April 3, 2008

Mr. Paresh Khatri
Alameda County
Health Care Services Agency
Environmental Health Services
1131 Harbor Bay Parkway, Ste. 250
Alameda, California 94502-6577

RE: **Site Update**
Alaska Gas
6211 San Pablo Avenue
Oakland, California

Dear Mr. Khatri:

Attached for your review and comment is the April 3, 2008 *Investigation Report for Dual Phase Extraction Pilot Test* prepared by HerSchy Environmental, Inc upon my behalf, for the above-referenced site.

As the legally authorized representative of the above-referenced project, I have reviewed the attached report and declare, under penalty of perjury, that the information and/or recommendations contained in the attached document are true and correct to the best of my knowledge.

Sincerely,

Mr. Pritpaul Sappal

HerSchy Environmental, Inc.

April 3, 2008
Project A51-01

Mr. Paresh Khatri
Alameda County
Health Care Services Agency
Environmental Health Services
1131 Harbor Bay Parkway, Ste. 250
Alameda, California 94502-6577

Re: **Investigation Report for Dual Phase Extraction Pilot Test**
Alaska Gasoline Company
6211 San Pablo Avenue
Oakland, California
Case #RO0000127

Dear Mr. Khatri:

HerSchy Environmental, Inc. (HerSchy), on behalf of Mr. Pritpaul Sappal of the Alaska Gasoline Company, has prepared this *Investigation Report for Dual Phase Pilot Test* for the site referenced above. 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 dual phase extraction (DPE) pilot test was originally proposed in HerSchy's *Proposal for Dual Phase Extraction Pilot Test*, dated January 26, 2007. The test was first attempted on May 7, 2007 using the onsite soil vapor extraction (SVE) system. The test was stopped after a short time due to inadequate system capabilities. A proposal for utilizing a more robust liquid-ring, high vacuum thermal oxidizer was made in HerSchy's May 11, 2007 *Dual Phase Extraction Pilot Test* along with details of the first pilot study attempt. Subsequent correspondence from Alameda County Environments Health Services (ACEHS) staff dated June 12, 2007 approved the modified objectives. In order to reduce the possibility of extending the compact smear zone any further, the test was postponed until water levels reached seasonal highs. The DPE test was conducted in order to evaluate the feasibility of utilizing a more aggressive extraction technique either to replace or to augment the currently installed soil vapor extraction system.

SITE LOCATION & DESCRIPTION

The site is located at 6211 San Pablo Avenue in Oakland, Alameda County, California (Figure 1). On February 12, 2004, three 10,000-gallon underground storage tanks (USTs) were removed under the supervision of Mr. Hernan Gomez as a representative of the City of Oakland. Currently, there are six, dual-sided, multi-product fuel dispensers and associated product piping connected to USTs and utilized for retail fuel sales (Figure 2).

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

GEOLOGY & HYDROGEOLOGY

The lithology encountered at the site during subsurface site assessment activities is reported as predominantly clay. Lesser intervals of silt, clayey silt, very fine to fine-grained sand (ML), and very fine to coarse-grained sand (SW) were encountered on site, but do not appear to be laterally continuous. Clayey gravel (GC) was encountered at 25 feet below grade (fbg) in well MW-6 and in boring B-10 at 10 fbg. The discontinuous coarser deposits may represent historic channel fill deposits. Given the local proximity to the San Francisco bay, the sediments encountered during site assessment activities are likely derived from bay silts and clays interspersed with seasonal stream-cut channels.

Historically, depth to groundwater has fluctuated from 3.96 feet to 9.33 fbg, which correlates to groundwater elevations ranging from 26.16 feet to 33.34 feet above msl. Groundwater flow has generally been to the southwest towards the San Francisco Bay.

METHODS OF INVESTIGATION

System Monitoring Data

Throughout the duration of the test, a number of system parameters were measured at regular intervals in the field. The monitored parameters included:

- System time and temperature
- Influent hydrocarbon concentrations (vapor) with a portable photo-ionization detector (PID)
- Air flow into the oxidizer
- Main system vacuum
- Applied vacuum on individual extraction wells EX-1, MW-3, and MW-4
- Groundwater elevation in and vacuum exerted on wells MW-1R, MW-2 (elevation only), MW-5, and MW-6 utilizing down-hole data loggers and magnahelic pressure readings, respectively
- Amount of water produced
- Propane usage

A comprehensive table of monitoring data is included as Appendix A.

Laboratory Sampling Procedures

Groundwater samples were collected from a sample collection spout located after the influent collection manifold. Groundwater samples were collected and contained in three 40-milliliter vials Each of the sample containers were filled completely to form a positive meniscus, capped, and checked to ensure no air bubbles were present.

Groundwater samples were sealed in a ziplock bag and placed in a cooler chest with either frozen gel packs or ice immediately after sampling. Samples were maintained at, or below, four degrees Celsius until delivered to the laboratory. All groundwater samples are stored, transported, and delivered under proper chain-of-custody documentation and delivered to a California certified laboratory.

Vapor samples were collected by using a vacuum box in conjunction with tedlar bags. A dedicated polyethylene hose is connected to the main influent process stream and connected to the sealed vacuum box. The hose is then connected to a tedlar bag located inside the vacuum box. When activated, a negative pressure is created inside the box, which inflates the tedlar bag with process air.

Vapor samples were then immediately sealed and placed in a dry, unchilled cooler out of the sun to prevent volatilization. All vapor samples are stored, transported, and delivered under proper chain-of-custody documentation and delivered to a California certified laboratory.

Laboratory Analyses

All groundwater samples were analyzed by McCampbell Analytical of Pittsburgh, California for total petroleum hydrocarbons as gasoline (TPHg), benzene, toluene, ethylbenzne, total xylenes (BTEX), and fuel oxygenate methyl tertiary butyl ether (MTBE) by EPA method 8021B/8015Cm.

All vapor samples were analyzed by McCampbell Analytical for TPHg, BTEX, MTBE, di-isopropyl ether (DIPE), ethyl tertiary butyl ether (ETBE), tertiary amyl methyl ether (TAME), tertiary butanol (TBA), 1,2-dichloroethane (1,2-DCA) and ethylene dibromide (EDB) by modified EPA method TO-15 or comparable.

DUAL PHASE EXTRACTION PILOT TEST RESULTS

The purpose of the dual phase extraction (DPE) pilot test was to determine the feasibility of DPE as an effective remediation technique. The DPE technique is a more aggressive technique than

the existing soil vapor extraction system (SVES). The DPE employs a much higher vacuum than the SVES, affecting a much greater area. The greater vacuum allows for extraction of both vapor and liquid-phase components, which in turn lowers the groundwater table exposing more vadose zone areas of concern. Previously, a soil vapor extraction system (SVES) had been employed onsite coupled with air sparging. While effective during the first 6-9 months of operation, the efficiency and effectiveness of the SVES appeared to reach asymptotic levels. The DPE pilot test was intended to evaluate whether a more aggressive system could lower the water table to levels which would allow residual hydrocarbons, previously unaffected by the SVES, to mobilize via both water and vapor streams. As proposed, the original test was to be done utilizing only extraction well EX-1. After an abbreviated test on May 7, 2007, modifications specified by ACEHS staff indicated that monitoring wells MW-3 and MW-4 should be included during this pilot test, and extracted simultaneously with EX-1

The DPE pilot test was initiated on February 5, 2008 utilizing a Mako Industries, Inc. portable 400 ACFM dual phase thermal oxidizer. Due to problems with inadequate horsepower during the first test conducted, the Mako unit was outfitted with an oil-sealed liquid ring blower capable of pulling up to 400 ACFM and up to 28" Hg (inches of mercury) vacuum. The unit was also outfitted with a 25 horsepower TEFC motor. Based on previous a free-product removal test and other experiences in areas with bay muds, the water production rate was anticipated to be roughly of 0.5 to 1 gallon per hour.

A PVC "stinger" was placed in each extraction well to control drawdown depths. Stinger depths were selected based on historical lows in groundwater elevation so as to prevent any vertical migration of the hydrocarbon smear zone. Upon test initiation, water production levels were roughly 20 gph. After approximately 2.5 hours, the system vacuum was reduced to both stem production rates and reduce overheating issues with the main oxidizer. Water production rates continued to be above 10 gph even at the systems minimum operating vacuum of 15" Hg (see field data sheet summary in Appendix A). The much greater water production rate reached the onsite water holding capacity before licensed hauler, NRC Environmental, Inc, (NRC) could be onsite for removal. As such, the test was halted after roughly 5 hours of runtime. A decision was made to restart the test early the following day with scheduled water pickups from NRC throughout the day in order to produce a test with constant vacuum on the sub-surface. An accessory 6,900 gallon storage tank was arranged for and delivered on February 6, 2008 to meet the water production rates and help minimize water pickups and test down time.

