened interval, followed by a minimum one-foot bentonite seal, followed by a sand-cement grout to the surface. Monitoring well elevations were surveyed to the nearest 0.01 feet after installation. Depth to groundwater measurements were made to the nearest 0.01 feet prior to sampling using an electric sounder.

The depth to groundwater was measured in each of the monitoring wells to the nearest 0.01 feet prior to initiating monitoring well development and sampling activities. The depth to groundwater and the total depth of the existing wells were used to calculate the appropriate purge volume. Well development, purging, and sampling was performed using a two-inch submersible pump. Physical characteristics (pH, electrical conductivity, and temperature) were measured prior to development and purging and again prior to sampling. Groundwater samples were collected in paired 40 milliliter vials. Groundwater samples were stored, transported, and delivered in a similar manner as described for soil above. In the absence of floating product, development and purge water was discharged an appropriate distance from the well head. Groundwater field sampling data sheets are presented in Appendix B.

Laboratory Analysis:

Soil and groundwater samples were analyzed for gasoline-range total petroleum hydrocarbons (TPH), benzene, toluene, ethylbenzene, and xylenes (BTEX), and methyl tertiary butyl ether (MTBE). Samples were analyzed using EPA method 8015M for TPH and EPA method 8020 for BTEX and MTBE. Certified analytical reports are presented in Appendix C.

RESULTS OF INVESTIGATION

Soil Conditions:

Soil beneath the site consists primarily of silty clay (CL) in the borings drilled during this investigation. Lesser intervals of silt, clayey silt, and very fine- to fine-grained sand (ML), and very fine to medium-grained or coarse-grained sand (SW) were encountered in some of the borings. Clayey gravel (GC) was encountered at a depth of 25 feet in MW-6, and at 10 feet in B-10.

All of the soil samples were submitted for laboratory analysis. Soil samples all indicated the presence of gasoline constituents based on field observations and screening. Certified analytical reports are presented in Appendix C and summarized in Table 4 below:

Table 4
Laboratory Analytical Results for Soil, November, 2001, Alaska Gasoline, Oakland

Sample	TPH	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE
MW-4 @ 5'	25,000	250	1,700	510	2,700	160
MW-4 @ 10'	4.6	0.011	0.080	0.033	0.19	9.8
MW-5 @ 5'	3.1	ND	0.0064	0.0051	0.0070	0.012
MW-5 @ 10'	. 17	0.067	0.018	0.20	0.25	ND
MW-6 @ 5'	30	0.57	0.14	0.72	2.9	1.5
MW-6 @ 10'	1,900	10	64	37	190	7.6
B-9 @ 5'	100	0.91	1.8	1.8	7.9	33
B-9 @ 10'	250	2.4	6.6	4.5	20	52
B-10 @ 5'	5.5	0.18	0.015	0.11	0.16	4.7
B-10 @ 10'	200	0.63	4.1	3.6	19	1.5
B-11 @ 5'	160	0.84	4.3	2.6	15	15
B-11 @ 10'	530	3.9	36	10	58	82
B-12 @ 5'	220	1.1	6.8	4.2	21	9.4
B-12 @ 10'	99	1.5	4.8	1.8	9.3	44
B-13 @ 5'	110	1.7	5.0	2.1	11	8.1
B-14 @ 10'	22	0.11	0.047	0.12	0.0056	1.5

All results presented in ppm

All of the soil samples collected during the most recent phase of drilling and sampling contained gasoline constituents. The highest concentrations were encountered

in MW-4 at five feet, and in MW-6 at ten feet. Most of the borings indicated an increase in concentrations between five and ten feet, which may be reflective of a widespread "smear" zone above shallow first encountered groundwater.

Groundwater Conditions:

Groundwater was present beneath the site at an approximate depth of 6.41 feet below the surveyed well elevations during the March 31, 2002 sampling event. The elevation of groundwater beneath the site averaged 27.62 feet above mean sea level at the time of the most recent sampling. The groundwater elevation increased approximately 0.61 feet since the November 17, 2001 sampling event. Groundwater gradient was S. 26 degrees W. at a gradient of .0108. Groundwater conditions are summarized in Table 5 and presented graphically in Figures 4 and 5.

Table 5
Groundwater Conditions, Alaska Gasoline, Oakland

Well Number	Elevation	Depth to GW	GW Elevation
November 7, 1999:			
MW-1	34.70	8.53	26.17
MW-2	34.94	8.26	26.68
MW-3	33.74	7.55	26.19
Flow Direction = S. 52 W.; Gradient = .0068			
March 8, 2001:			
MW-1	34.70	6.32	28.38
MW-2	34.94	5.89	29.05
MW-3	33.74	5.36	28.30
Flow Direction = S. 39 W.; Gradient = .0092			
November 17, 2001:			
MW-1	34.70	8.09	26.61
MW-2	34.94	7.75	27.19
MW-3	33.74	7.18	26.56
MW-4	32.38	5.75	26.63
MW-5	33.75	6.22	27.53
MW-6	34.68	7.19	27.49
Flow Direction = S. 50 W.; Gradient = .0091			
March 31, 2002:			
MW-1	34.70	7.18	27.52
MW-2	34.94	6.68	28.26
MW-3	33.74	6.27	27.47
MW-4	32.38	5.40	26.98
MW-5	33.75	6.35	27.40
MW-6	34.68	6.58	28.10
Flow Direction = S. 26 W.; Gradient = .0108			

The groundwater flow direction is toward San Francisco Bay, located approximately 0.75 miles southwest of the site. Regional groundwater flow appears to parallel the surface grade in the area.

Groundwater Quality:

All of the site monitoring wells contained petroleum hydrocarbon-impacted groundwater. The highest overall concentrations are present in MW-3 which is directly down gradient relative the location of the USTs. Relatively high concentrations gasoline constituents are also present in the other monitoring wells except for MW-5 which has relatively low concentrations. The fuel oxygenate MTBE was detected at relatively high concentrations in all of the wells, particularly in down gradient well MW-3. Certified analytical reports are presented in Appendix C and are summarized in Table 6 below:

Table 6
Laboratory Analytical Results for Groundwater, Alaska Gasoline, Oakland

Well	TPH	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE
November 7, 1999:						
MW-1	5,700	170	59	22	85	20,000
MW-2	6,000	1,300	92	50	400	6,800
MW-3	43,000	860	70	ND	65	120,000
March 8, 2001:						
MW-1	17,000	480	150	52	170	38,000
MW-2	41,000	8,100	870	2,000	4,100	26,000
MW-3	90,000	1,800	ND	ND	ND	210,000
November 17, 2001:						
MW-1	10,000	230	210	60	250	22,000
MW-2	18,000	3,700	180	610	640	16,000
MW-3	110,000	1,600	ND	ND	ND	300,000
MW-4	64,000	960	1,400	360	1,600	140,000
MW-5	210	15	12	11	23	4.8
MW-6	3,500	160	260	95	420	1,500
March 31, 2002:						
MW-1	12,000	61	ND	ND	29	35,000
MW-2	32,000	6,500	270	1,700	2,700	19,000
MW-3	130,000	2,400	670	300	390	300,000
MW-4	78,000	4,400	4,700	690	2,700	150,000
MW-5	120	11	7.4	6.1	16	4.2
MW-6	3,200	410	170	82	280	3,000

All results presented in parts per billion (ppb)

All of the site monitoring wells are impacted with gasoline constituents. The concentrations are highest in down gradient wells MW-3 and MW-4. Concentrations are significantly lower in MW-5 than any of the other well, reflecting its distance from and up gradient location relative the USTs. Based on the results of this most recent investigation, it appears that additional investigation and interim remedial action is warranted. A work plan for additional off site well installation, and an evaluation and recommendation of remedial options is presented in subsequent sections of this submittal.

WORK PLAN FOR ADDITIONAL INVESTIGATION

Drilling and Soil Sampling:

Drilling will be performed using a truck-mounted drill rig equipped with eight-inch hollow stem augers. Augers will be steam cleaned prior to arriving on site. Two additional monitoring wells (MW-7 and MW-8) will be drilled and sampled at the site. Site locations are not presented because they will be down gradient and off site, with anticipated restrictions related to underground and overhead utilities. These wells will require encroachment permits from the City of Oakland. Monitoring wells will be installed to a depth of 20 to 25 feet.

Soil samples will be collected using a California modified split spoon sampler equipped with brass liners. The samples will be collected at five and ten feet from each of the borings used for well installation. Samples will be collected by driving the sampler ahead of the drill bit. The sampler and liners will be cleaned between sampling events.

Soil samples will be field screened using a portable organic vapor analyzer (OVA) for the presence of volatile organic compounds (VOCs). All of the soil samples will be submitted to the laboratory for analysis.

Samples will be placed in a cooler chest with frozen gel packs ("blue ice") and maintained at a temperature of four degrees Celsius or less until delivered to the laboratory. All samples will be maintained, transported, and delivered to the laboratory under chain of custody documentation. Soil samples and drill cuttings will be described in accordance with the Unified Soil Classification System by a California Registered Geologist. Drill cuttings will be contained in DOT-approved 55-gallon drums and stored on site as directed by the property owner. Soil sampling will be discontinued below a depth of ten feet due to the presence of shallow groundwater.

Monitoring Well Installation, Development, and Sampling Procedures:

Well construction and annular materials will be installed through the hollow stem augers. Groundwater monitoring wells will be constructed with two-inch schedule 40 PVC well casing with screw joints. The screened intervals will be constructed with 15 to 20 feet of 0.020-inch factory slotted screen such that 10 to 15 feet of the screened interval is below first encountered groundwater in each of the monitoring wells. Blank casing will be installed from the top of the screened interval to surface grade. The monitoring

wells will be completed flush with surface grade in a traffic rated well cover with a locking well cap.

Annular materials will consist of #3 sand from the bottom of the borings to approximately two feet above the screened interval, followed by a minimum one-foot bentonite seal, followed by a sand-cement grout to the surface. Monitoring well elevations will be surveyed to the nearest 0.01 feet after installation. Depth to groundwater measurements will be made to the nearest 0.01 feet prior to sampling using an electric sounder.

The depth to groundwater will be measured in each of the monitoring wells to the nearest 0.01 feet prior to initiating monitoring well development and sampling activities. Well development, purging, and sampling will be performed using a two-inch submersible pump. Physical characteristics (pH, electrical conductivity, and temperature) will be measured prior to development and purging and again prior to sampling. Groundwater samples will be collected in paired 40 milliliter vials. Groundwater samples will be stored, transported, and delivered in a similar manner as described for soil above. In the absence of floating product, development and purge water will be discharged an appropriate distance from the well head.

Laboratory Analysis:

Soil and groundwater samples will be analyzed for gasoline-range total petroleum hydrocarbons (TPH), benzene, toluene, ethylbenzene, and xylenes (BTEX), and methyl tertiary butyl ether (MTBE). Samples will be analyzed using EPA method 8015M for TPH and EPA method 8020 for BTEX and MTBE.

INTERIM REMEDIAL ACTION PLAN

Feasibility Study:

Groundwater beneath the site has been designated as beneficial use. Therefore, it is proposed that gasoline adsorbed to soil be removed as an initial remedial measure, and that a "no action" alternative is inappropriate. Groundwater monitoring during soil vapor extraction/treatment may indicate that future additional direct remediation of groundwater such as air sparging or pump and treat may not be warranted. Nonetheless, **air sparge wells and a four-inch groundwater extraction well are proposed to be installed along with the vapor extraction system in anticipation of possible additional direct remediation of groundwater.**

The California Underground Storage Tank Cleanup Fund (USTCF) Cost Guidelines (1996) require that at least three alternatives for restoring groundwater resources be evaluated under such conditions. This cost analysis evaluates three alternatives, including excavation and disposal because of the relatively limited lateral and vertical extent of impacted soil and accessibility. A review of the extent and concentration of petroleum fuel in site soils indicates that impacted soil is relatively

widespread beneath the site. The total volume of significantly impacted soil in this area is approximately 3,700 cubic yards of soil.

Of the remedial alternatives available for removing fuel constituents from soil and groundwater without excavation, the most cost effective generally consist of vapor extraction with some form of air abatement measures. The most cost effective and easily permitted air abatement measures are by using either granular activated carbon (GAC) filtration or thermal oxidation (incineration). The cost evaluation assumes the removal of 90 percent of the gasoline adsorbed to soil over a six month operating period. The quantity of gasoline adsorbed to soil has been estimated by reviewing boring logs and laboratory analytical results from previous investigations.