The test was restarted at 6:30 am February 6, 2008 after allowing some subsurface recharge overnight. Water production rates continued to be between 9 and 13 gph for the first 3.5 hours of runtime. Water production rates dropped to between 5.5 and 7.7 gph for the remainder of the test. The test was concluded at 9:30 pm February 6, 2008, after equipment failure of main oxidizer

components again halted the test at approximately 6:30 pm. The failure was later diagnosed by Mako personnel as an electrical issue associated with the primary system operations. During repair and restart attempts in the field, a patron of the gas station inadvertently allowed his car to roll into the temporary remediation compound and hit the 6,900 gal storage tank, knocking the tank out of line with its base, rendering it unsafe.

In light of water production issues, oxidizer equipment malfunction, instability of the water storage tanks, and lack of continuous vacuum on the subsurface, a decision was made to halt the test indefinitely after 12 hours of continuous runtime. It was determined that restarting the test again after system repairs would have made further water production prohibitively expensive and beyond the scope of this pilot test. The following sections describe monitoring and sampling protocols during test activities and include a discussion of data analyses.

All phases of this pilot test were conducted under the direction of a California professional geologist.

Groundwater Sampling Results

Groundwater samples were collected from the influent stream at approximately 1-hour after each system startup. A sample was also collected at 12 hours during the second operating session. All groundwater samples were collected and stored in three to six 40-milliliter vials preserved with HCl and fitted with Teflon-lined septa. Sample containers were filled to form a positive meniscus and checked after capping to ensure no air bubbles were present. All samples were placed in a sealed container at or below 4° C immediately following sampling. All samples were stored, transported, and delivered to the laboratory under proper chain-of-custody documentation.

A summary of reported concentrations are included in Table 1 below. Complete analytical results for groundwater are included as Appendix B.

Table 1
Analytical Data for Groundwater
Alaska Gasoline, Oakland, CA

Sample Name	*Date-Time*	*TPHg*	*Benzene*	*Toluene*	*Ethylbenzene*	*Total Xylene*	*MTBE*
Influent - 1 Hour	2/5/08 - 2:10 PM	38,000[a]	1,200	2,300	820	4,700	7,100
Influent - 2nd Day	2/6/08 - 7:45 AM	14,000[a]	340	1,000	350	2,500	10,000
Influent - 2nd Day @12 hrs	2/6/08 - 6:20 PM	16,000[a,b]	380	1,200	390	1,900	7,500

a) unmodified or weakly modified gasoline is significant; * all reported values in parts per billion (ppb)
b) liquid sample that contains greater than ~1 vol. % sediment;

Vapor Sampling Results

Vapor samples were collected from the influent air stream at approximately 1-hour after system startup (Sessions 1 & 2) and at 12 hours (Session 2 only). Air samples were collected using a vacuum box and tedlar bags attached to the influent air stream. Air samples were packed in sealed, unchilled containers for transport immediately following sampling. All samples were stored, transported, and delivered under proper chain-of-custody documentation.

A summary of reported concentrations are included in Table 2 below. Complete analytical results for air are included as Appendix B.

Table 2
Analytical Data for Air
Alaska Gasoline, Oakland, CA

Sample Name	*Date Time*	*TPHg*		*Benzene*		*Toluene*		*EthylBenzene*		*Xylenes*		*MTBE*	
		ppmv	ug/L	ppmv	ug/L	ppmv	ug/L	ppmv	ug/L	ppmv	ug/L	ppmv	ug/L
Influent - 1 Hour	2/5/08 2:10 pm	2,900[a]	10,000[a]	49	160	62	240	20	87	130	570	ND<90	ND<350
Influent - 2nd Day	2/6/08 7:45 am	2,800[a]	10,000[a]	32	100	82	310	18	81	110	470	ND<90	ND<350
Influent - 2nd Day @12 hrs	2/6/08 6:15 pm	7,700[a]	28,000[a]	100	330	250	970	61	270	250	1,100	ND<150	ND<600

a) unmodified or weakly modified gasoline is significant;

Waste Handling

Groundwater generated during the test was stored onsite in polyethylene storage tanks for later disposal. Licensed hauler NRC Environmental Services of Alameda, California removed all wastewater generated during testing to the Evergreen Oil, Inc. waste management facility in Newark, California.

DPE PILOT TEST FINDINGS

Over the course of the two abbreviated pilot tests, a total of approximately 8,500 gallons (gal) of water were produced. Based on runtime data and water production levels, the average water production rate was approximately 10.24 gallons-per-minute (gpm).

Down hole dataloggers were used in wells MW-1R, MW-2, MW-5, and MW-6 to measure drawdown in groundwater elevation. The dataloggers were in operation for the entire duration of the test and for several days following the test. The information from the dataloggers was

intended to be used as a means to estimate transmissivity, hydraulic conductivity, and radius of influence. Due to the abbreviated nature of the test, some of these values were not calculated. Although estimations are not made, several assertions can be made about site conditions.

Analysis of distance-drawdown curves for the various wells utilized during the test produced valuable information regarding the induced radius-of-influence. Because multiple wells were utilized during the extraction process, calculations were made based on both individual extraction locations as well as the total complement of extraction wells. Table 3 below, summarizes the findings of these calculations.

Table 3
Distance-Drawdown Calculations based on Field Data
Alaska Gas, Oakland, Ca

Well	*Measured Drawdown (Session 1)* *ft*		*Measured Drawdown (Session 2)* *ft*	
MW-1RR	0.539		0.610	
MW-2	0.377		0.078	
MW-5	1.578		1.648	
MW-6	0.441		0.457	
Well	*Distance from **MW-3*** *ft*	*Distance from **MW-4*** *ft*	*Distance from **EX-1*** *ft*	***Avg. Distance from All Extraction Wells*** *ft*
MW-1RR	48.52	98.20	109.31	85.34
MW-2	72.43	119.47	132.35	108.08
MW-5	56.28	87.39	93.45	79.04
MW-6	96.14	112.20	124.92	111.09

* ft – feet

The measured drawdown listed for session 2 was taken as the difference between the recharged level after session 1 (different from static at test initiation) and the level at final system shutdown. Each set of measured drawdown are relative numbers taken only from data and time set relating directly to the individual sessions. Upon review of data after test completion it appears that groundwater recovered no more than 50% from session 1 results; drawdown values, however, were notable throughout the site. Recovery of well MW-2 prior to session two was approximately 30%, with session 2 drawdown being marginal (about 20% of session 1 drawdown). These drawdown values, ranging from about 0.50 feet to 1.50 feet, with the exception of MW-2, indicate a good radius-of-influence extending over the site. A more detailed investigation is not possible due to the several stoppages occurring during the test, including high water production issues and mechanical failure of the oxidizer. However, a qualitative analysis is appropriate from the gathered data.

Based on distance-drawdown measurements made utilizing the average distances from the extraction wells, the radius-of-influence is approximately 100 to 130 ft. A distance versus

drawdown semi-log plot of the drawdown data was used to interpret radius of influence and is included as Figure 3. The range in the radius of influence is included to account for zones of different hydraulic conductivity and to account for possible margins of error in field measurements.

Contaminant Removal

Based on analytical data collected throughout the duration of the pilot test, approximately 102.55 lbs or the equivalent of 16.59 gallons of product were removed from the subsurface in vapor phase. Approximately 1.64 lbs or the equivalent of 0.27 gallons of product were removed from the subsurface in liquid phase, as determined from groundwater concentrations. It is important to note, however, that contaminants from water would have been volatilized during the high vacuum extraction process, forcing some groundwater contaminants into vapor phase, and consequently lumped in with the vapor data. While the totality of contaminants removed is unchanged, it is likely that contaminants from groundwater removed is higher than is reported, while actual soil vapor concentrations removed are less. In total, approximately 104.19 lbs or the equivalent of 16.86 gallons of product were removed from the subsurface during dual-phase extraction efforts. Table 4, below, provides a summary of contaminant removal data.

Table 4
Summary of Contaminant Removal Calculations based on Analytical Data
Alaska Gas, Oakland, Ca

Date / Sample ID	*Hours of Blower Operation*	*Influent as TPHg (µg/L)*	*Air Flow (CFM)**	*VOCs Removed (lbs/day)*	*Total VOCs Removed (lbs)*
2/5/2008 Session 1 Influent - 1 Hour	5.1	10,000	69.0	61.91	13.155
2/6/2008 Session 2 Influent - 2nd Day	1.25	10,000	54.0	48.45	2.523
2/6/2008 Session 2 Influent - 2nd Day @12 hrs	10.75	28,000	66.2	166.35	74.512
Total pounds removed (vapor-phase)				***90.19***	
Total equivalent in gallons of product as gasoline				***14.59***	

Date	***Session***	*Gallons of groundwater Removed*	*Influent as TPHg (ppb)*	*Pounds of Mass Removed as TPHg*	*Equivalent in Gallons*
2/5/2008	Session 1	3,000	38,000	0.951	0.154
2/6/2008	Session 2	5,500	15,000	0.688	0.111
Total pounds removed (liquid-phase)				***1.640***	
Total equivalent in gallons of product as gasoline				***0.265***	
			COMBINED TOTAL REMOVED (lbs)		**91.83**
			Equivalent in Gallons		**14.86**

* TPHg - Total Petroleum Hydrocarbons as Gasoline
* CFM - cubic feet per minute
* lbs/day - pounds (US) per day
* lbs - pounds (US)

Further details of the contaminant removal calculations, including formulae used, are included in Appendix C.

CONCLUSIONS

It appears that, based on the findings discussed above, that dual phase extraction is an effective alternative for use in conjunction with or as a replacement for the current vapor extraction system at Alaska Gasoline. Although water production was a bigger issue than anticipated, it is clear that the temporary DPE system was able to produce a broad range of influence (100 -130 ft radius-of-influence). If the test had continued, the radius of influence may have grown as equilibrium was reached, producing less water and making this option more economically feasible. The main goals of this technique were to bring the water table down to a level that would make residual impact within the vadose zone more available to the induced vacuum of the DPE system while concurrently pulling in impacted water. After experiencing diminishing returns from the existing vapor extraction system trending towards asymptotic levels, it appears that the more aggressive

dual phase extraction system has the ability to influence and operate on impacted areas that were previously unavailable.

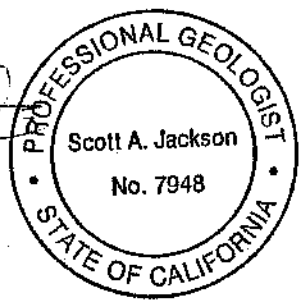
To reiterate, the goal of this test was to evaluate a viable option to the currently installed SVE system onsite. The pilot test showed that this method is indeed an effective option, removing about 15 gallons of product in roughly 17 hours of operation. The question that remains is whether or not this is the most cost effective option to remediate the residual impact onsite. An evaluation would need to be made on the economic feasibility for on-site water treatment and discharge versus hauling untreated water off site for disposal. If water production rates do not subside over time when utilizing this method, then costs associated with waste hauling would make this method prohibitively expensive. At present, HerSchy is still attempting to define the full extent of the hydrocarbon plume. Without knowing the full extents of the plume, it is difficult to recommend a full scale remedial option. There have been many obstacles throughout the history of this investigation. HerSchy continues its attempts at moving forward with the various ongoing investigative efforts, which include continuing to define the hydrocarbon plume to its lateral extents, evaluating different feasible remedial options, and working with city officials and private property owners to further our work. HerSchy continues to await approval for work proposed last summer, after which we would be able to define the lateral extent of the plume.

CLOSING

We appreciate the opportunity to work with you on this matter. Please contact Reijo Ratilainen (559) 760-0037 or Scott Jackson (559) 641-7320 with any questions or for additional information.

Sincerely,

HerSchy Environmental, Inc.



Reijo Ratilainen
Project Geologist

Scott Jackson, P.G. #7948
Senior Project Geologist

Figures
1 – Vicinity Map
2 – Site Plan
3 – Distance vs. Drawdown Graph

Appendices
A – Field Data Table
B – Laboratory Analytical Results
C – Contaminant Removal Calculations

cc: Mr. Pritpaul Sappal
Mr. Hernan Gomez, Oakland Fire Services Agency
Ms. Alyce Sandbach, Deputy District Attorney

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

SITE LOCATION MAP

ALASKA GASOLINE COMPANY

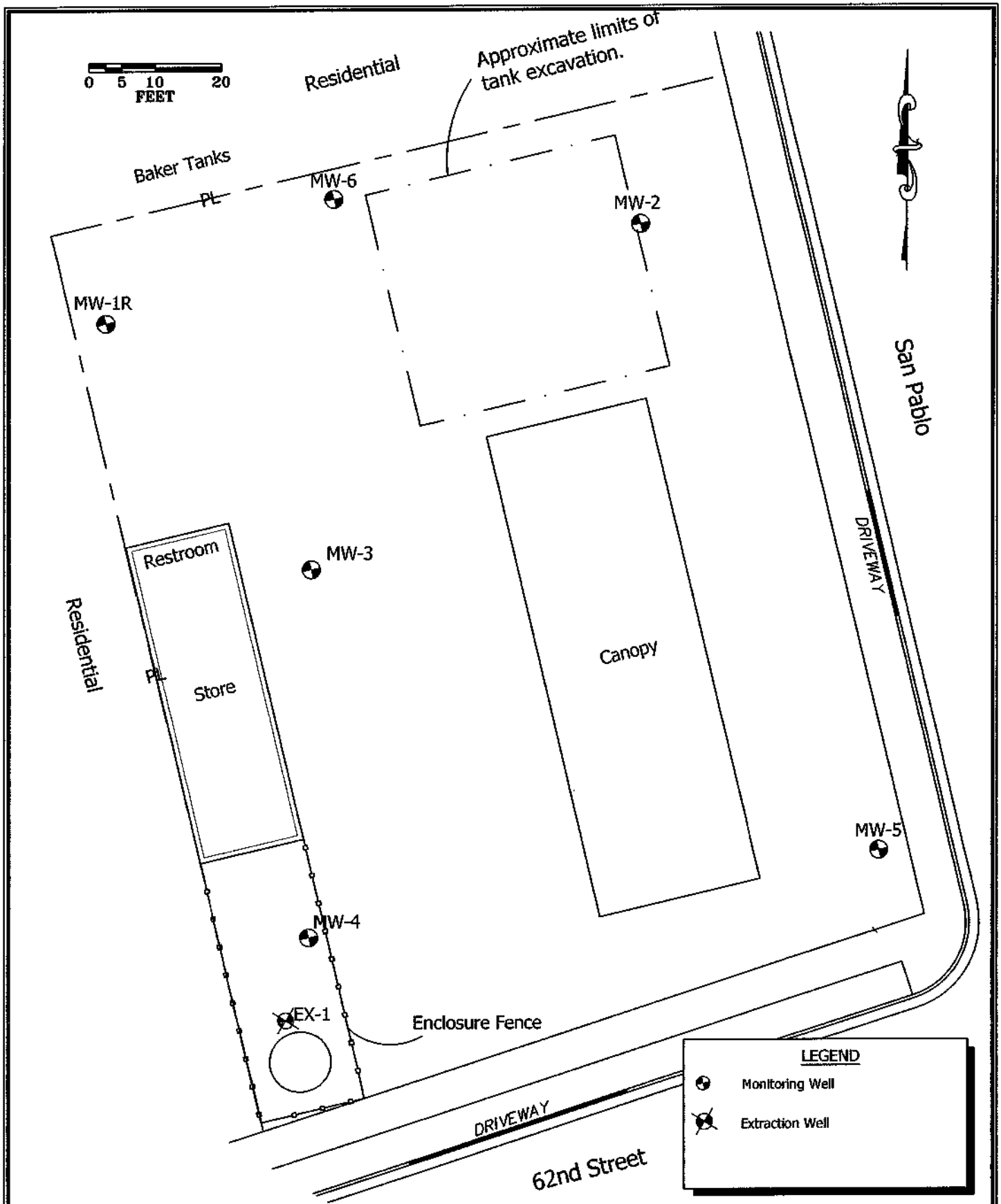
6211 San Pablo Avenue, Oakland, California

DATE: August 2005

FILE NO.: A51.01

DRAWN BY: WEA

FIGURE 1



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SITE MAP

ALASKA GASOLINE COMPANY

6211 San Pablo Avenue, Oakland, California

DATE:

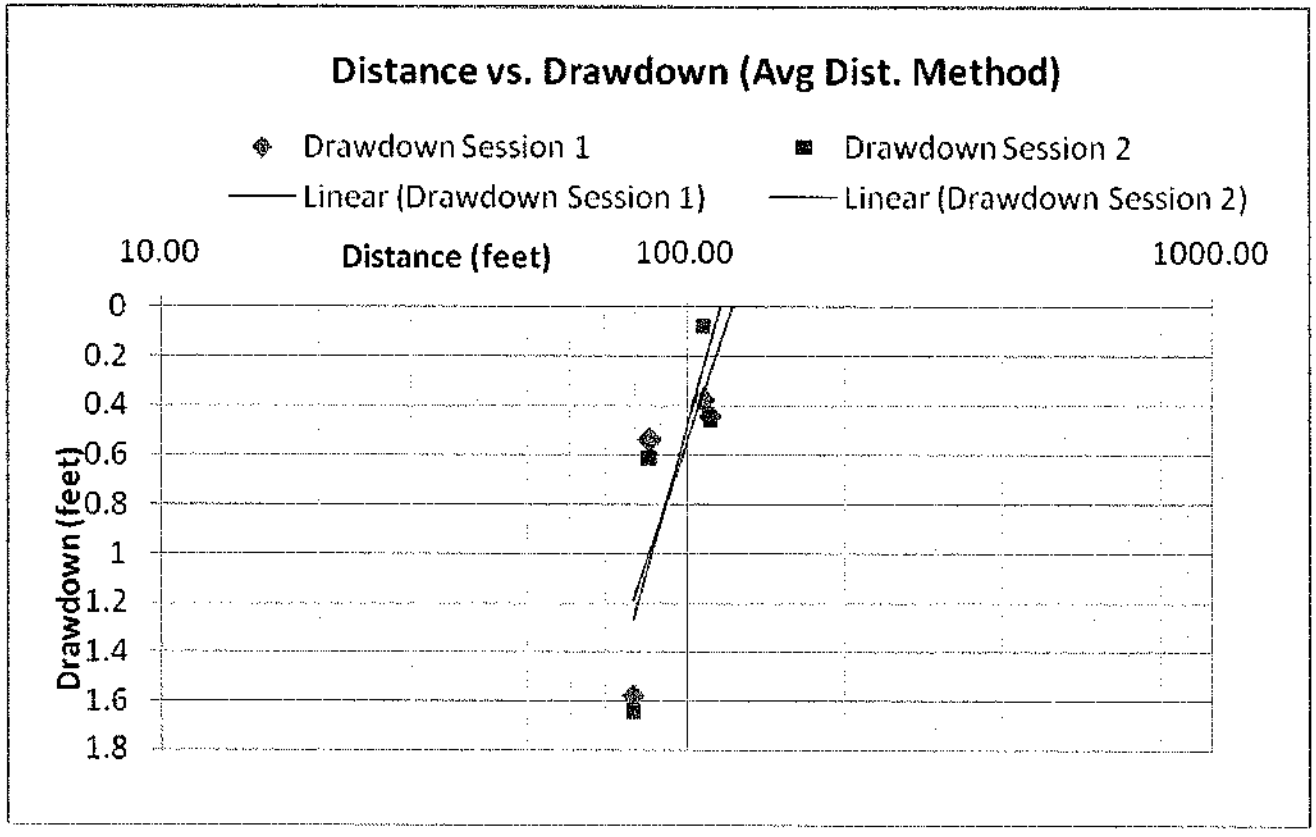
FILE NO.: A51-01

DRAWN BY: RER

FIGURE 2

Figure 3: Semi-Log Plot of Distance-Drawdown Curve

The distance-drawdown graph shown is used to establish a radius-of-influence for the DPE test conducted. Because there were three extraction wells used in conjunction with each other, the relative distances to the distal wells (wells MW-1RR, MW-2, MW-5, and MW-6) was averaged for simplicity.



APPENDIX A

Field Data Table

Field Data Table

Alaska Gas, Oakland, Ca

Date	Time	System Hrs.	HerSchy Influent (ppm)	Horiba Influent (ppm)	TC (degrees)	Airflow (cfm)	EX-1 ("Hg)	MW-4 ("Hg)	MW-3	"Hg/"H2O	MW-1R ("H2O)	MW-5 ("H2O)	MW-6 ("H2O)	Water Levels (gals)	Water Production Rate (GPM)	Liqiud Ring ("Hg)	Propane Level (%)
2/5/08	1:20 PM	118123	8180	5500	1486	20.3	11	17									20
	1:35 PM	118126	775		1571	16.5	16	19	50	H2O	0	0	0				20
	1:55 PM	118129	1000		1608	17*	16	20	+100	H2O							20
	2:10 PM	118132	950		1675	17.9	17	20	+100	H2O				1075	21.48		20
	2:30 PM	118137	1000		1566	62.5	14	16.5	15	Hg				1400	20.00		20
At 2:30 PM -system smoking, open dilution air																	
	3:20 PM	118143	1070		1630	36	16	19	16	Hg				1725	14.38	26	20
	3:50 PM	118149	1115	5370	1614	36.8	16	19	15	Hg				2075	13.83	26	20
	4:30 PM	118154	753		1430	148	6	10	0-5*	Hg				2300	12.11	15.5	20
	5:00 PM	118159	625		1457	150	6	9	1-5*	Hg						15.5	20
NRC onsite for water removal ~4:45pm-5:15pm, remove 2300 gallons (according to manifest)																	
	5:20 PM	118163	860		1300	107	9.5	12.5	5	Hg						18	20
	5:55 PM	118169	875		1440	110	10	12.5	5.5	Hg				450	11.25	18	20
	6:20 PM	118173	930		1443	106	10	12.5	8	Hg				650	10.00	18	19
System shut down at 118174 hours with 700 gallons in tank																	
2/6/08	6:30 AM	118175	875		1450	51.5	13	16	13	Hg				700		25	19
	6:45 AM	118177	915		1490	52.5	17	16-17*	13	Hg				850	10.00		19
	7:00 AM	118180	1000		1384	56	14	16	14	Hg	0	0.75	0	1115	13.83	24.5	18.5
	7:25 AM	118184	1130		1460	56	14	16.5	14	Hg				1400	12.73	24	18
	8:00 AM	118190	1110		1375	59	15	16	14	Hg				1775	11.94	24	18
	8:30 AM	118194	1205		1423	60	15	16.5	14.5	Hg	0	0.98	0	1975	10.63	24	16.5
	9:00 AM	118199	1200		1454	57.5	15	16	14	Hg				2250	10.33	24	17
	9:30 AM	118205	1300		1451	59	15	16	14	Hg	0	0.1	0	2475	9.86	23.5	
	10:00 AM	118210	1285		1451	60	15	16	13	Hg				2600	9.05	23.5	16
NRC onsite for water removal ~9:30am-10:15am, remove 2600 gallons (according to manifest)																	
	10:15 AM	118213	985		1453	117	9	12	6	Hg				0		17	16
	11:00 AM	118220	940		1446	117	9	12	7.5	Hg				275	6.11	17	15.5

Field Data Table*(Cntinued)*

Alaska Gas, Oakland, Ca

Date	Time	System Hrs.	HerSchy Influent (ppm)	Horiba Influent (ppm)	TC (degrees)	Airflow (cfm)	EX-1 ("Hg)	MW-4 ("Hg)	MW-3	"Hg/"H2O	MW-1R ("H2O)	MW-5 ("H2O)	MW-6 ("H2O)	Water Levels (gals)	Water Production Rate (GPM)	Liqiud Ring ("Hg)	Propane Level (%)
	11:45 AM	118227	825		1444	117	9	12	10	Hg				525	5.83	17	15
	12:35 PM	118235	1015		1485	49	16	17	16.5	Hg				775	5.54	25	14
	1:00 PM	118240	1375		1614	49.5	16	17	16	Hg				925	5.61	25	14
	1:30 PM	118245	1415		1612	51.5	16	17	16.5	Hg				1200	6.15	25	14
	2:00 PM	118250	1450		1617	52	16	17	16	Hg	0	0	0	1400	6.22	25	14
	3:00 PM	118260	1425		1645	47.5	16	17.5	16	Hg				1800	6.32	25	14
NRC onsite for water removal ~3:00pm-3:25pm, remove 1950 gallons (according to manifest)																	
At 3:25 PM -system blower auto shutoff (down 5 minutes), extra 6900-gal tank installed for water production issues																	
	4:25 PM	118273	1415		1748	53.5	14	16.5	15	Hg				466	7.77	24.5	13.5
	5:25 PM	118283	1550		1698	54.5	14	16.5	14	Hg				875	7.29	24.5	12.5
	6:25 PM	118293	1500		1668	55.5	16	17	15	Hg				1400	7.78	24.5	12.5
At 8:25 PM -back onsite and system was down with clock at 118295. Apparent electrical issue. Reset breakers and restarted.																	
	9:06 PM	118299	1315		1747	56	13	15						1575		24	12
	9:15 PM		1650		1685	70-90**										19.5	
	At 9:15 PM -system shutdown (possibly vacuum overload)																
NRC back on 2/8/08 to remove final load of ~1625-1650gals; Total water removed = 8,500-gals																	

* Estimate (due to moisture)

** Varying between range

measured as vacuum in tested wells

Avg production rate for duration of Test (gpm) 10.24

APPENDIX B

Laboratory Analytical Results

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Web: www.mccampbell.com E-mail: main@mccampbell.com
Telephone: 877-252-9262 Fax: 925-252-9269

Herschy Environmental P.O. Box 229 Bass Lake, CA 93604	Client Project ID: Alaska Gas-DPE	Date Sampled: 02/05/08-02/06/08
		Date Received: 02/06/08
	Client Contact: Reijo Ratilainen	Date Reported: 02/07/08
	Client P.O.:	Date Completed: 02/07/08

WorkOrder: 0802105

February 07, 2008

Dear Reijo:

Enclosed within are:

1) The results of the **4** analyzed samples from your project: **Alaska Gas-DPE,**
2) A QC report for the above samples,
3) A copy of the chain of custody, and
4) An invoice for analytical services.