The surface area underlain by petroleum hydrocarbon-impacted soil in excess of 100 ppm is relatively widespread around the USTs and dispensers, and in the southwest portion of the site which appears to be the dominant groundwater flow direction. Significantly impacted soil appears to be restricted to less than 10 feet in depth due to relatively shallow groundwater. (except B-7, B-8, MW-1)

Using data gathered to date, it is estimated that the average concentration of TPH beneath the site 2,000 ppm. The quantity of petroleum hydrocarbon-impacted soil is estimated to be a combined maximum of approximately 99,000 cubic feet (approximately 3,700 cubic yards). Using an average soil weight of 2,600 pounds per yard, the quantity of gasoline in soil is estimated to be 19,240 pounds or approximately 3,200 gallons. The cost evaluation of soil vapor extraction and treatment alternatives assumes the removal of 90 percent of the gasoline adsorbed to soil (2,880 gallons) over a six month year operating period. The estimated cost of the remedial action options are presented in Table 8 below:

Table 8
Remedial Alternative Costs

Alternative	Estimated Cost
Excavation and Treatment:	
Demolition/Replacement of existing structures/USTs	$250,000
Excavate 3,700 cubic yards soil @ $6.00/yd	$22,200
Replace/compact @ $4.75/yd	$17,575
Laboratory Analysis, 35 samples @ $100/sample	$3,500
Transport/disposal of 3,700 cubic yards @ $20/yd.	$74,000
Total Excavation/Disposal:	**$367,275**
Carbon Adsorption (GAC):	
Installation/Permitting:	
Direct Labor	$22,000
Materials and Equipment	$5,000

Table 8
(continued)

Alternative	Estimated Cost
Air Sampling (Laboratory)	$600
One Year Monitoring/Reporting/O & M:	
Direct Labor	$10,140
Blower Rental	$4,000
Expenses (mileage, PID, etc.)	$7,020
GAC @ 20% Loading (inc. disposal)	$214,000
Total GAC:	**$262,760**
Thermal Oxidation:	
Installation/Permitting:	
Direct Labor	$22,000
Materials and Equipment	$5,000
Air Sampling (Laboratory)	$600
One Year Monitoring/Reporting/O & M:	
Direct Labor	$3,240
Expenses (mileage, PID, etc.)	$1,620
Thermal Oxidizer Rental @ $3,200/mo.	$19,200
Fuel @ $500/wk	$13,000
PG & E hookup	$2,000
Total Thermal Oxidizer:	**$66,660**

Costs for installation and direct labor for GAC and thermal oxidation are shown as being identical in that similar equipment and materials (blowers, fencing, piping, etc.) are needed for both vapor extraction and treatment alternatives. Labor for operation and maintenance (O & M) are somewhat different due to weekly air monitoring requirements for GAC as opposed to monthly monitoring for thermal oxidizer equipment as dictated by the Bay Area Air Quality Management District (BAAQMD). Permitting and startup inspection requirements of the BAAQMD are otherwise identical

The primary cost differences are related to the use and disposal of GAC versus the rental and fuel cost of the thermal oxidizer equipment. The cost for purchase and disposal of the GAC filters is approximately $400 per 180 pound drum. The rental charges for the thermal oxidizer unit will remain constant during the duration of the project. Fuel charges for the thermal oxidizer will be relatively low initially when influent concentrations are high, and will increase gradually as influent concentrations decrease. However, past experience with similar projects suggests that an estimated fuel cost of $500 per week is reasonable. The only other charges that differ between the two

alternatives are for the natural gas hookup to fuel the oxidizer and blower rental for the GAC filters.

Based on the cost analysis presented above, it is apparent that the most cost effective interim corrective action is the installation and operation of an SVES using thermal oxidation for air abatement. The SVES will be operated concurrent with air sparging of groundwater. A four-inch groundwater extraction well will be installed in the event that future direct treatment of groundwater is required to complete the corrective action. Therefore, a work plan for installation of a SVES, including the installation of vapor extraction, air sparging, and a groundwater extraction well is presented below.

Soil Vapor Extraction and Treatment:

The petroleum hydrocarbon-impacted soil will be treated in place by installation of a SVES. Installation of air sparging wells and a groundwater extraction well will be performed simultaneous with the SVES installation. Soil vapor extraction and treatment will be performed using a shallow vapor extraction "gallery" consisting of a series of ten-foot screened intervals in 13 vapor extraction wells (VW-1 through VW-13) along individual pipe runs (Figure 6). The exact configuration of the piping and location of the air abatement equipment will be determined after consultation with the site operator, but will likely be on the north side of the existing store building. Soil vapor treatment will be performed by thermal oxidation.

An appropriately sized blower or similar equipment will be used for the extraction of VOCs from soil. The above ground blower and air abatement equipment will be located in a secure fenced area, most likely on the northwest area of the property. Pipelines will be installed below grade from the vapor extraction wells, air sparging wells, and groundwater extraction well to a fenced area constructed for the remediation equipment. A vacuum pump (blower) will transfer the VOCs to the air abatement equipment for destruction of the VOCs. Vapor extraction and treatment will be performed under a permit to operate (PTO) issued by the BAAQMD.

Gasoline concentrations in groundwater are expected to decrease concurrently along with the removal of gasoline constituents from overlying soil. This occurs as the partial vapor pressure changes in the soil pore spaces within the vadose zone, causing gasoline to volatilize from groundwater. A more important mechanism is the change to an aerobic environment in the "core" of the groundwater contaminant plume that will accelerate naturally occurring biodegradation. This change will be dramatic with the concurrent air sparging of groundwater during SVES operation. Documentation of decreasing concentrations of gasoline constituents in groundwater will be via continued quarterly groundwater monitoring.

Vapor Extraction, Air Sparging, and Groundwater Extraction Well Installation Procedures:

Vapor extraction, air sparging, and groundwater extraction well installation will be performed using hollow stem auger drilling equipment. Vapor extraction and air sparging wells will be installed with eight-inch augers and two-inch diameter well casing. The groundwater extraction well will be installed using ten-inch augers and four-inch diameter well casing.

Vapor extraction wells will be installed to a depth of approximately 12 feet with a ten-foot screened interval. Air sparging wells (AS-1 through AS-5) will be installed to a depth of 25 feet with a five-foot screened interval. Groundwater extraction well EX-1 will be installed with four-inch casing to a depth of 30 feet with a 25-foot screened interval.

Trenching and Pipe Installation:

All of the piping for the SVES will be installed at a depth of 14 to 18 inches under concrete pavement. The pavement will be saw cut to accommodate a 14-inch trench. Pavement will be removed and taken to a pavement recycling facility. Pavement will be removed and trenching performed using a backhoe with a 14-inch trenching bucket. Two-inch schedule 40 PVC irrigation pipe will be used to install the horizontal piping of the SVES.

Horizontal piping will be attached to the vertical vapor extraction and air sparging wells with PVC "T's" and 90 degree elbows. Vapor extraction and air sparging lines will lead to two-inch above ground PVC ball valves within a fenced enclosure. The groundwater extraction well will be hooked into the horizontal PVC piping using 90 degree sweeps to accommodate hoses and electrical wiring for future installation of down-hole water extraction equipment at a later date. The water extraction piping will end above-ground within the equipment enclosure as a capped line.

Upon completion of trenching, well drilling, and installation of the horizontal lines, the trenches will be backfilled with native soil and compacted. The pavement will be replaced with concrete pavement. All of the vapor extraction and air sparge wells will be below ground beneath pavement. The four-inch water extraction well will be completed beneath a 12-inch well cover installed flush with surface grade.

Well Installation Procedures:

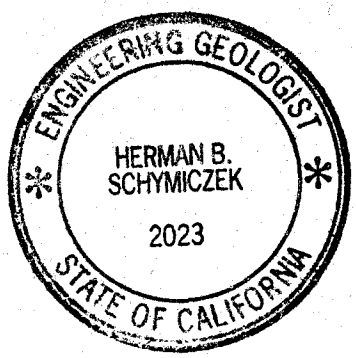
Borings for well installation will be drilled using hollow stem auger drilling equipment. Borings will be drilled directly within previously excavated trenches. Vapor extraction and air sparging wells will be drilled with eight-inch diameter augers, whereas the groundwater extraction well will be drilled with ten-inch augers. Vapor extraction wells will be drilled to a depth of 12 feet. Air sparging wells and the groundwater extraction wells will be drilled to depths of 25 and 30 feet, respectively. Soil will be

described in accordance with the Unified Soil Classification System by a California Registered Geologist. Boring logs will be prepared by description of drill cuttings, soil stuck to the auger plug brought to the surface during auger connections, and by drilling habit.

All well construction and annular materials will be installed through the hollow stem augers. Well construction materials will consist of schedule 40 PVC casing and screen. Vapor extraction and air sparging wells will be constructed with two-inch diameter materials. Vapor extraction wells will be constructed with 10 feet of 0.020-inch factory slotted screen from 2 to 12 feet, and blank casing from 2 feet to surface grade. Air sparging wells will be constructed with five feet of screen from 20 to 25 feet, and blank casing from surface grade to 20 feet. The groundwater extraction well will be constructed with similar four-inch diameter materials. The screened interval will extend from 5 to 30 feet, with blank casing from surface grade to 5 feet.

Annular materials will consist of number 3 sand from the bottom of the borings to approximately two feet above the screened interval in all of the wells. A continuous bentonite seal will be installed from the top of the sand pack to surface grade. The vapor extraction and air sparging wells will be connected directly to horizontal piping beneath pavement. The extraction well will be completed with a locking well cap inside of a 12-inch well cover installed flush with surface grade.

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

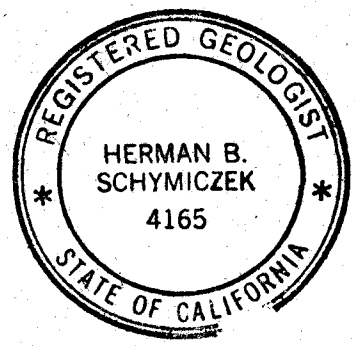


With best regards,

Herman Schymiczek

Herman Schymiczek
Registered Geologist #4165
Certified Engineering Geologist #2023

pc: Mr. Pritpaul Sappal
Mr. Syed Nawab, Alaska Gasoline Company



APPENDIX C

CERTIFIED ANALYTICAL REPORTS

CASTLE ANALYTICAL LABORATORY

Environmental Testing Services
Certificate # 2480

2333 Shuttle Drive, Atwater, CA 95301

Phone: (209) 384-2930
Fax: (209) 384-1507

HerSchy Environmental
P.O. Box 229
Bass Lake, CA 93604
Attn: Herman Schymiczek

Client Project ID: Alaska Gasoline Oakland
Reference Number: 4536
Sample Description: Water
Sample Prep/Analysis Method: EPA 5030/8015M, 8020
Lab Numbers: 4536-1W, 2W, 3W, 4W, 5W

Sampled: 03-31-02
Received: 04-01-02
Extracted: 04-02-02
Analyzed: 04-02-02
Reported: 04-11-02

TOTAL PETROLEUM HYDROCARBONS - GASOLINE WITH BTEX DISTINCTION

ANALYTE	REPORTING LIMIT µg/L	SAMPLE ID MW - 1 (µg/L)	SAMPLE ID MW - 2 (µg/L)	SAMPLE ID MW - 3 (µg/L)	SAMPLE ID MW - 4 (µg/L)	SAMPLE ID MW - 5 (µg/L)
MTBE	0.50	35000	19000	300000	150000	4.2
BENZENE	0.50	61	6500	2400	4400	11
TOLUENE	0.50	ND	270	670	4700	7.4
ETHYL BENZENE	0.50	ND	1700	300	690	6.1
TOTAL XYLENES	0.50	29	2700	390	2700	16
GASOLINE RANGE HYDROCARBONS	50	12000	32000	130000	78000	120
Report Limit Multiplication Factor:		50	200	500	100	1
Report Limit Multiplication Factor for MTBE only:		1000	1000	20000	5000	

Surrogate % Recovery:	FID: 100% / PID: 98.6%	FID: 107% / PID: 102%	FID: 104% / PID: 102%	FID: 106% / PID: 104%	FID: 103% / PID: 99.0%
Instrument ID:	VAR-GC1	VAR-GC1	VAR-GC1	VAR-GC1	VAR-GC1

Analytes reported as ND were not detected or below the Practical Quantitation Limit
Practical Quantitation Limit = Reporting Limit x Report Limit Multiplication Factor

ANALYST: Clari J. Cone

APPROVED BY: James C. Phillips
Laboratory Director

CASTLE ANALYTICAL LABORATORY

Environmental Testing Services
Certificate # 2480

2333 Shuttle Drive, Atwater, CA 95301

Phone: (209) 384-2930
Fax: (209) 384-1507

HerSchy Environmental	Client Project ID: Alaska Gasoline Oakland	Sampled: 03-31-02
P.O. Box 229	Reference Number: 4536	Received: 04-01-02
Bass Lake, CA 93604	Sample Description: Water	Extracted: 04-02-02
Attn: Herman Schymiczek	Sample Prep/Analysis Method: EPA 5030/8015M, 8020	Analyzed: 04-02-02
	Lab Numbers: 4536-6W	Reported: 04-11-02

TOTAL PETROLEUM HYDROCARBONS - GASOLINE WITH BTEX DISTINCTION

ANALYTE	REPORTING LIMIT µg/L	SAMPLE ID MW - 6 (µg/L)
MTBE	0.50	3000
BENZENE	0.50	410
TOLUENE	0.50	170
ETHYL BENZENE	0.50	82
TOTAL XYLENES	0.50	280
GASOLINE RANGE HYDROCARBONS	50	3200

Report Limit Multiplication Factor: 10
Report Limit Multiplication Factor for MTBE only: 100

Surrogate % Recovery:	FID: 113% / PID: 107%
Instrument ID:	VAR-GC1

Analytes reported as ND were not detected or below the Practical Quantitation Limit
Practical Quantitation Limit = Reporting Limit x Report Limit Multiplication Factor

ANALYST: Clari J. Cone

APPROVED BY: James C. Phillips
Laboratory Director

CASTLE ANALYTICAL LABORATORY

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

HerSchy Environmental
P.O. Box 229
Bass Lake, CA 93604
Attn: Herman Schymiczek

Client Project ID: Alaska Gasoline Oakland
Reference Number: 4536
Sample Description: Water
Analyst: Jim Phillips

Method: EPA 5030/8015M,8020
Instrument ID: Var-GC1
Prepared: 04-02-02
Analyzed: 04-02-02
Reported: 04-11-02

QUALITY CONTROL DATA REPORT

ANALYTE	Gasoline	MTBE	Benzene	Toluene	Ethyl Benzene	Total Xylenes
Spike Concentration:	110	2.10	1.32	7.94	1.84	9.22
Units:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
LCS Batch #:	VW-4022	VW-4022	VW-4022	VW-4022	VW-4022	VW-4022
LCS % Recovery:	113%	117%	123%	110%	117%	110%
Surrogate Recovery:	105%	101%	101%	101%	101%	101%
Control Limits:	70-130 %	70-130 %	70-130 %	70-130 %	70-130 %	70-130 %
MS/MSD Batch #:	VW-4022	VW-4022	VW-4022	VW-4022	VW-4022	VW-4022
Spike Concentration:	110	2.10	1.32	7.94	1.84	9.22
MS % Recovery:	107%	118%	119%	111%	119%	116%
Surrogate Recovery:	112%	106%	106%	106%	106%	106%
MSD % Recovery:	98.6%	235%	112%	103%	111%	107%
Surrogate Recovery:	107%	102%	102%	102%	102%	102%
Relative % Difference:	7.50%	63.5%	5.86%	6.61%	6.93%	7.30%
Methanol Blank :	ND	ND	ND	ND	ND	ND
Surrogate Recovery:	99.9%	101%	101%	101%	101%	101%

The LCS (Laboratory Check Sample) is a control sample of known, interferent free matrix that is fortified with representative analytes and analyzed using the same reagents, preparation and analytical methods employed for the samples. The LCS % recovery is used for validation of sample batch results. Due to matrix effects, the QC limits and recoveries for MS/MSD's are advisory only and are not used to accept or reject batch results.

ANALYST: *Clari J. Cone*

APPROVED BY: *James C. Phillips*
Laboratory Director

CASTLE ANALYTICAL LABORATORY

CHAIN OF CUSTODY

Location: 2333 Shuttle Drive, Bldg 908/909, Atwater, CA 95301
Mailing Address: 2333 Shuttle Drive, Atwater, CA 95301
Phone: (209) 384-2930 - Fax: (209) 384-1507

Certificate No. 2079

PAGE 1 OF 1

Customer: Alaska Gasoline
Address: Oakland
City/State/ZIP:
Phone / FAX:
Proj # / P.O. #:
Report Attention:
Sampler Signature: Herman Schumacher
Printed: Herman Schmiczek

Lab ID#	SAMPLE ID	DATE	TIME	DESCRIPTION/LOCATION	SAMPLE TYPE (g) grab (c) composite (d) discrete	SAMPLE MATRIX (s) solid (l) liquid (o) other	BTEX/TPH-GAS	MTBE	TPH-DIESEL	TRPH 418.1M	NUMBER OF CONTAINERS	OBSERVATIONS/REMARKS
45360 1W	MW-1	3/31/02	11:00		d	L	X	X				
2W	MW-2	"	11:30									
3W	MW-3	"	12:30									
4W	MW-4	"	12:00									
5W	MW-5	"	10:00									
6W	MW-6	"	10:30		↓	↓	↓	↓				

Method of Shipment:

Notes:

	Signature	Printed Name	Date	Time	Company Name
Relinquished by:	Herman Schumacher	Herman Schumiczek	4/1/02	9:15	Her.Schu Environmental
Received by:		James Phillips	4/1/02	9:15	Castle Analytical
Relinquished by:					
Received by:					
Relinquished by:					
Received by:					

Total number of containers submitted to the laboratory

Note: All special requests (e.g. quick turn times) must be cleared through authorized laboratory personnel .

RESULTS DUE : _____

☐ VERBAL ☐ WRITTEN

CASTLE ANALYTICAL LABORATORY

Environmental Testing Services
Certificate #I-2480

2333 Shuttle Drive, Atwater, CA 95301

Phone: (209) 384-2930
Fax: (209) 384-1507

HerSchy Environmental
P.O. Box 229
Bass Lake, CA 93604
Attn: Herman Schymiczek

Client Project ID: Alaska Gasoline, Oakland
Reference Number: 4226
Sample Description: Soil
Sample Prep/Analysis Method: EPA 5030/8015M, 8020
Lab Numbers: 4226- 1S, 2S, 3S, 4S, 5S

Sampled: 11-16-01
Received: 11-19-01
Extracted: 11-23-01
Analyzed: 11-23-01
Reported: 12-11-01

TOTAL PETROLEUM HYDROCARBONS - GASOLINE RANGE WITH BTEX DISTINCTION

ANALYTE	REPORTING LIMIT (mg/kg)	SAMPLE ID MW-4 @ 5' (mg/kg)	SAMPLE ID MW-4 @ 10' (mg/kg)	SAMPLE ID MW-5 @ 5' (mg/kg)	SAMPLE ID MW-5 @ 10' (mg/kg)	SAMPLE ID MW-6 @ 5' (mg/kg)
MTBE	0.010	160	9.8	0.012	ND	1.5
BENZENE	0.0050	250	0.011	ND	0.067	0.57
TOLUENE	0.0050	1700	0.080	0.0064	0.018	0.14
ETHYLBENZENE	0.0050	510	0.033	0.0051	0.20	0.72
TOTAL XYLENES	0.0050	2700	0.19	0.0070	0.25	2.9
GASOLINE RANGE HYDROCARBONS	1.0	25000	4.6	3.1	17	30
Report Limit Multiplication Factor:		2000	1	1	1	5
Report Limit Multiplication Factor for MTBE only:			20			
Surrogate % Recovery:		NA	FID: 74.3% / PID: 72.3%	FID: 77.1% / PID: 74.2%	FID: 128% / PID: 97.6%	NA
Instrument ID:		VAR-GC1	VAR-GC1	VAR-GC1	VAR-GC1	VAR-GC1

Analytes reported as ND were not detected or below the Practical Quantitation Limit
Practical Quantitation Limit = Reporting Limit x Report Limit Multiplication Factor

ANALYST: _____ APPROVED BY: _____
Clari J. Cone

James C. Phillips
Laboratory Director

CASTLE ANALYTICAL LABORATORY

Environmental Testing Services
Certificate #I-2480

2333 Shuttle Drive, Atwater, CA 95301

Phone: (209) 384-2930
Fax: (209) 384-1507

HerSchy Environmental
P.O. Box 229
Bass Lake, CA 93604
Attn: Herman Schymiczek

Client Project ID: Alaska Gasoline, Oakland
Reference Number: 4226
Sample Description: Soil
Sample Prep/Analysis Method: EPA 5030/8015M, 8020
Lab Numbers: 4226- 6S, 7S, 8S, 9S, 10S

Sampled: 11-16-01
Received: 11-19-01
Extracted: 11-23-01
Analyzed: 11-23-01
Reported: 12-11-01

TOTAL PETROLEUM HYDROCARBONS - GASOLINE RANGE WITH BTEX DISTINCTION

ANALYTE	REPORTING LIMIT (mg/kg)	SAMPLE ID MW-6 @ 10' (mg/kg)	SAMPLE ID B-9 @ 5' (mg/kg)	SAMPLE ID B-9 @ 10' (mg/kg)	SAMPLE ID B-10 @ 5' (mg/kg)	SAMPLE ID B-10 @ 10' (mg/kg)
MTBE	0.010	7.6	33	52	4.7	1.5
BENZENE	0.0050	10	0.91	2.4	0.18	0.63
TOLUENE	0.0050	64	1.8	6.6	0.015	4.1
ETHYLBENZENE	0.0050	37	1.8	4.5	0.11	3.6
TOTAL XYLENES	0.0050	190	7.9	20	0.16	19
GASOLINE RANGE HYDROCARBONS	1.0	1900	100	250	5.5	200
Report Limit Multiplication Factor:		200	10	20	1	10
Report Limit Multiplication Factor for MTBE only:			100	100	20	
Surrogate % Recovery:		NA	NA	NA	FID: 81.0% / PID: 75.9%	NA
Instrument ID:		VAR-GC1	VAR-GC1	VAR-GC1	VAR-GC1	VAR-GC1

Analytes reported as ND were not detected or below the Practical Quantitation Limit
Practical Quantitation Limit = Reporting Limit x Report Limit Multiplication Factor

ANALYST: *Clari J. Cone*

APPROVED BY: *James C. Phillips*
Laboratory Director

CASTLE ANALYTICAL LABORATORY

Environmental Testing Services
Certificate #I-2480

2333 Shuttle Drive, Atwater, CA 95301

Phone: (209) 384-2930
Fax: (209) 384-1507

HerSchy Environmental	Client Project ID: Alaska Gasoline, Oakland	Sampled: 11-16-01
P.O. Box 229	Reference Number: 4226	Received: 11-19-01
Bass Lake, CA 93604	Sample Description: Soil	Extracted: 11-23-01
Attn: Herman Schymiczek	Sample Prep/Analysis Method: EPA 5030/8015M, 8020	Analyzed: 11-23-01
	Lab Numbers: 4226- 11S, 12S, 13S, 14S, 15S	Reported: 12-11-01

TOTAL PETROLEUM HYDROCARBONS - GASOLINE RANGE WITH BTEX DISTINCTION

ANALYTE	REPORTING LIMIT (mg/kg)	SAMPLE ID B-11 @ 5' (mg/kg)	SAMPLE ID B-11 @ 10' (mg/kg)	SAMPLE ID B-12 @ 5' (mg/kg)	SAMPLE ID B-12 @ 10' (mg/kg)	SAMPLE ID B-13 @ 5' (mg/kg)
MTBE	0.010	15	82	9.4	44	8.1
BENZENE	0.0050	0.84	3.9	1.1	1.5	1.7
TOLUENE	0.0050	4.3	36	6.8	4.8	5.0
ETHYLBENZENE	0.0050	2.6	10	4.2	1.8	2.1
TOTAL XYLENES	0.0050	15	58	21	9.3	11
GASOLINE RANGE HYDROCARBONS	1.0	160	530	220	99	110
Report Limit Multiplication Factor:		10	100	20	10	10
Report Limit Multiplication Factor for MTBE only:		20			100	

Surrogate % Recovery:		NA	NA	NA	NA	NA
Instrument ID:		VAR-GC1	VAR-GC1	VAR-GC1	VAR-GC1	VAR-GC1

Analytes reported as ND were not detected or below the Practical Quantitation Limit
Practical Quantitation Limit = Reporting Limit x Report Limit Multiplication Factor

ANALYST: _____ APPROVED BY: _____

Clari J. Cone

James C. Phillips
Laboratory Director

CASTLE ANALYTICAL LABORATORY

Environmental Testing Services
Certificate #I-2480

2333 Shuttle Drive, Atwater, CA 95301

Phone: (209) 384-2930
Fax: (209) 384-1507

HerSchy Environmental	Client Project ID: Alaska Gasoline, Oakland	Sampled: 11-16-01
P.O. Box 229	Reference Number: 4226	Received: 11-19-01
Bass Lake, CA 93604	Sample Description: Soil	Extracted: 11-23-01
Attn: Herman Schymiczek	Sample Prep/Analysis Method: EPA 5030/8015M, 8020	Analyzed: 11-26-01
	Lab Numbers: 4226- 16S	Reported: 12-11-01

TOTAL PETROLEUM HYDROCARBONS - GASOLINE RANGE WITH BTEX DISTINCTION

ANALYTE	REPORTING LIMIT (mg/kg)	SAMPLE ID B-14 @ 10' (mg/kg)
MTBE	0.010	1.5
BENZENE	0.0050	0.11
TOLUENE	0.0050	0.047
ETHYLBENZENE	0.0050	0.12
TOTAL XYLENES	0.0050	0.0056
GASOLINE RANGE HYDROCARBONS	1.0	22
Report Limit Multiplication Factor:		2

Surrogate % Recovery:	NA
Instrument ID:	VAR-GC1

Analytes reported as ND were not detected or below the Practical Quantitation Limit
Practical Quantitation Limit = Reporting Limit x Report Limit Multiplication Factor

ANALYST: _____ APPROVED BY: _____

Clari J. Cone

James C. Phillips
Laboratory Director

CASTLE ANALYTICAL LABORATORY

Environmental Testing Services
Certificate #I-2480

2333 Shuttle Drive, Atwater, CA 95301

Phone: (209) 384-2930
Fax: (209) 384-1507

HerSchy Environmental
P.O. Box 229
Bass Lake, CA 93604
Attn: Herman Schymiczek

Client Project ID: Alaska Gasoline, Oakland
Reference Number: 4226
Sample Description: Water
Sample Prep/Analysis Method: EPA 5030/8015M, 8020
Lab Numbers: 4226-17W, 18W, 19W, 20W, 21W

Sampled: 11-17-01
Received: 11-19-01
Extracted: 11-24-01
Analyzed: 11-24-01
Reported: 12-11-01

TOTAL PETROLEUM HYDROCARBONS - GASOLINE WITH BTEX DISTINCTION

ANALYTE	REPORTING LIMIT µg/L	SAMPLE ID MW-1 (µg/L)	SAMPLE ID MW-2 (µg/L)	SAMPLE ID MW-3 (µg/L)	SAMPLE ID MW-4 (µg/L)	SAMPLE ID MW-5 (µg/L)
MTBE	0.50	22000	16000	300000	140000	4.8
BENZENE	0.50	230	3700	1600	960	15
TOLUENE	0.50	210	180	ND	1400	12
ETHYL BENZENE	0.50	60	610	ND	360	11
TOTAL XYLENES	0.50	250	640	ND	1600	23
GASOLINE RANGE HYDROCARBONS	50	10000	18000	110000	64000	210
Report Limit Multiplication Factor:		50	200	500	100	1
Report Limit Multiplication Factor for MTBE only:		1000	1000	20000	5000	