All analyses were completed satisfactorily and all QC samples were found to be within our control limits.

If you have any questions or concerns, please feel free to give me a call. Thank you for choosing McCampbell Analytical Laboratories for your analytical needs.

Best regards,

Angela Rydelius
Laboratory Manager
McCampbell Analytical, Inc.

0802105

McCAMPBELL ANALYTICAL, INC.
1534 WILLOW PASS ROAD
PITTSBURG, CA 94565-1701
Website: www.mccampbell.com Email: main@mccampbell.com
Telephone: (877) 252-9262 Fax: (925) 252-9269

RUSH

CHAIN OF CUSTODY RECORD

TURN AROUND TIME ☑ RUSH ☐ 24 HR ☐ 48 HR ☐ 72 HR ☐ 5 DAY

GeoTracker EDF ☐ PDF ☐ Excel ☐ Write On (DW) ☐

☐ Check if sample is effluent and "J" flag is required

Report To: Reijo Rantalainen Bill To: HerSchy Env. Inc.
Company: HerSchy Environmental, Inc P.O. Box 229

E-Mail: Reijo.R@HerSchy@STI.net
Tele: (559) 760-0037 Fax: (559) 641-7340
Project #: [illegible] Project Name: Alaska Gas - DPE
Project Location: 6211 San Pablo Ave, Oakland CA
Sampler Signature:

SAMPLE ID	LOCATION/ Field Point Name	SAMPLING Date	SAMPLING Time	# Containers	Type Containers	MATRIX Water	MATRIX Soil	MATRIX Air	MATRIX Sludge	MATRIX Other	METHOD PRESERVED ICE	METHOD PRESERVED HCL	METHOD PRESERVED HNO_3	METHOD PRESERVED Other	BTEX & TPH as Gas (602 / 8021 + 8015) / MTBE	TPH as Diesel (8015)	Total Petroleum Oil & Grease (1664 / 5520 E/B&F)	Total Petroleum Hydrocarbons (418.1)	EPA 502.2 / 601 / 8010 / 8021 (HVOCs)	MTBE / BTEX ONLY (EPA 602 / 8021)	EPA 505/ 608 / 8081 (Cl Pesticides)	EPA 608 / 8082 PCB's ONLY; Aroclors / Congeners	EPA 507 / 8141 (NP Pesticides)	EPA 515 / 8151 (Acidic Cl Herbicides)	EPA 524.2 / 624 / 8260 (VOCs)	EPA 525.2 / 625 / 8270 (SVOCs)	EPA 8270 SIM / 8310 (PAHs / PNAs)	CAM 17 Metals (200.7 / 200.8 / 6010 / 6020)	LUFT 5 Metals (200.7 / 200.8 / 6010 / 6020)	Lead (200.7 / 200.8 / 6010 / 6020)	Other	Other	Other	Comments
Influent - 1 hour		2/5/08		2	VOA	X						X			X																			Filter Samples for Metals analysis: Yes / No
Influent - 2nd Day		2/6/08		2	VOA	X						X			X																			
Influent - 1 hour		2/5/08		1	Tbag			X							X																			
Influent - 2nd day		2/6/08		1	Tbag			X							X																			

Relinquished By:	Date:	Time:	Received By:
[signature]	2/6/08	1:00	[signature]
[signature]	2/6/08	2:00	[signature] 2/6/08 2:00 PM

ICE/t° 10.2 °C
GOOD CONDITION ✓
HEAD SPACE ABSENT ✓
DECHLORINATED IN LAB N/A
APPROPRIATE CONTAINERS ✓
PRESERVED IN LAB HCL ✓

COMMENTS:

	VOAS	O&G	METALS	OTHER
PRESERVATION	HCL		pH<2	

McCampbell Analytical, Inc.
1534 Willow Pass Rd
Pittsburg, CA 94565-1701
(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 0802105 **ClientID: HEBL**

☐ EDF ☐ Excel ☐ Fax ☐ Email ☐ HardCopy ☐ ThirdParty

Report to:
Reijo Ratilainen
Herschy Environmental
P.O. Box 229
Bass Lake, CA 93604

Email: Reijorherschy@sti.net
TEL: (559) 641-7320 FAX: (559) 641-7340
ProjectNo: Alaska Gas-DPE
PO:

Bill to:
Katie Hickling
Herschy Environmental
P.O. Box 229
Bass Lake, CA 93604

Requested TAT: 1 day

Date Received: **02/06/2008**
Date Printed: **02/06/2008**

Sample ID	ClientSampID	Matrix	Collection Date	Hold	Requested Tests (See legend below)											
					1	2	3	4	5	6	7	8	9	10	11	12
0802105-001	Influent-1 Hour	Water	2/5/2008	☐		A										
0802105-002	Influent- 2nd Day	Water	2/6/2008	☐		A										
0802105-003	Influent- 1 Hour	Air	2/5/2008	☐	A											
0802105-004	Influent- 2nd Day	Air	2/6/2008	☐	A											

Test Legend:

1	G-MBTEX_AIR	2	G-MBTEX_W	3		4		5	
6		7		8		9		10	
11		12							

The following SampIDs: 003A, 004A contain testgroup.

Prepared by: Samantha Arbuckle

Comments:

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.

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Telephone: 877-252-9262 Fax: 925-252-9269

Sample Receipt Checklist

Client Name: **Herschy Environmental**
Date and Time Received: **2/6/2008 2:06:53 PM**

Project Name: **Alaska Gas-DPE**
Checklist completed and reviewed by: Samantha Arbuckle

WorkOrder N°: **0802105** Matrix Air/Water
Carrier: Rob Pringle (MAI Courier)

Chain of Custody (COC) Information

Chain of custody present?	Yes ☑	No ☐
Chain of custody signed when relinquished and received?	Yes ☑	No ☐
Chain of custody agrees with sample labels?	Yes ☑	No ☐
Sample IDs noted by Client on COC?	Yes ☑	No ☐
Date and Time of collection noted by Client on COC?	Yes ☑	No ☐
Sampler's name noted on COC?	Yes ☑	No ☐

Sample Receipt Information

Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	NA ☐
Shipping container/cooler in good condition?	Yes ☑	No ☐	
Samples in proper containers/bottles?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	

Sample Preservation and Hold Time (HT) Information

All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature	Cooler Temp: 10.2°C		NA ☐
Water - VOA vials have zero headspace / no bubbles?	Yes ☑	No ☐	No VOA vials submitted ☐
Sample labels checked for correct preservation?	Yes ☑	No ☐	
TTLC Metal - pH acceptable upon receipt (pH<2)?	Yes ☐	No ☐	NA ☑

Client contacted: Date contacted: Contacted by:

Comments:

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Web: www.mccampbell.com E-mail: main@mccampbell.com
Telephone: 877-252-9262 Fax: 925-252-9269

Herschy Environmental	Client Project ID: Alaska Gas-DPE	Date Sampled: 02/05/08-02/06/08
P.O. Box 229		Date Received: 02/06/08
Bass Lake, CA 93604	Client Contact: Reijo Ratilainen	Date Extracted: 02/06/08
	Client P.O.:	Date Analyzed 02/06/08

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE*

Extraction method SW5030B Analytical methods SW8021B/8015Cm Work Order: 0802105

Lab ID	Client ID	Matrix	TPH(g)	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes	DF	% SS
003A	Influent- 1 Hour	A	10,000,a	ND<350	160	240	87	570	20	99
004A	Influent- 2nd Day	A	10,000,a	ND<350	100	310	81	470	20	103

Reporting Limit for DF =1; ND means not detected at or above the reporting limit	A	25	2.5	0.25	0.25	0.25	0.25	1	µg/L
	S	NA	NA	NA	NA	NA	NA	1	mg/Kg

* water and vapor samples are reported in µg/L, soil/sludge/solid samples in mg/kg, wipe samples in µg/wipe, product/oil/non-aqueous liquid samples in mg/L.

cluttered chromatogram; sample peak coelutes with surrogate peak.