Surrogate % Recovery:	FID: 95.9% / PID: 94.2%	FID: 96.8% / PID: 93.6%	FID:94.0% / PID: 92.4%	FID: 98.2% / PID: 95.3%	FID:112% / PID: 104%
Instrument ID:	VAR-GC1	VAR-GC1	VAR-GC1	VAR-GC1	VAR-GC1

Analytes reported as ND were not detected or below the Practical Quantitation Limit
Practical Quantitation Limit = Reporting Limit x Report Limit Multiplication Factor

ANALYST: Clari J. Cone

APPROVED BY: James C. Phillips
Laboratory Director

CASTLE ANALYTICAL LABORATORY

Environmental Testing Services
Certificate #I-2480

2333 Shuttle Drive, Atwater, CA 95301

Phone: (209) 384-2930
Fax: (209) 384-1507

HerSchy Environmental
P.O. Box 229
Bass Lake, CA 93604
Attn: Herman Schymiczek

Client Project ID: Alaska Gasoline, Oakland
Reference Number: 4226
Sample Description: Water
Sample Prep/Analysis Method: EPA 5030/8015M, 8020
Lab Numbers: 4226-22W

Sampled: 11-17-01
Received: 11-19-01
Extracted: 11-24-01
Analyzed: 11-24-01
Reported: 12-11-01

TOTAL PETROLEUM HYDROCARBONS - GASOLINE WITH BTEX DISTINCTION

ANALYTE	REPORTING LIMIT µg/L	SAMPLE ID MW-6 (µg/L)
MTBE	0.50	1500
BENZENE	0.50	160
TOLUENE	0.50	260
ETHYL BENZENE	0.50	95
TOTAL XYLENES	0.50	420
GASOLINE RANGE HYDROCARBONS	50	3500
Report Limit Multiplication Factor:		50

Surrogate % Recovery: FID: 103% / PID: 102%

Instrument ID: VAR-GC1

Analytes reported as ND were not detected or below the Practical Quantitation Limit
Practical Quantitation Limit = Reporting Limit x Report Limit Multiplication Factor

ANALYST: Clari Cone
Clari J. Cone

APPROVED BY:
James C. Phillips
Laboratory Director

CASTLE ANALYTICAL LABORATORY

Environmental Testing Services
Certificate #I-2480

2333 Shuttle Drive, Atwater, CA 95301

Phone: (209) 384-2930
Fax: (209) 384-1507

HerSchy Environmental	Client Project ID: Alaska Gasoline, Oakland	Method: EPA 5030/8015M,8020
P.O. Box 229	Reference Number: 4226	Instrument ID: Var-GC1
Bass Lake, CA 93604	Matrix: Soil	Prepared: 11-23-01
Attn: Herman Schymiczek	Analyst: Clari Cone	Analyzed: 11-23-01
		Reported: 12-11-01

QUALITY CONTROL DATA REPORT

ANALYTE	Gasoline	MTBE	Benzene	Toluene	Ethyl Benzene	Total Xylenes
Spike Concentration:	2.20	42.0	26.4	159	36.8	184
Units:	mg/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
LCS Batch #:	VS-N231	VS-N231	VS-N231	VS-N231	VS-N231	VS-N231
LCS % Recovery:	87.1%	92.0%	103%	93.3%	97.1%	94.1%
Surrogate Recovery:	93.2%	90.4%	90.4%	90.4%	90.4%	90.4%
Control Limits:	70-130 %	70-130 %	70-130 %	70-130 %	70-130 %	70-130 %
MS/MSD Batch #:	VS-N231	VS-N231	VS-N231	VS-N231	VS-N231	VS-N231
MS % Recovery:	84.8%	80.4%	74.4%	82.6%	84.2%	82.5%
Surrogate Recovery:	86.9%	86.0%	86.0%	86.0%	86.0%	86.0%
MSD % Recovery:	71.6%	71.5%	73.8%	77.7%	80.8%	79.0%
Surrogate Recovery:	81.2%	79.8%	79.8%	79.8%	79.8%	79.8%
Relative % Difference:	15.4%	10.6%	0.659%	5.71%	3.83%	4.06%
Methanol Blank :	ND	ND	ND	ND	ND	ND
Surrogate Recovery:	93.5%	93.3%	93.3%	93.3%	93.3%	93.3%

Please Note:
The LCS (Laboratory Check Sample) is a control sample of known, interferent free matrix that is fortified with representative analytes and analyzed using the same reagents, preparation and analytical methods employed for the samples. The LCS % recovery is used for validation of sample batch results. Due to matrix effects, the QC limits and recoveries for MS/MSD's are advisory only and are not used to accept or reject batch results.

ANALYST: _____ APPROVED BY: _____

Clari J. Cone

James C. Phillips
Laboratory Director

CASTLE ANALYTICAL LABORATORY

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

HerSchy Environmental	Client Project ID: Alaska Gasoline, Oakland	Method: EPA 5030/8015M,8020
P.O. Box 229	Reference Number: 4226	Instrument ID: Var-GC1
Bass Lake, CA 93604	Matrix: Water	Prepared: 11-24-01
Attn: Herman Schymiczek	Analyst: Jim Phillips	Analyzed: 11-24-01
		Reported: 12-11-01

QUALITY CONTROL DATA REPORT

ANALYTE	Gasoline	MTBE	Benzene	Toluene	Ethyl Benzene	Total Xylenes
Spike Concentration:	110	2.10	1.32	7.94	1.84	9.22
Units:	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
LCS Batch #:	VW-N241	VW-N241	VW-N241	VW-N241	VW-N241	VW-N241
Surrogate Recovery:	95.7% 96.7%	114% 94.2%	106% 94.2%	98.5% 94.2%	104% 94.2%	99.6% 94.2%
Control Limits:	70-130 %	70-130 %	70-130 %	70-130 %	70-130 %	70-130 %
MS/MSD Batch #:	VW-N241	VW-N241	VW-N241	VW-N241	VW-N241	VW-N241
Spike Concentration:	110	2.10	1.32	7.94	1.84	9.22
MS % Recovery:	91.6%	105%	104%	101%	105%	102%
Surrogate Recovery:	103%	99.9%	99.9%	99.9%	99.9%	99.9%
MSD % Recovery:	126%	101%	103%	97.9%	109%	102%
Surrogate Recovery:	101%	98.2%	98.2%	98.2%	98.2%	98.2%
Relative % Difference:	30.4%	4.59%	1.33%	3.27%	3.77%	0.170%
Methanol Blank :	ND	ND	ND	ND	ND	ND
Surrogate Recovery:	94.2%	94.6%	94.6%	94.6%	94.6%	94.6%

The LCS (Laboratory Check Sample) is a control sample of known, interferent free matrix that is fortified with representative analytes and analyzed using the same reagents, preparation and analytical methods employed for the samples. The LCS % recovery is used for validation of sample batch results. Due to matrix effects, the QC limits and recoveries for MS/MSD's are advisory only and are not used to accept or reject batch results.

ANALYST: Clari J. Cone

APPROVED BY: James C. Phillips
Laboratory Director

CASTLE ANALYTICAL LABORATORY

CHAIN OF CUSTODY

Location: 2333 Shuttle Drive, Bldg 908/909, Atwater, CA 95301
Mailing Address: 2333 Shuttle Drive, Atwater, CA 95301
Phone: (209) 384-2930 - Fax: (209) 384-1507

Certificate No. 2079

Customer: Alaska Gasoline
Address: Oakland
City/State/ZIP:
Phone / FAX:
Proj # / P.O. #:
Report Attention:
Sampler Signature: Herman Schymiczek
Printed: Herman Schymiczek

Lab ID#	SAMPLE ID	DATE	TIME	DESCRIPTION/LOCATION	SAMPLE TYPE (g) grab (c) composite (d) discrete	SAMPLE MATRIX (s) solid (l) liquid (o) other	REQUESTED ANALYSES: BTEX/TPH-GAS	MTBE	TPH-DIESEL	TRPH 418.1M	NUMBER OF CONTAINERS	OBSERVATIONS/REMARKS
4226-1S	MW-4@5'	11/16/01	10:40		d	S	X	X				
2S	MW-4@10'	"	10:50									
3S	MW-5@5'	"	8:35									
4S	MW-5@10'	"	8:45									
5S	MW-6@5'	"	7:10									
6S	MW-6@10'	"	7:15									
7S	B-9@5'	"	1:30									
8S	B-9@10'	"	1:35									
9S	B-10@5'	"	1:05									
10S	B-10@10'	"	1:10									
11S	B-11@5'	"	2:30									
12S	B-11@10'	"	2:35									
13S	B-12@5'	"	12:30									
14S	B-12@10'	"	12:45									
15S	B-13@5'	"	2:50		↓	↓	↓	↓				

Method of Shipment:

Notes:

	Signature	Printed Name	Date	Time	Company Name
Relinquished by:	Herman Schymiczek	Herman Schymiczek	11/19/01	3:10	HerSchy Environmental
Received by:		James Phillips	11/19/01	3:10	Castle Analytical
Relinquished by:					
Received by:					
Relinquished by:					
Received by:					

Total number of containers submitted to the laboratory

Note: All special requests (e.g. quick turn times) must be cleared through authorized laboratory personnel .

RESULTS DUE : _____

☐ VERBAL ☐ WRITTEN

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

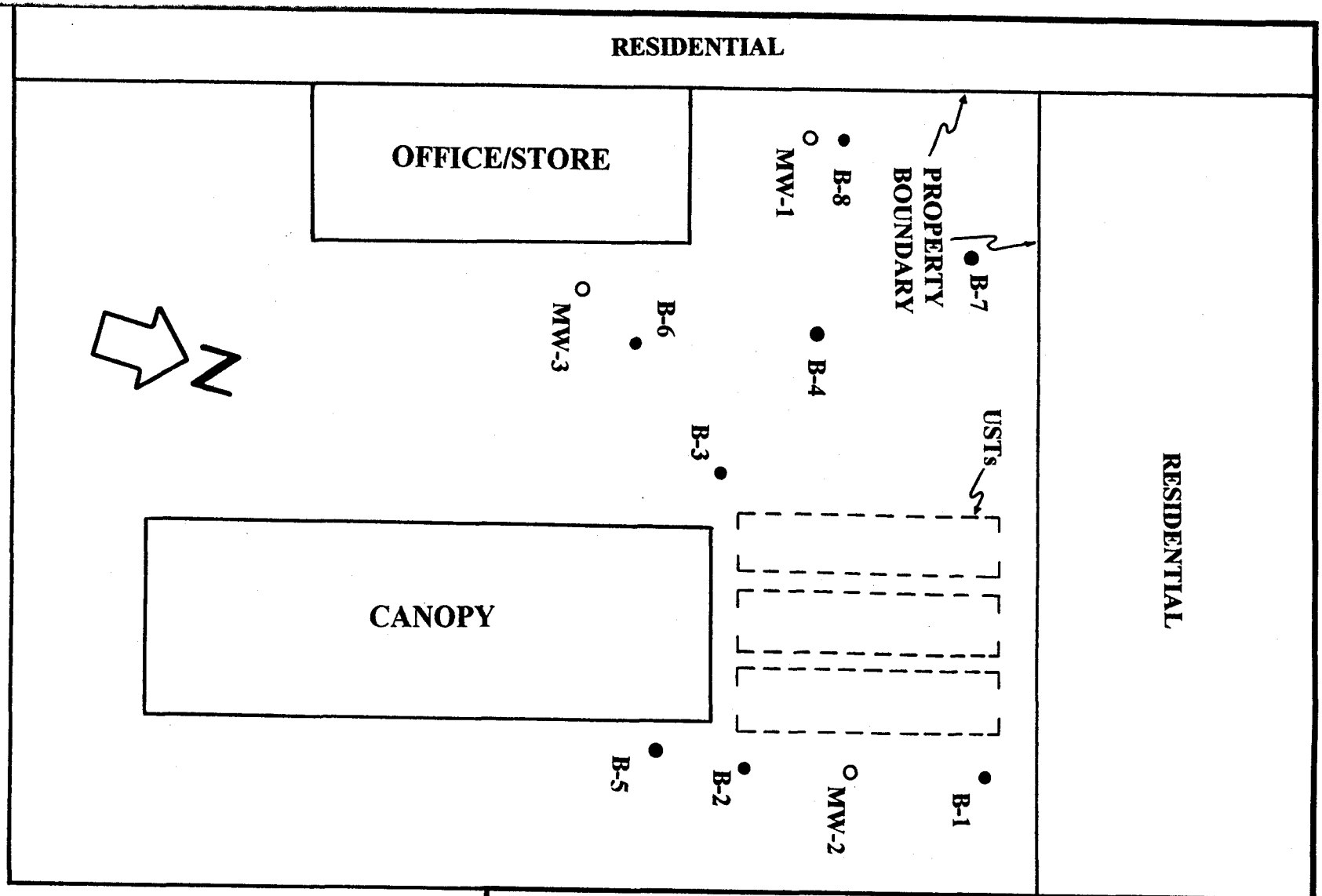


FIGURE 2 - BORING/WELL LOCATIONS

SCALE: 1" = 20'	APPROVED BY:	DRAWN BY HBS
DATE: 4/27/99		REVISED 12/12/99

ALASKA GASOLINE COMPANY
Oakland, California

HerSchy Environmental | DRAWING NUMBER

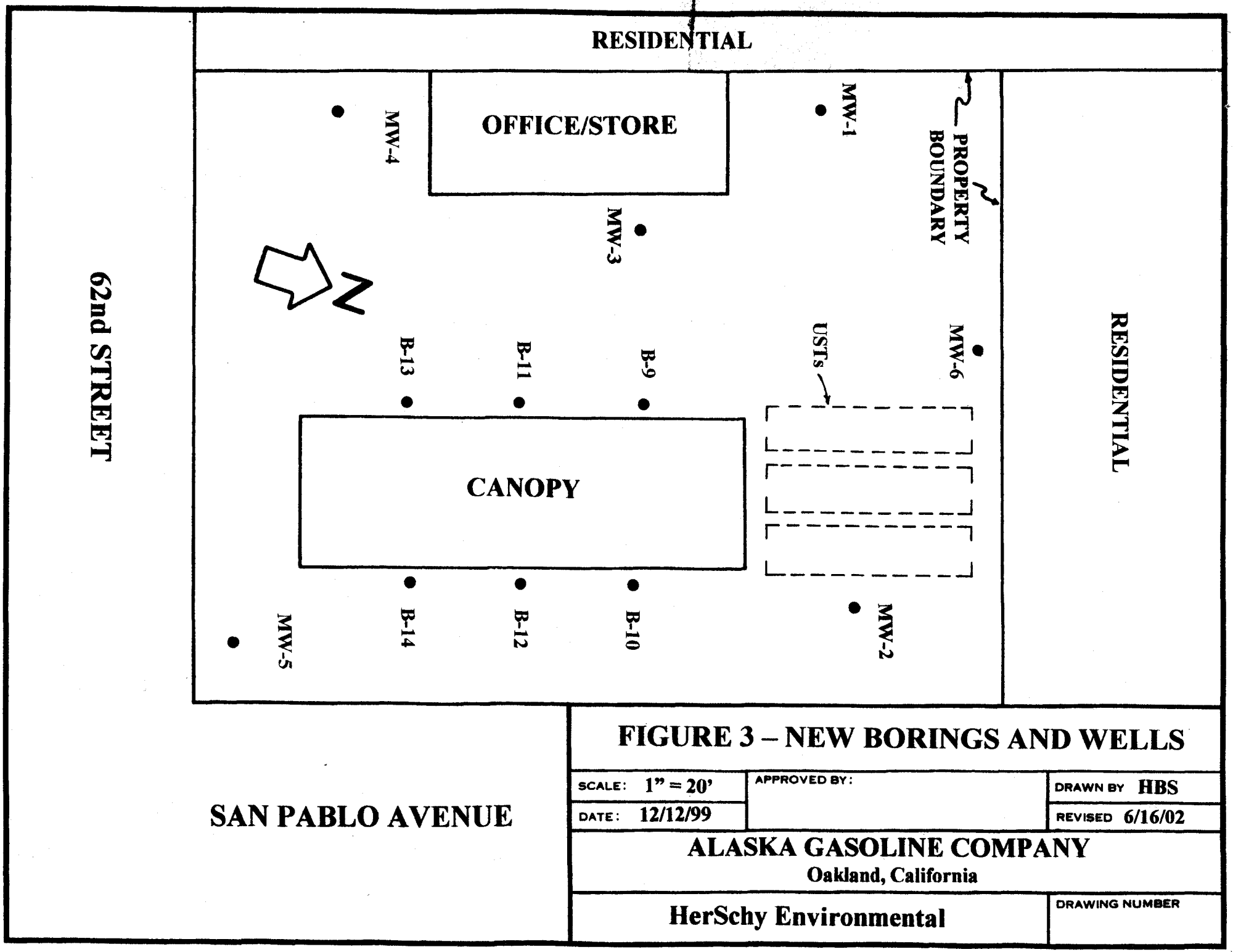


FIGURE 3 – NEW BORINGS AND WELLS

SCALE: 1" = 20'	APPROVED BY:	DRAWN BY HBS
DATE: 12/12/99		REVISED 6/16/02

ALASKA GASOLINE COMPANY
Oakland, California

HerSchy Environmental

DRAWING NUMBER

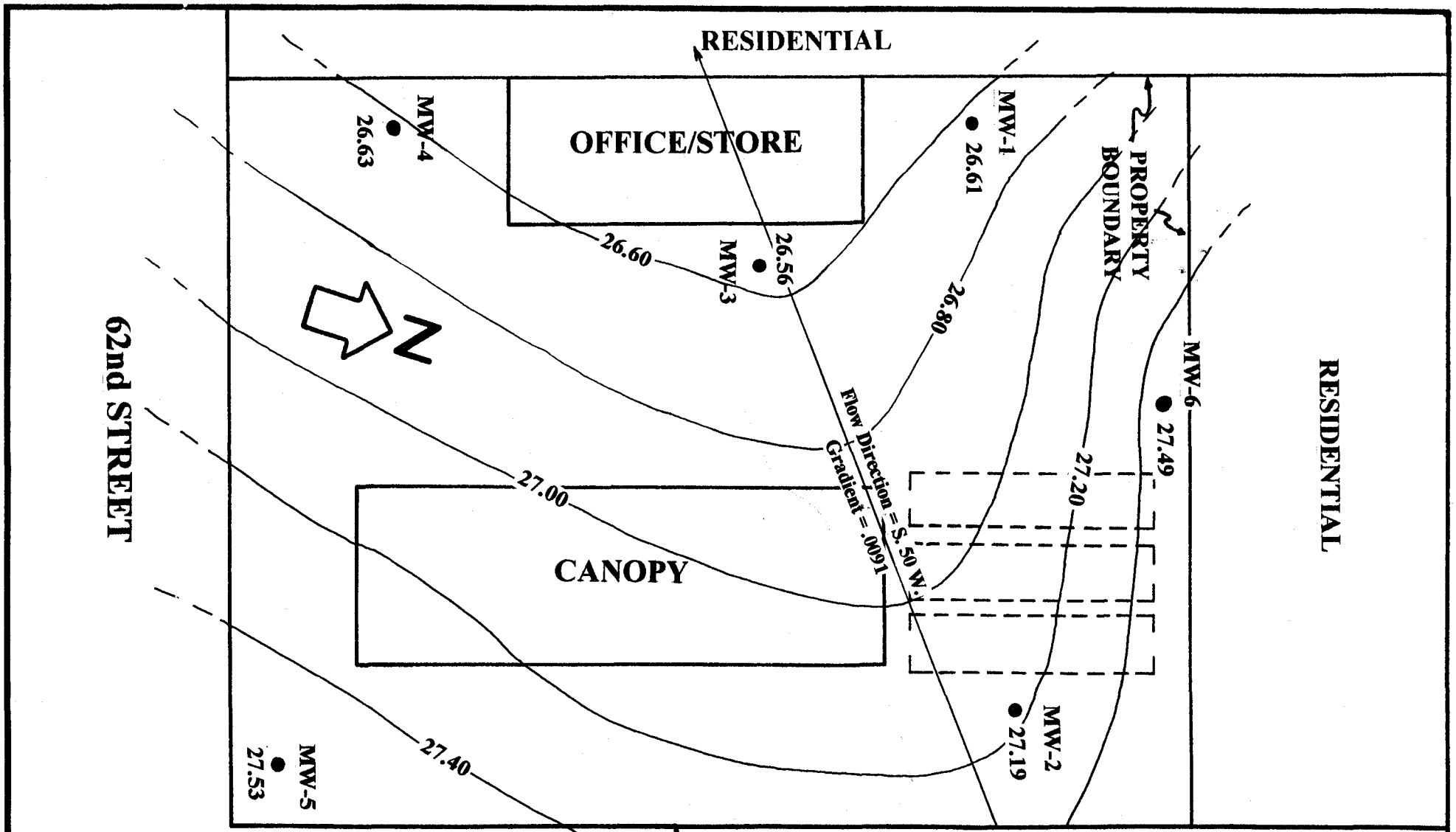


FIGURE 4 – GROUNDWATER CONDITIONS

November 17, 2001

SCALE: 1" = 20'	APPROVED BY:	DRAWN BY HBS
DATE: 12/12/99		REVISED 6/16/02

ALASKA GASOLINE COMPANY

Oakland, California

HerSchy Environmental

DRAWING NUMBER

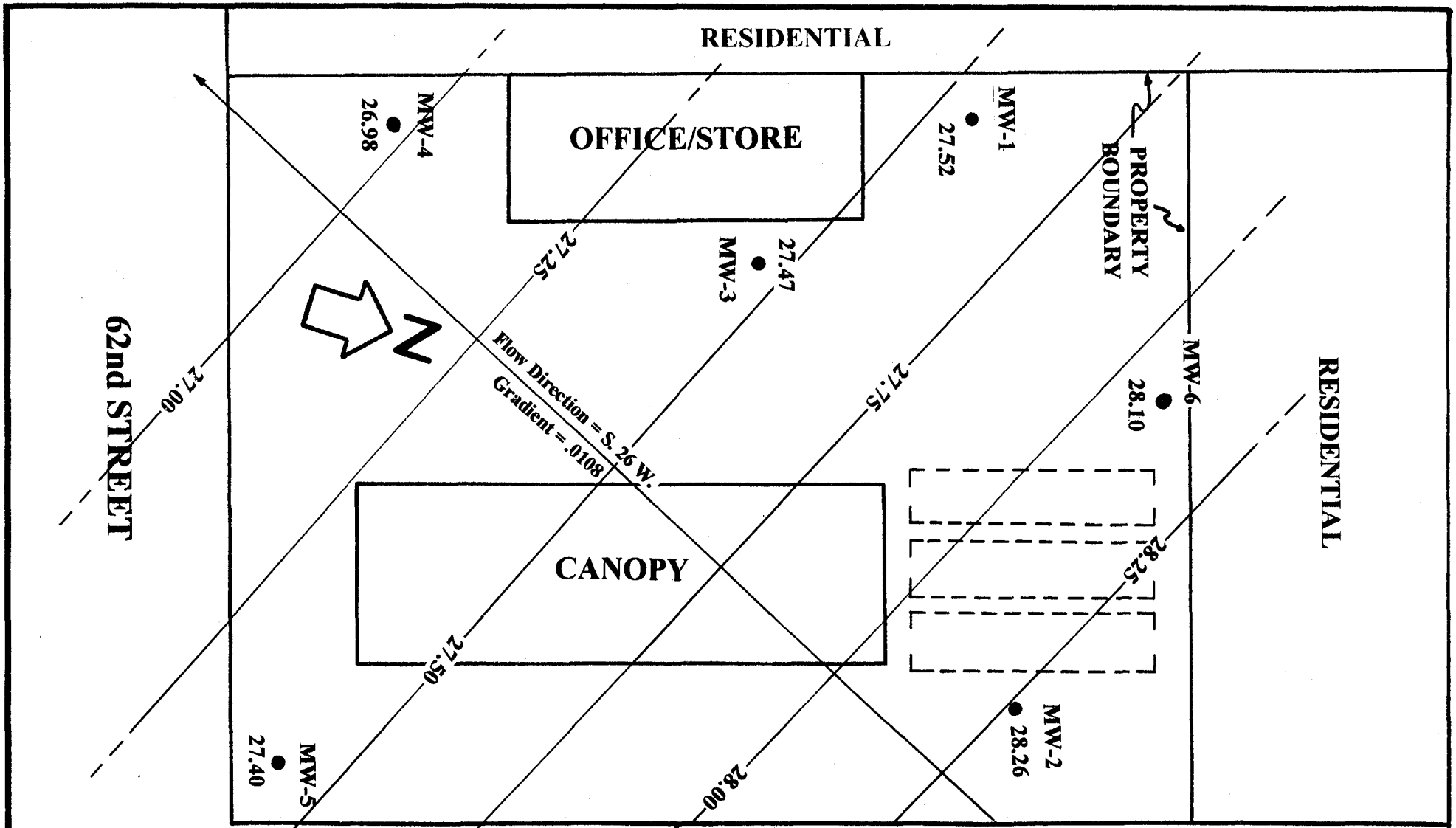


FIGURE 5 – GROUNDWATER CONDITIONS

March 31, 2002

SCALE: 1" = 20'	APPROVED BY:	DRAWN BY HBS
DATE: 12/12/99		REVISED 6/16/02

ALASKA GASOLINE COMPANY
Oakland, California

HerSchy Environmental

DRAWING NUMBER

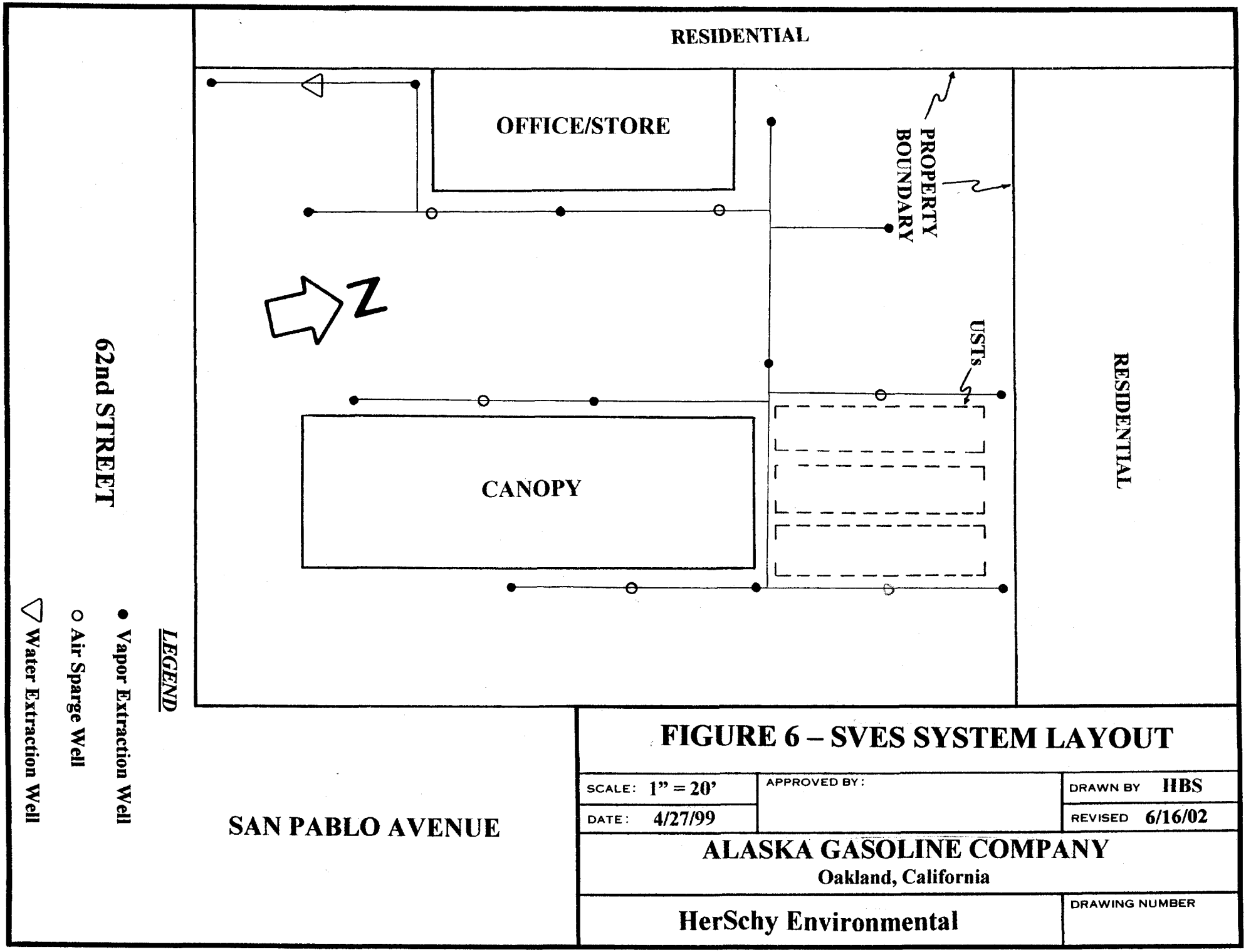


FIGURE 6 – SVES SYSTEM LAYOUT

SCALE: 1" = 20'	APPROVED BY:	DRAWN BY HBS
DATE: 4/27/99		REVISED 6/16/02

ALASKA GASOLINE COMPANY
Oakland, California

HerSchy Environmental

DRAWING NUMBER

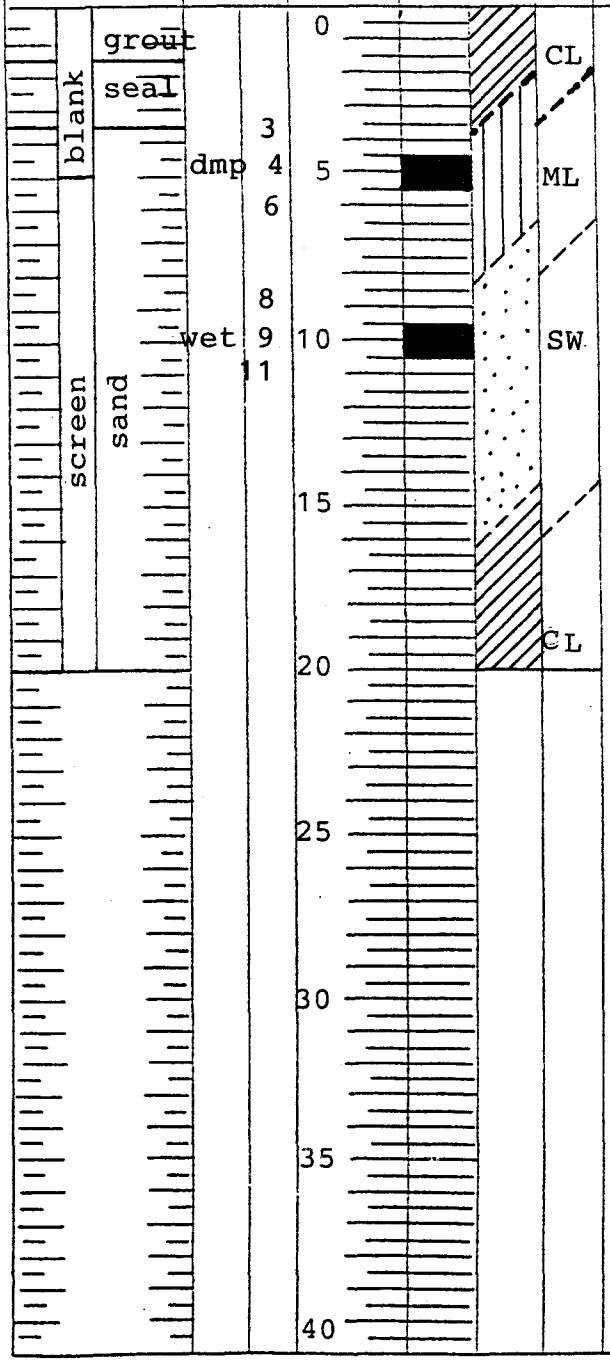
APPENDIX A

BORING LOGS AND WELL CONSTRUCTION DETAILS

HerSchy Environmental — WELL / BORING LOG

WELL/ MW-4
BORING NA
PAGE 1 OF 1

CLIENT	Alaska Gasoline	LOGGED BY	H. Schymiczek