+The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified gasoline is significant; b) heavier gasoline range compounds are significant(aged gasoline?); c) lighter gasoline range compounds (the most mobile fraction) are significant; d) gasoline range compounds having broad chromatographic peaks are significant; biologically altered gasoline?; e) TPH pattern that does not appear to be derived from gasoline (stoddard solvent / mineral spirit?); f) one to a few isolated non-target peaks present; g) strongly aged gasoline or diesel range compounds are significant; h) lighter than water immiscible sheen/product is present; i) liquid sample that contains greater than ~1 vol. % sediment; j) reporting limit raised due to high organic / MTBE content; k) TPH pattern that does not appear to be derived from gasoline (aviation gas). m) no recognizable pattern.

DHS ELAP Certification N° 1644

Angela Rydelius, Lab Manager

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Web: www.mccampbell.com E-mail: main@mccampbell.com
Telephone: 877-252-9262 Fax: 925-252-9269

Herschy Environmental	Client Project ID: Alaska Gas-DPE	Date Sampled: 02/05/08
P.O. Box 229		Date Received: 02/06/08
Bass Lake, CA 93604	Client Contact: Reijo Ratilainen	Date Extracted: 02/06/08
	Client P.O.:	Date Analyzed 02/06/08

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with MTBE and BTEX in ppmv*

Extraction method SW5030B Analytical methods SW8021B/8015Cm Work Order: 0802105

Lab ID	Client ID	Matrix	TPH(g)	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes	DF	% SS
003A	Influent- 1 Hour	A	2900,a	ND<90	49	62	20	130	20	99
004A	Influent- 2nd Day	A	2800,a	ND<90	32	82	18	110	20	103

ppm (mg/L) to ppmv (ul/L) conversion for TPH(g) assumes the molecular weight of gasoline to be equal to that of hexane.

Reporting Limit for DF =1; ND means not detected at or above the reporting limit	A	7.0	0.68	0.077	0.065	0.057	0.057	1	uL/L
	S	NA	NA	NA	NA	NA	NA	1	mg/Kg

* vapor samples are reported in µL/L, soil/sludge/solid samples in mg/kg, wipe samples in µg/wipe, product/oil/non-aqueous liquid samples in mg/L, water samples and all TCLP & SPLP extracts are reported in µg/L.

cluttered chromatogram; sample peak coelutes with surrogate peak.

+The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified gasoline is significant; b) heavier gasoline range compounds are significant(aged gasoline?); c) lighter gasoline range compounds (the most mobile fraction) are significant; d) gasoline range compounds having broad chromatographic peaks are significant; biologically altered gasoline?; e) TPH pattern that does not appear to be derived from gasoline (stoddard solvent / mineral spirit?); f) one to a few isolated non-target peaks present; g) strongly aged gasoline or diesel range compounds are significant; h) lighter than water immiscible sheen/product is present; i) liquid sample that contains greater than ~1 vol. % sediment; j) reporting limit raised due to high organic / MTBE content; k) TPH pattern that does not appear to be derived from gasoline (aviation gas). m) no recognizable pattern.

DHS ELAP Certification N° 1644

Angela Rydelius, Lab Manager

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Web: www.mccampbell.com E-mail: main@mccampbell.com
Telephone: 877-252-9262 Fax: 925-252-9269

Herschy Environmental	Client Project ID: Alaska Gas-DPE	Date Sampled: 02/05/08-02/06/08
P.O. Box 229		Date Received: 02/06/08
Bass Lake, CA 93604	Client Contact: Reijo Ratilainen	Date Extracted: 02/07/08
	Client P.O.:	Date Analyzed 02/07/08

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE*

Extraction method SW5030B Analytical methods SW8021B/8015Cm Work Order: 0802105

Lab ID	Client ID	Matrix	TPH(g)	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes	DF	% SS
001A	Influent-1 Hour	W	38,000,a	7100	1200	2300	820	4700	50	116
002A	Influent- 2nd Day	W	14,000,a	10,000	340	1000	350	2500	10	96

Reporting Limit for DF =1; ND means not detected at or above the reporting limit	W	50	5.0	0.5	0.5	0.5	0.5	1	µg/L
	S	NA	NA	NA	NA	NA	NA	1	mg/Kg

* water and vapor samples and all TCLP & SPLP extracts are reported in ug/L, soil/sludge/solid samples in mg/kg, wipe samples in µg/wipe, product/oil/non-aqueous liquid samples in mg/L.

cluttered chromatogram; sample peak coelutes with surrogate peak.

+The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified gasoline is significant; b) heavier gasoline range compounds are significant(aged gasoline?); c) lighter gasoline range compounds (the most mobile fraction) are significant; d) gasoline range compounds having broad chromatographic peaks are significant; biologically altered gasoline?; e) TPH pattern that does not appear to be derived from gasoline (stoddard solvent / mineral spirit?); f) one to a few isolated non-target peaks present; g) strongly aged gasoline or diesel range compounds are significant; h) lighter than water immiscible sheen/product is present; i) liquid sample that contains greater than ~1 vol. % sediment; j) reporting limit raised due to high MTBE content; k) TPH pattern that does not appear to be derived from gasoline (aviation gas). m) no recognizable pattern; n) TPH(g) range non-target isolated peaks subtracted out of the TPH(g) concentration at the client's request; p) see attached narrative.

DHS ELAP Certification N° 1644

Angela Rydelius, Lab Manager

McCampbell Analytical, Inc.
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Web: www.mccampbell.com E-mail: main@mccampbell.com
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QC SUMMARY REPORT FOR SW8021B/8015Cm

W.O. Sample Matrix: Air/Water QC Matrix: Water WorkOrder 0802105

EPA Method SW8021B/8015Cm **Extraction SW5030B** **BatchID: 33657** **Spiked Sample ID: 0802103-007A**

Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)			
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
TPH(btex)£	ND	60	86.4	78.6	9.45	108	111	2.82	70 - 130	30	70 - 130	30
MTBE	ND	10	96.2	95.4	0.788	99.4	103	3.18	70 - 130	30	70 - 130	30
Benzene	ND	10	93.4	96.5	3.18	96.5	97.4	0.914	70 - 130	30	70 - 130	30
Toluene	ND	10	94.1	98	4.08	96.7	97.7	1.08	70 - 130	30	70 - 130	30
Ethylbenzene	ND	10	92.2	93.9	1.76	101	102	0.788	70 - 130	30	70 - 130	30
Xylenes	ND	30	89.3	85.3	4.53	110	113	2.99	70 - 130	30	70 - 130	30
%SS:	92	10	103	110	5.88	90	91	0.862	70 - 130	30	70 - 130	30

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:

NONE

BATCH 33657 SUMMARY

Sample ID	Date Sampled	Date Extracted	Date Analyzed	Sample ID	Date Sampled	Date Extracted	Date Analyzed
0802105-001A	02/05/08	02/07/08	02/07/08 9:23 AM	0802105-002A	02/06/08	02/07/08	02/07/08 10:46 AM
0802105-002A	02/06/08	02/07/08	02/07/08 12:00 PM	0802105-003A	02/05/08	02/06/08	02/06/08 4:04 PM
0802105-004A	02/06/08	02/06/08	02/06/08 4:37 PM				

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

% Recovery = 100 * (MS-Sample) / (Amount Spiked); RPD = 100 * (MS - MSD) / ((MS + MSD) / 2).

MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.

£ TPH(btex) = sum of BTEX areas from the FID.

cluttered chromatogram; sample peak coelutes with surrogate peak.

DHS ELAP Certification N° 1644

QA/QC Officer

McCampbell Analytical, Inc.
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1534 Willow Pass Road, Pittsburg, CA 94565-1701
Web: www.mccampbell.com E-mail: main@mccampbell.com
Telephone: 877-252-9262 Fax: 925-252-9269

Herschy Environmental	Client Project ID: Alaska Gas-DPE	Date Sampled: 02/06/08
P.O. Box 229		Date Received: 02/07/08
Bass Lake, CA 93604	Client Contact: Reijo Ratilainen	Date Reported: 02/12/08
	Client P.O.:	Date Completed: 02/12/08

WorkOrder: 0802150

February 12, 2008

Dear Reijo:

Enclosed within are:

1) The results of the 2 analyzed samples from your project: **Alaska Gas-DPE,**
2) A QC report for the above samples,
3) A copy of the chain of custody, and
4) An invoice for analytical services.

All analyses were completed satisfactorily and all QC samples were found to be within our control limits.

If you have any questions or concerns, please feel free to give me a call. Thank you for choosing McCampbell Analytical Laboratories for your analytical needs.

Best regards,

Angela Rydelius
Laboratory Manager
McCampbell Analytical, Inc.

0802150

McCAMPBELL ANALYTICAL, INC.

1534 WILLOW PASS ROAD
PITTSBURG, CA 94565-1701
Website: www.mccampbell.com Email: main@mccampbell.com
Telephone: (877) 252-9262 Fax: (925) 252-9269

CHAIN OF CUSTODY RECORD

TURN AROUND TIME ☐ RUSH ☐ 24 HR ☐ 48 HR ☐ 72 HR ☑ 5 DAY

GeoTracker EDF ☐ PDF ☐ Excel ☐ Write On (DW) ☐

☐ Check if sample is effluent and "J" flag is required

Report To: Reijo Rafilaanen Bill To: Same

Company: HerSchy Environmental Inc.

E-Mail: ReijoRHerSchy@Sbcglobal.net

Tele: (559) 760-0057 Fax: (559) 124-7340

Project #: Project Name: Alaska Gas - DPE

Project Location: 6211 San Pablo Ave, Oakland, CA

Sampler Signature:

SAMPLE ID	LOCATION/ Field Point Name	SAMPLING Date	SAMPLING Time	# Containers	Type Containers	MATRIX Water	MATRIX Soil	MATRIX Air	MATRIX Sludge	MATRIX Other	METHOD PRESERVED ICE	METHOD PRESERVED HCL	METHOD PRESERVED HNO_3	METHOD PRESERVED Other	BTEX & TPH as Gas (602 / 8021 + 8015) / MTBE	TPH as Diesel (8015)	Total Petroleum Oil & Grease (1664 / 5520 E/B&F)	Total Petroleum Hydrocarbons (418.1)	EPA 502.2 / 601 / 8010 / 8021 (HVOCs)	MTBE / BTEX ONLY (EPA 602 / 8021)	EPA 505/ 608 / 8081 (CI Pesticides)	EPA 608 / 8082 PCB's ONLY; Aroclors / Congeners	EPA 507 / 8141 (NP Pesticides)	EPA 515 / 8151 (Acidic CI Herbicides)	EPA 524.2 / 624 / 8260 (VOCs)	EPA 525.2 / 625 / 8270 (SVOCs)	EPA 8270 SIM / 8310 (PAHs / PNAs)	CAM 17 Metals (200.7 / 200.8 / 6010 / 6020)	LUFT 5 Metals (200.7 / 200.8 / 6010 / 6020)	Lead (200.7 / 200.8 / 6010 / 6020)	Other			Comments
** Influent 2nd day @ 12hrs		2/6/08		1	1 liter			X							X																			Filter Samples for Metals analysis: Yes / No
+1 Influent 2nd day @ 12hrs.		2/6/08		2	VOA	X									X																			

	Date:	Time:		
Relinquished By:	2/7/08	5:30	Received By:	Environtech TL
Relinquished By: Environ-Tech SR.	2/7	1837	Received By:	
Relinquished By:	2/7/08	1900	Received By:	2/7/08 7:00PM

ICE/T 11.2°C
GOOD CONDITION ✓
HEAD SPACE ABSENT ✓
DECHLORINATED IN LAB N/A ✓
APPROPRIATE CONTAINERS
PRESERVED IN LAB HCL

PRESERVATION HCL VOAS O&G METALS OTHER pH<2

COMMENTS:

McCampbell Analytical, Inc.
1534 Willow Pass Rd
Pittsburg, CA 94565-1701
(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 0802150 **ClientID: HEBL**

☐ EDF ☐ Excel ☐ Fax ☐ Email ☐ HardCopy ☐ ThirdParty

Report to:
Reijo Ratilainen
Herschy Environmental
P.O. Box 229
Bass Lake, CA 93604

Email: Reijorherschy@sti.net
TEL: (559) 760-0037 FAX: (559) 641-7340
ProjectNo: Alaska Gas-DPE
PO:

Bill to:
Katie Hickling
Herschy Environmental
P.O. Box 229
Bass Lake, CA 93604

Requested TAT: 5 days

Date Received: 02/07/2008
Date Printed: 02/07/2008

Sample ID	ClientSampID	Matrix	Collection Date	Hold	Requested Tests (See legend below)											
					1	2	3	4	5	6	7	8	9	10	11	12
0802150-001	Influent-2nd Day	Air	02/06/08	☐	A											
0802150-002	Influent-2nd Day	Water	02/06/08	☐		A										

Test Legend:

1	G-MBTEX_AIR	2	G-MBTEX_W	3		4		5	
6		7		8		9		10	
11		12							

The following SampID: 001A contains testgroup.

Prepared by: Samantha Arbuckle

Comments:

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.

McCampbell Analytical, Inc.
"When Quality Counts"

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Web: www.mccampbell.com E-mail: main@mccampbell.com
Telephone: 877-252-9262 Fax: 925-252-9269

Sample Receipt Checklist

Client Name: **Herschy Environmental**
Date and Time Received: **02/07/08 7:08:21 PM**

Project Name: **Alaska Gas-DPE**
Checklist completed and reviewed by: Samantha Arbuckle

WorkOrder N°: **0802150** Matrix Air/Water
Carrier: Michael Hernandez (MAI Courier)

Chain of Custody (COC) Information

Chain of custody present?	Yes ☑	No ☐
Chain of custody signed when relinquished and received?	Yes ☑	No ☐
Chain of custody agrees with sample labels?	Yes ☑	No ☐
Sample IDs noted by Client on COC?	Yes ☑	No ☐
Date and Time of collection noted by Client on COC?	Yes ☑	No ☐
Sampler's name noted on COC?	Yes ☑	No ☐

Sample Receipt Information

Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	NA ☐
Shipping container/cooler in good condition?	Yes ☑	No ☐	
Samples in proper containers/bottles?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	

Sample Preservation and Hold Time (HT) Information

All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature	Cooler Temp: 11.2°C		NA ☐
Water - VOA vials have zero headspace / no bubbles?	Yes ☑	No ☐	No VOA vials submitted ☐
Sample labels checked for correct preservation?	Yes ☑	No ☐	
TTLC Metal - pH acceptable upon receipt (pH<2)?	Yes ☐	No ☐	NA ☑

Client contacted: Date contacted: Contacted by:

Comments:

McCampbell Analytical, Inc.
"When Quality Counts"

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Web: www.mccampbell.com E-mail: main@mccampbell.com
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Herschy Environmental	Client Project ID: Alaska Gas-DPE	Date Sampled: 02/06/08
P.O. Box 229		Date Received: 02/07/08
Bass Lake, CA 93604	Client Contact: Reijo Ratilainen	Date Extracted: 02/08/08
	Client P.O.:	Date Analyzed 02/08/08

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE*

Extraction method SW5030B Analytical methods SW8021B/8015Cm Work Order: 0802150

Lab ID	Client ID	Matrix	TPH(g)	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes	DF	% SS
001A	Influent-2nd Day	A	28,000,a	ND<600	330	970	270	1100	20	112

Reporting Limit for DF =1; ND means not detected at or above the reporting limit	A	25	2.5	0.25	0.25	0.25	0.25	1	µg/L
	S	NA	NA	NA	NA	NA	NA	1	mg/Kg

* water and vapor samples are reported in µg/L, soil/sludge/solid samples in mg/kg, wipe samples in µg/wipe, product/oil/non-aqueous liquid samples in mg/L.

cluttered chromatogram; sample peak coelutes with surrogate peak.

+The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified gasoline is significant; b) heavier gasoline range compounds are significant(aged gasoline?); c) lighter gasoline range compounds (the most mobile fraction) are significant; d) gasoline range compounds having broad chromatographic peaks are significant; biologically altered gasoline?; e) TPH pattern that does not appear to be derived from gasoline (stoddard solvent / mineral spirit?); f) one to a few isolated non-target peaks present; g) strongly aged gasoline or diesel range compounds are significant; h) lighter than water immiscible sheen/product is present; i) liquid sample that contains greater than ~1 vol. % sediment; j) reporting limit raised due to high organic / MTBE content; k) TPH pattern that does not appear to be derived from gasoline (aviation gas). m) no recognizable pattern.