DATE DRILLED	11-16-01	DRILLED BY	CTL
LOCATION	Oakland, CA	DRILLING METHOD	HSA
HOLE DIAMETER	8"	SAMPLING METHOD	Split Spoon
HOLE DEPTH	20'	CASING TYPE	Sch. 40 PVC
WELL DEPTH	19.40'	SLOT SIZE	0.020"
WELL DIAMETER	2"	GRAVEL PACK	#3 sand
ELEVATION	32.38'		



LITHOLOGY / REMARKS

Approx. 1" asphalt.
Silty clay, dk. grey, distinct petroleum odor.

Sand, grey, v.fine-to fine-grained, trace silt, strong gasoline odor, no stain; OVA=479ppm.

Sand, grey, v.fine-to med.-grained, scattered pebbles to 0.25' strong gasoline odor, no stain' OVA=215ppm.

Silty clay, brown.

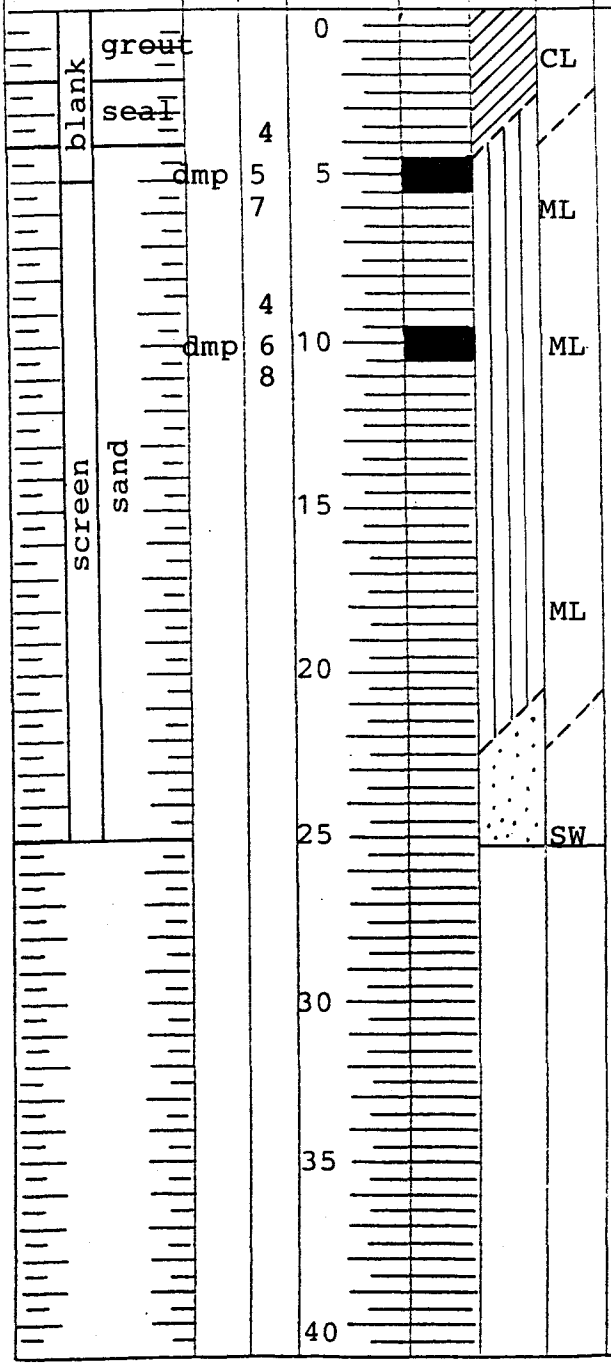
T.D.=20'

BORINGP2.DW2

HerSchy Environmental — WELL / BORING LOG

WELL/ MW-5
BORING NA
PAGE 1 OF 1

CLIENT	Alaska Gasoline	LOGGED BY	H. Schymiczek
DATE DRILLED	11-16-01	DRILLED BY	CTL
LOCATION	Oakland, CA	DRILLING METHOD	HSA
HOLE DIAMETER	8"	SAMPLING METHOD	Split Spoon
HOLE DEPTH	25'	CASING TYPE	Sch. 40 PVC
WELL DEPTH	24.65'	SLOT SIZE	0.020"
WELL DIAMETER	2"	GRAVEL PACK	#3 sand
ELEVATION	33.75'		



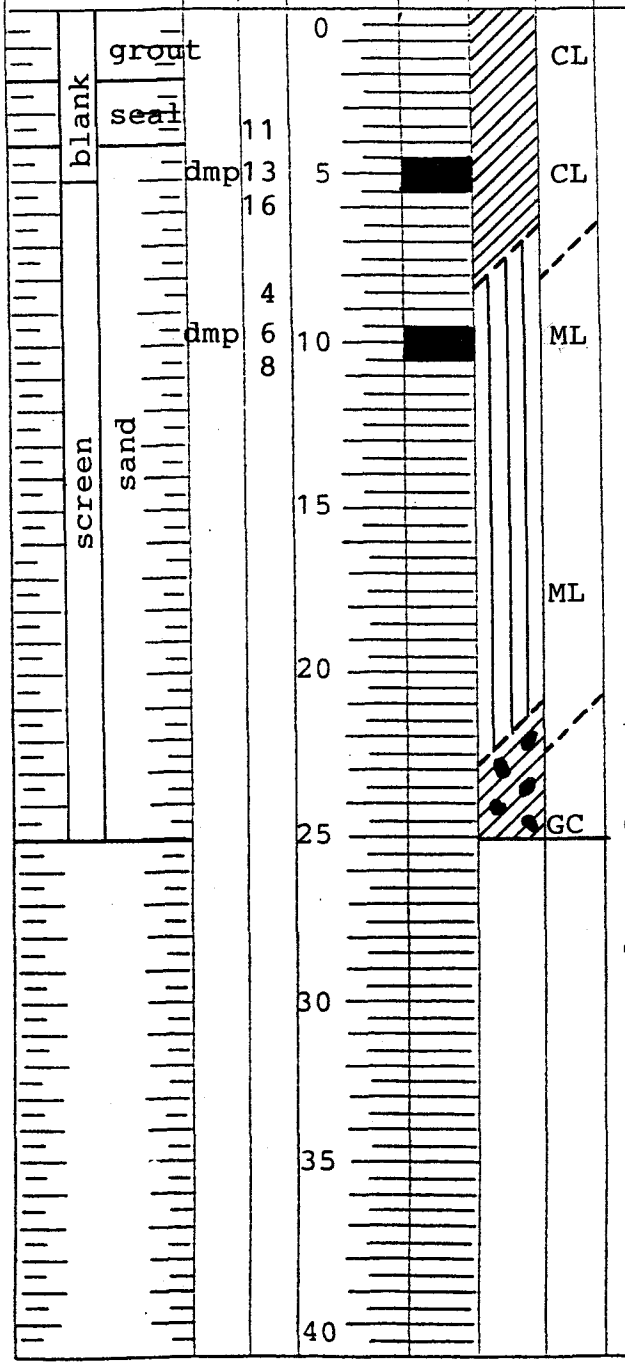
MOISTURE CONTENT	BLOWS/FOOT	DEPTH (FEET)	SOIL TYPE	LITHOLOGY / REMARKS
		0	CL	Approx. 2" asphalt. Silty clay, dk. brown.
	4			
dmp	5	5	ML	Silt, grey, trace clay and v.fine sand, no odor or stain; OVA=25.6ppm.
	7			
	4			
dmp	6	10	ML	Sandy silt, grey, v.fine-to coarse-grained sand fraction, trace clay, no odor or stain; OVA=22.2ppm.
	8			
		15		
			ML	Silty clay, brown.
		20		
		25	SW	Sand, brown, v.fine-to coarse-grained, scattered pebbles to 0.5".
				T.D.=25'
		30		
		35		
		40		

BORINGP2.DW2

HerSchy Environmental — WELL / BORING LOG

WELL/ MW-6
BORING NA
PAGE 1 OF 1

CLIENT	Alaska Gasoline Co.	LOGGED BY	H. Schymiczek
DATE DRILLED	11-16-01	DRILLED BY	CTL
LOCATION	Oakland, CA	DRILLING METHOD	HSA
HOLE DIAMETER	8"	SAMPLING METHOD	Split Spoon
HOLE DEPTH	25'	CASING TYPE	Sch. 40 PVC
WELL DEPTH	23.75'	SLOT SIZE	0.020"
WELL DIAMETER	2"	GRAVEL PACK	#3 sand
ELEVATION	34.68'		



MOISTURE CONTENT	BLOWS/FOOT	DEPTH (FEET)	SOIL TYPE	LITHOLOGY / REMARKS
		0	CL	Approx. 1" asphalt. Silty clay, dk. brown.
	11			
dmp	13	5	CL	Silty clay, grey, faint petroleum odor, no stain; OVA=17.9ppm.
	16			
	4			
dmp	6	10	ML	Silty sand, grey, v.fine-to fine-grained, distinct gasoline odor, no stain; OVA=488ppm.
	8			
		15		
			ML	Clayey silt, lt. brown.
		20		
		25	GC	Clayey gravel, brown, v.fine-to coarse-grained sand with clasts up to 0.5" in a clay.
				T.D.=25'
		30		
		35		
		40		

BORINGP2.DW2

HerSchy Environmental — WELL / BORING LOG

WELL/ NA
BORING B-9
PAGE 1 OF 1

CLIENT	Alaska Gasoline	LOGGED BY	H. Schymiczek
DATE DRILLED	11-16-01	DRILLED BY	CTL
LOCATION	Oakland, CA	DRILLING METHOD	HSA
HOLE DIAMETER	8"	SAMPLING METHOD	Split Spoon
HOLE DEPTH	10'	CASING TYPE	NA
WELL DEPTH	NA	SLOT SIZE	NA
WELL DIAMETER	NA	GRAVEL PACK	NA
ELEVATION	not surveyed		

WELL COMPLETION DETAIL	MOISTURE CONTENT	BLOWS/FOOT	DEPTH (FEET)	SOIL TYPE	LITHOLOGY / REMARKS
			0	CL	Approx. 2" asphalt. Silty clay, dk. brown.
		5			
	dmp	8	5	CL	Clay, lt. brown, trace silt, faint gasoline odor, no stain; OVA=82.5ppm.
		12			
		4			
	dmp	8	10	SM	Silty sand, grey, v.fine-to med.-grained, scattered pebbles to 0.25", distinct gasoline odor, no stain; OVA=509ppm.
		11			
			15		T.D.=10'
			20		
			25		
			30		
			35		
			40		

BORINGP2.DW2

HerSchy Environmental

WELL / BORING LOG

WELL/ NA
BORING B-10
PAGE 1 OF 1

CLIENT	Alaska Gasoline	LOGGED BY	H. Schymiczek
DATE DRILLED	11-16-01	DRILLED BY	CTL
LOCATION	Oakland, CA	DRILLING METHOD	HSA
HOLE DIAMETER	8"	SAMPLING METHOD	Split Spoon
HOLE DEPTH	10'	CASING TYPE	NA
WELL DEPTH	NA	SLOT SIZE	NA
WELL DIAMETER	NA	GRAVEL PACK	NA
ELEVATION	not surveyed		

WELL COMPLETION DETAIL	MOISTURE CONTENT	BLOWS/FOOT	DEPTH (FEET)	SAMPLE	GRAPHIC	SOIL TYPE	LITHOLOGY / REMARKS
			0			CL	Approx. 1" asphalt. Silty clay dk. brown.
		3					
	dmp	6	5			CL	Silty clay, grey, faint gasoline odor, no stain; OVA=46.5ppm.
		7					
		4					
	dmp	6	10			GC	Clayey gravel, grey, pebbles up to 0.5", distinct gasoline odor, no stain; OVA=403ppm.
		8					
							T.D.=10'
			15				
			20				
			25				
			30				
			35				
			40				

BORINGP2.DW2

HerSchy Environmental

WELL / BORING LOG

WELL/ NA
BORING B-11
PAGE 1 OF 1

CLIENT	Alaska Gasoline	LOGGED BY	H. Schymiczek
DATE DRILLED	11-16-01	DRILLED BY	CTL
LOCATION	Oakland, CA	DRILLING METHOD	HSA
HOLE DIAMETER	8"	SAMPLING METHOD	Split Spoon
HOLE DEPTH	10'	CASING TYPE	NA
WELL DEPTH	NA	SLOT SIZE	NA
WELL DIAMETER	NA	GRAVEL PACK	NA
ELEVATION	not surveyed		

WELL COMPLETION DETAIL	MOISTURE CONTENT	BLOWS/FOOT	DEPTH (FEET)	SAMPLE	GRAPHIC	SOIL TYPE	LITHOLOGY / REMARKS
			0			CL	Approx. 1" asphalt. Clay, dk. brown.
		4					
	dmp	7	5			CL	Clay, grey, trace silt, gaint gas-oline odor, no stain; OVA=30.1ppm.
		9					
		4					
	dmp	5	10			CL	S.A.A., faint gasoline odor, no stain; OVA=23.7ppm.
		6					T.D.=10'
			15				
			20				
			25				
			30				
			35				
			40				

BORINGP2.DW2

HerSchy Environmental — WELL / BORING LOG

WELL NA
BORING B-12
PAGE 1 OF 1

CLIENT	Alaska Gasoline	LOGGED BY	H. Schymiczek
DATE DRILLED	11-16-01	DRILLED BY	CTL
LOCATION	Oakland, CA	DRILLING METHOD	HSA
HOLE DIAMETER	8"	SAMPLING METHOD	Split Spoon
HOLE DEPTH	10'	CASING TYPE	NA
WELL DEPTH	NA	SLOT SIZE	NA
WELL DIAMETER	NA	GRAVEL PACK	NA
ELEVATION	NA		

WELL COMPLETION DETAIL	MOISTURE CONTENT	BLOWS/FOOT	DEPTH (FEET)	SAMPLE	GRAPHIC	SOIL TYPE	LITHOLOGY / REMARKS
			0			CL	Approx. 2" asphalt. Silty clay, dk. brown.
	dmp	4 6 8	5			CL	Silty clay, grey, distinct gasoline odor, no stain; OVA=457ppm.
	dmp	4 6 8	10			CL	Clay, grey, trace silt, distinct gasoline odor, no stain; OVA=316ppm.
							T.D.=10'
			15				
			20				
			25				
			30				
			35				
			40				

BORINGP2.DW2

HerSchy Environmental

WELL / BORING LOG

WELL NA
BORING B-13
PAGE 1 OF 1

CLIENT	Alaska Gasoline	LOGGED BY	H. Schymiczek
DATE DRILLED	11-16-01	DRILLED BY	CTL
LOCATION	Oakland, CA	DRILLING METHOD	HSA
HOLE DIAMETER	8"	SAMPLING METHOD	Split Spoon
HOLE DEPTH	6'	CASING TYPE	NA
WELL DEPTH	NA	SLOT SIZE	NA
WELL DIAMETER	NA	GRAVEL PACK	NA
ELEVATION	NA		

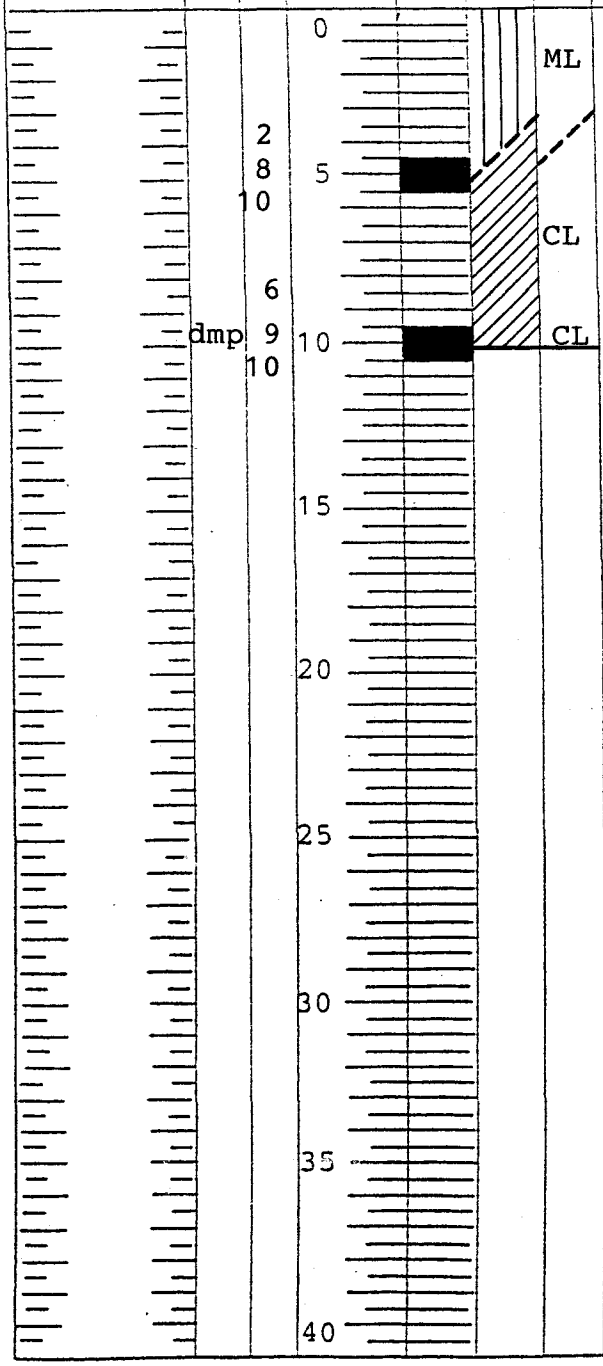
WELL COMPLETION DETAIL	MOISTURE CONTENT	BLOWS/FOOT	DEPTH (FEET)	SAMPLE	GRAPHIC	SOIL TYPE	LITHOLOGY / REMARKS
			0			CL	Approx. 1" asphalt. Clay, dk. brown.
	dmp	4 7 9	5				Clay, dk. brown, distinct gasoline odor, no stain; OVA=289ppm.
							T.D.=6'
			10				
			15				
			20				
			25				
			30				
			35				
			40				

BORINGP2.DW2

HerSchy Environmental — WELL / BORING LOG

WELL/ NA
BORING B-14
PAGE 1 OF 1

CLIENT	Alaska Gasoline	LOGGED BY	H. Schymiczek
DATE DRILLED	11-16-01	DRILLED BY	CTL
LOCATION	Oakland, CA	DRILLING METHOD	HSA
HOLE DIAMETER	8"	SAMPLING METHOD	Split Spoon
HOLE DEPTH	10'	CASING TYPE	NA
WELL DEPTH	NA	SLOT SIZE	NA
WELL DIAMETER	NA	GRAVEL PACK	NA
ELEVATION	Not surveyed		



LITHOLOGY / REMARKS

Approx. 2" asphalt.
Clayey silt, dk. brown.

No recovery

Silty clay, grey.

Silty clay, grey, scattered pebbles to 0.5", distinct gasoline odor, no stain; OVA=319ppm.

T.D.=10'

BORINGP2.DW2

APPENDIX B

GROUNDWATER FIELD SAMPLING DATA SHEETS

HerSchy Environmental

WATER SAMPLE FIELD DATA SHEET

Client Name: Alaska Gasoline Location: Oakland

Purged By: H. Schymiczek Sampled By: H. Schymiczek

Sample ID: MW-1 Type: Groundwater X Surface Water ___ Other ___

Casing Diameter (inches): 2 X 3 ___ 4 ___ 5 ___ 6 ___ Other ___

Casing Elevation (feet/MSL): 34.70 Volume in Casing (gal.): 2.17

Depth of Well (feet): 20.50 Calculate Purge Volume (gal.): 8.68

Depth to Water (feet): 7.18 Actual Purge Volume (gal.): +9

Date Purged: 3-31-02 Date Sampled: 3-31-02

TIME	VOLUME	pH	E. C.	TEMP.	TURBIDITY
10:50	-	6.87	751	65.6	clear
11:00	+9	6.87	723	64.7	clear

Other Observations: ___ Odor: faint H_2S

Purging Equipment: Purger ES-60

Sampling Equipment: " " "

Remarks: ___

Samplers Signature: Herman B. Schymiczek

HerSchy **Environmental**

WATER SAMPLE FIELD DATA SHEET

Client Name: Alaska Gasoline Location: Oakland

Purged By: H. Schymiczek Sampled By: H. Schymiczek

Sample ID: MW-2 Type: Groundwater X Surface Water ___ Other ___

Casing Diameter (inches): 2 X 3 ___ 4 ___ 5 ___ 6 ___ Other ___

Casing Elevation (feet/MSL): 34.94 Volume in Casing (gal.): 2.29

Depth of Well (feet): 20.70 Calculate Purge Volume (gal.): 9.16

Depth to Water (feet): 6.68 Actual Purge Volume (gal.): +10

Date Purged: 3-31-02 Date Sampled: 3-31-02

TIME	VOLUME	pH	E. C.	TEMP.	TURBIDITY
11:20	—	6.89	969	66.7	clear
11:30	+10	6.96	1,028	66.2	clear

Other Observations: ___ Odor: faint H_2S

Purging Equipment: Purger ES-60

Sampling Equipment: " " "

Remarks: ___

Samplers Signature: Herman Schymiczek

HerSchy Environmental

WATER SAMPLE FIELD DATA SHEET

Client Name: Alaska Gasoline Location: Oakland

Purged By: H. Schymiczek Sampled By: H. Schymiczek

Sample ID: MW-3 Type: Groundwater X Surface Water ___ Other ___

Casing Diameter (inches): 2 X 3 ___ 4 ___ 5 ___ 6 ___ Other ___

Casing Elevation (feet/MSL): 33.74 Volume in Casing (gal.): 2.39

Depth of Well (feet): 20.95 Calculate Purge Volume (gal.): 9.56

Depth to Water (feet): 6.27 Actual Purge Volume (gal.): +10

Date Purged: 3-31-02 Date Sampled: 3-31-02

TIME	VOLUME	pH	E. C.	TEMP.	TURBIDITY
12:20	—	7.17	999	69.8	cloudy
12:30	+10	6.80	874	66.8	clear

Other Observations: ___ Odor: distinct H2S

Purging Equipment: Purger ES-60

Sampling Equipment: "

Remarks: ___

Samplers Signature: Herman Schymiczek

HerSchy **Environmental**

WATER SAMPLE FIELD DATA SHEET

Client Name: Alaska Gasoline Location: Oakland

Purged By: H. Schymiczek Sampled By: H. Schymiczek

Sample ID: MW-4 Type: Groundwater X Surface Water ___ Other ___

Casing Diameter (inches): 2 X 3 ___ 4 ___ 5 ___ 6 ___ Other ___

Casing Elevation (feet/MSL): 32.38 Volume in Casing (gal.): 2.28

Depth of Well (feet): 19.40 Calculate Purge Volume (gal.): 9.12

Depth to Water (feet): 5.40 Actual Purge Volume (gal.): +10

Date Purged: 3-31-02 Date Sampled: 3-31-02

TIME	VOLUME	pH	E. C.	TEMP.	TURBIDITY
11:50	-	6.87	805	68.6	cloudy
12:00	+10	6.89	829	66.4	cloudy

Other Observations: ___ Odor: faint gasoline

Purging Equipment: Purger ES-60

Sampling Equipment: " " "

Remarks: Sheen of gasoline in purged water. Checked with bailer, sheen of fuel in clear bailer.

Samplers Signature: Herman Schymiczek

HerSchy Environmental

WATER SAMPLE FIELD DATA SHEET

Client Name: Alaska Gasoline Location: Oakland

Purged By: H. Schymiczek Sampled By: H. Schymiczek

Sample ID: MW-5 Type: Groundwater X Surface Water ___ Other ___

Casing Diameter (inches): 2 X 3 ___ 4 ___ 5 ___ 6 ___ Other ___

Casing Elevation (feet/MSL): 33.75 Volume in Casing (gal.): 2.98

Depth of Well (feet): 24.65 Calculate Purge Volume (gal.): 11.92

Depth to Water (feet): 6.35 Actual Purge Volume (gal.): +12

Date Purged: 3-31-02 Date Sampled: 3-31-02

TIME	VOLUME	pH	E. C.	TEMP.	TURBIDITY
9:50	-	8.05	1,893	67.6	cloudy
10:00	+12	7.37	745	66.7	cloudy

Other Observations: ___ Odor: none

Purging Equipment: Purger ES-60

Sampling Equipment: ___

Remarks: ___

Samplers Signature: Herman Schymiczek

HerSchy Environmental

WATER SAMPLE FIELD DATA SHEET

Client Name: Alaska Gasoline Location: Oakland

Purged By: H. Schymiczek Sampled By: H. Schymiczek

Sample ID: MW-6 Type: Groundwater X Surface Water ___ Other ___

Casing Diameter (inches): 2 X 3 ___ 4 ___ 5 ___ 6 ___ Other ___

Casing Elevation (feet/MSL): 34.68 Volume in Casing (gal.): 2.60

Depth of Well (feet): 23.75 Calculate Purge Volume (gal.): 10.40

Depth to Water (feet): 6.58 Actual Purge Volume (gal.): +11

Date Purged: 3-31-02 Date Sampled: 3-31-02

TIME	VOLUME	pH	E. C.	TEMP.	TURBIDITY
10:20	-	7.39	677	65.4	cloudy
10:30	+11	7.06	603	64.6	clear

Other Observations: ___ Odor: faint H_2S

Purging Equipment: Purger ES-60

Sampling Equipment: " " "

Remarks: ___

Samplers Signature: Herman Schymiczek

HerSchy **Environmental**

WATER SAMPLE FIELD DATA SHEET

Client Name: Alaska Gasoline Location: Oakland

Purged By: H. Schymiczek Sampled By: H. Schymiczek

Sample ID: MW-1 Type: Groundwater X Surface Water ___ Other ___

Casing Diameter (inches): 2 X 3 ___ 4 ___ 5 ___ 6 ___ Other ___

Casing Elevation (feet/MSL): 34.70 Volume in Casing (gal.): 2.02

Depth of Well (feet): 20.50 Calculate Purge Volume (gal.): 8.08

Depth to Water (feet): 8.09 Actual Purge Volume (gal.): +9

Date Purged: 11-17-01 Date Sampled: 11-17-01

TIME	VOLUME	pH	E. C.	TEMP.	TURBIDITY
9:55	–	6.76	733	67.6	clear
10:05	+9	6.65	983	68.4	clear

Other Observations: ___ Odor: distinct H_2S

Purging Equipment: Purger ES-60

Sampling Equipment: " " "

Remarks: ___

Samplers Signature: Herman Schymiczek

HerSchy **Environmental**

WATER SAMPLE FIELD DATA SHEET

Client Name: Alaska Gasoline Location: Oakland

Purged By: H. Schymiczek Sampled By: H. Schymiczek

Sample ID: MW-2 Type: Groundwater X Surface Water ___ Other ___

Casing Diameter (inches): 2 X 3 ___ 4 ___ 5 ___ 6 ___ Other ___

Casing Elevation (feet/MSL): 34.94 Volume in Casing (gal.): 2.11

Depth of Well (feet): 20.70 Calculate Purge Volume (gal.): 8.44

Depth to Water (feet): 7.75 Actual Purge Volume (gal.): +9

Date Purged: 11-17-01 Date Sampled: 11-17-01

TIME	VOLUME	pH	E. C.	TEMP.	TURBIDITY
10:15	-	6.43	1,036	69.8	clear
10:25	+9	6.42	1,055	70.8	clear

Other Observations: ___ Odor: faint H_2S

Purging Equipment: Purger ES-60

Sampling Equipment: " " "

Remarks: ___

Samplers Signature: Hernan Schymiczek

HerSchy **Environmental**

WATER SAMPLE FIELD DATA SHEET

Client Name: Alaska Gasoline Location: Oakland

Purged By: H. Schymiczek Sampled By: H. Schymiczek

Sample ID: MW-3 Type: Groundwater X Surface Water ___ Other ___

Casing Diameter (inches): 2 X 3 ___ 4 ___ 5 ___ 6 ___ Other ___

Casing Elevation (feet/MSL): 33.74 Volume in Casing (gal.): 2.24

Depth of Well (feet): 20.95 Calculate Purge Volume (gal.): 8.96

Depth to Water (feet): 7.18 Actual Purge Volume (gal.): +9

Date Purged: 11-17-01 Date Sampled: 11-17-01

TIME	VOLUME	pH	E. C.	TEMP.	TURBIDITY
10:40	—	6.59	958	69.3	cloudy
10:50	+9	6.71	918	69.5	clear

Other Observations: ___ Odor: Faint gasoline

Purging Equipment: Purger ES-60

Sampling Equipment: " " "

Remarks: ___

Samplers Signature: Herman Schymiczek

HerSchy **WATER SAMPLE FIELD DATA SHEET**
Environmental

Client Name: Alaska Gasoline Location: Oakland

Purged By: H. Schymiczek Sampled By: H. Schymiczek

Sample ID: MW-4 Type: Groundwater X Surface Water ___ Other ___

Casing Diameter (inches): 2 X 3 ___ 4 ___ 5 ___ 6 ___ Other ___

Casing Elevation (feet/MSL): 32.38 Volume in Casing (gal.): 2.22

Depth of Well (feet): 19.40 Calculate Purge Volume (gal.): 8.88

Depth to Water (feet): 5.75 Actual Purge Volume (gal.): ~60

Date Purged: 11-17-01 Date Sampled: 11-17-01

TIME	VOLUME	pH	E. C.	TEMP.	TURBIDITY
8:30	—	7.18	1,276	68.5	muddy
9:00	~60	7.20	942	72.2	cloudy

Other Observations: ___ Odor: distinct gasoline

Purging Equipment: Purger ES-60

Sampling Equipment: ___

Remarks: Sampled after well development

Samplers Signature: H. Schymiczek

HerSchy Environmental

WATER SAMPLE FIELD DATA SHEET

Client Name: Alaska Gasoline Location: Kirkland

Purged By: H. Schymiczek Sampled By: H. Schymiczek

Sample ID: MW-5 Type: Groundwater X Surface Water ____ Other ____

Casing Diameter (inches): 2 X 3 ____ 4 ____ 5 ____ 6 ____ Other ____

Casing Elevation (feet/MSL): 33.75 Volume in Casing (gal.): 3.00

Depth of Well (feet): 24.65 Calculate Purge Volume (gal.): 12.0

Depth to Water (feet): 6.22 Actual Purge Volume (gal.): ~60

Date Purged: 11-17-01 Date Sampled: 11-17-01

TIME	VOLUME	pH	E. C.	TEMP.	TURBIDITY
7:30	—	6.27	1,309	64.7	muddy
8:05	~60	6.84	788	69.3	cloudy

Other Observations: ____ Odor: none

Purging Equipment: Purger ES-60

Sampling Equipment: ____

Remarks: Sampled after well development

Samplers Signature: Herman Schymiczek

HerSchy **Environmental**

WATER SAMPLE FIELD DATA SHEET

Client Name: Alaska Gasoline Location: Oakland

Purged By: H. Schymiczek Sampled By: H. Schymiczek

Sample ID: MW-6 Type: Groundwater X Surface Water ___ Other ___

Casing Diameter (inches): 2 X 3 ___ 4 ___ 5 ___ 6 ___ Other ___

Casing Elevation (feet/MSL): 34.68 Volume in Casing (gal.): 2.70

Depth of Well (feet): 23.75 Calculate Purge Volume (gal.): 10.80

Depth to Water (feet): 7.19 Actual Purge Volume (gal.): ~60

Date Purged: 11-17-01 Date Sampled: 11-17-01

TIME	VOLUME	pH	E. C.	TEMP.	TURBIDITY
9:15	–	7.15	1,690	70.0	muddy
9:45	~60	7.53	1,722	68.2	cloudy

Other Observations: ___ Odor: faint gasoline

Purging Equipment: Purger ES-60

Sampling Equipment: " " "

Remarks: ___

Samplers Signature: Herman Schymiczek

CASTLE ANALYTICAL LABORATORY

CHAIN OF CUSTODY

Location: 2333 Shuttle Drive, Bldg 908/909, Atwater, CA 95301
Mailing Address: 2333 Shuttle Drive, Atwater, CA 95301
Phone: (209) 384-2930 - Fax: (209) 384-1507

Certificate No. 2079

Customer: Alaska Gasoline
Address: Oakland
City/State/ZIP:
Phone / FAX:
Proj # / P.O. #:
Report Attention:
Sampler Signature: Herman Schymiczek
Printed: Herman Schymiczek

Lab ID#	SAMPLE ID	DATE	TIME	DESCRIPTION/LOCATION	SAMPLE TYPE (g) grab (c) composite (d) discrete	SAMPLE MATRIX (s) solid (l) liquid (o) other	REQUESTED ANALYSES: BTEX/TPH-GAS	MTBE	TPH-DIESEL	TRPH 418.1M	NUMBER OF CONTAINERS	OBSERVATIONS/REMARKS
4226-16	B-14@10'	11/6/01	12:05		d	S	X	X				
FW	MW-1	11/7/01	10:05			L						
18W	MW-2	"	10:25									
19W	MW-3	"	10:50									
20W	MW-4	"	9:00									
21W	MW-5	"	8:05									
22W	MW-6	"	9:45		↓	↓	↓	↓				

Method of Shipment:

Notes:

	Signature	Printed Name	Date	Time	Company Name
Relinquished by:	Herman Schymiczek	Herman Schymiczek	11/9/01	3:10	HerSchy Environmental
Received by:		James Phillips	11/9/01	3:10	Castle Analytical
Relinquished by:					
Received by:					
Relinquished by:					
Received by:					

Total number of containers submitted to the laboratory

Note: All special requests (e.g. quick turn times) must be cleared through authorized laboratory personnel .

RESULTS DUE : _____

☐ VERBAL ☐ WRITTEN