DHS ELAP Certification N° 1644

Angela Rydelius, Lab Manager

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Herschy Environmental	Client Project ID: Alaska Gas-DPE	Date Sampled: 02/06/08
P.O. Box 229		Date Received: 02/07/08
Bass Lake, CA 93604	Client Contact: Reijo Ratilainen	Date Extracted: 02/08/08
	Client P.O.:	Date Analyzed 02/08/08

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with MTBE and BTEX in ppmv*

Extraction method SW5030B Analytical methods SW8021B/8015Cm Work Order: 0802150

Lab ID	Client ID	Matrix	TPH(g)	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes	DF	% SS
001A	Influent-2nd Day	A	7700,a	ND<150	100	250	61	250	20	112

ppm (mg/L) to ppmv (ul/L) conversion for TPH(g) assumes the molecular weight of gasoline to be equal to that of hexane.

Reporting Limit for DF =1; ND means not detected at or above the reporting limit	A	7.0	0.68	0.077	0.065	0.057	0.057	1	uL/L
	S	NA	NA	NA	NA	NA	NA	1	mg/Kg

* vapor samples are reported in µL/L, soil/sludge/solid samples in mg/kg, wipe samples in µg/wipe, product/oil/non-aqueous liquid samples in mg/L, water samples and all TCLP & SPLP extracts are reported in µg/L.

cluttered chromatogram; sample peak coelutes with surrogate peak.

+The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified gasoline is significant; b) heavier gasoline range compounds are significant(aged gasoline?); c) lighter gasoline range compounds (the most mobile fraction) are significant; d) gasoline range compounds having broad chromatographic peaks are significant; biologically altered gasoline?; e) TPH pattern that does not appear to be derived from gasoline (stoddard solvent / mineral spirit?); f) one to a few isolated non-target peaks present; g) strongly aged gasoline or diesel range compounds are significant; h) lighter than water immiscible sheen/product is present; i) liquid sample that contains greater than ~1 vol. % sediment; j) reporting limit raised due to high organic / MTBE content; k) TPH pattern that does not appear to be derived from gasoline (aviation gas). m) no recognizable pattern.

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Herschy Environmental P.O. Box 229 Bass Lake, CA 93604	Client Project ID: Alaska Gas-DPE	Date Sampled: 02/06/08 Date Received: 02/07/08
	Client Contact: Reijo Ratilainen	Date Extracted: 02/08/08-02/11/08
	Client P.O.:	Date Analyzed 02/08/08-02/11/08

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE*

Extraction method SW5030B — Analytical methods SW8021B/8015Cm — Work Order: 0802150

Lab ID	Client ID	Matrix	TPH(g)	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes	DF	% SS
002A	Influent-2nd Day	W	16,000,a,i	7500	380	1200	390	1900	10	114

Reporting Limit for DF =1; ND means not detected at or above the reporting limit	W	50	5.0	0.5	0.5	0.5	0.5	1	μg/L
	S	NA	NA	NA	NA	NA	NA	1	mg/Kg

* water and vapor samples and all TCLP & SPLP extracts are reported in ug/L, soil/sludge/solid samples in mg/kg, wipe samples in μg/wipe, product/oil/non-aqueous liquid samples in mg/L.

cluttered chromatogram; sample peak coelutes with surrogate peak.

+The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified gasoline is significant; b) heavier gasoline range compounds are significant(aged gasoline?); c) lighter gasoline range compounds (the most mobile fraction) are significant; d) gasoline range compounds having broad chromatographic peaks are significant; biologically altered gasoline?; e) TPH pattern that does not appear to be derived from gasoline (stoddard solvent / mineral spirit?); f) one to a few isolated non-target peaks present; g) strongly aged gasoline or diesel range compounds are significant; h) lighter than water immiscible sheen/product is present; i) liquid sample that contains greater than ~1 vol. % sediment; j) reporting limit raised due to high MTBE content; k) TPH pattern that does not appear to be derived from gasoline (aviation gas). m) no recognizable pattern; n) TPH(g) range non-target isolated peaks subtracted out of the TPH(g) concentration at the client's request; p) see attached narrative.

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QC SUMMARY REPORT FOR SW8021B/8015Cm

W.O. Sample Matrix: Air QC Matrix: Water WorkOrder 0802150

EPA Method SW8021B/8015Cm	Extraction SW5030B				BatchID: 33683			Spiked Sample ID: 0802166-004A			
Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)			
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
TPH(btex)£	ND	60	82	88.1	7.16	100	92.6	7.89	70 - 130	30	70 - 130	30
MTBE	ND	10	115	118	2.08	112	114	1.54	70 - 130	30	70 - 130	30
Benzene	ND	10	96.5	99.7	3.20	96.1	93.7	2.52	70 - 130	30	70 - 130	30
Toluene	ND	10	83	87.6	5.22	88	85.1	3.34	70 - 130	30	70 - 130	30
Ethylbenzene	ND	10	90.3	98.7	8.85	95.9	93.5	2.51	70 - 130	30	70 - 130	30
Xylenes	ND	30	80.7	95.7	17.0	92	91.3	0.727	70 - 130	30	70 - 130	30
%SS:	97	10	101	97	3.89	96	95	1.14	70 - 130	30	70 - 130	30

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:

NONE

BATCH 33683 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
0802150-001A	02/06/08	02/08/08	02/08/08 6:16 AM				

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

% Recovery = 100 * (MS-Sample) / (Amount Spiked); RPD = 100 * (MS - MSD) / ((MS + MSD) / 2).

MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.

£ TPH(btex) = sum of BTEX areas from the FID.

cluttered chromatogram; sample peak coelutes with surrogate peak.

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QA/QC Officer

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QC SUMMARY REPORT FOR SW8021B/8015Cm

W.O. Sample Matrix: Water QC Matrix: Water WorkOrder 0802150

EPA Method SW8021B/8015Cm **Extraction SW5030B** **BatchID: 33683** **Spiked Sample ID: 0802166-004A**

Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)			
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
TPH(btex)£	ND	60	82	88.1	7.16	100	92.6	7.89	70 - 130	30	70 - 130	30
MTBE	ND	10	115	118	2.08	112	114	1.54	70 - 130	30	70 - 130	30
Benzene	ND	10	96.5	99.7	3.20	96.1	93.7	2.52	70 - 130	30	70 - 130	30
Toluene	ND	10	83	87.6	5.22	88	85.1	3.34	70 - 130	30	70 - 130	30
Ethylbenzene	ND	10	90.3	98.7	8.85	95.9	93.5	2.51	70 - 130	30	70 - 130	30
Xylenes	ND	30	80.7	95.7	17.0	92	91.3	0.727	70 - 130	30	70 - 130	30
%SS:	97	10	101	97	3.89	96	95	1.14	70 - 130	30	70 - 130	30

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:

NONE

BATCH 33683 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
0802150-002A	02/06/08	02/08/08	02/08/08 4:19 PM	0802150-002A	02/06/08	02/11/08	02/11/08 6:11 PM

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

% Recovery = 100 * (MS-Sample) / (Amount Spiked); RPD = 100 * (MS - MSD) / ((MS + MSD) / 2).

MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.

£ TPH(btex) = sum of BTEX areas from the FID.

cluttered chromatogram; sample peak coelutes with surrogate peak.

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QA/QC Officer

APPENDIX C

Contaminant Removal Calculations

The following formulae were utilized in calculating amounts of constituent removed during testing activities.

Vapor Phase

If we take the labortory reported value for TPHg in micrograms per liter (µg/L), and there are 2.2 pounds (lbs) to every 1x10^9 micrograms (µg), to convert "X" µg/L to pounds per liter (lbs/L), we use the following:

(x µg/L) (2.2 lbs/(1x10^9 µg)) = "y" lbs/L of VOC's as TPHg

Further, to convert lbs/L to lbs/day, we can use the following information. One liter is equal to 0.03531 cubic feet (ft^3). One ft^3 is equal to one meter (m). There are 1440 minutes per day. Based on this, to get lbs/day, we use:

("y" lbs/L)(1 L/0.03531 ft^3)(ft^3/m)(1440 minutes/day) = "Z" lbs/24-hour day VOCs as TPHg.

Liquid Phase

To calculate the amount of contaminant removed in liquid phase we use the following:
1 ppb = µg/L
1 Liter = 0.2642 gallons
1 gram = 1,000,000 µg
1 pound (US) = 453.59 grams

x ppb = amount reported in Lab results
n gallons = number of gallons of water produced during related test period

(x ppb)(1 µg/L/1 ppb) (1 liter/0.2642 gallons) (1 g/1000000 µg) = "y" grams/gallon

("y" g/gal) (1 pound/453.59 g) ('n' Gallons produced) = "z" lbs/day of VOC's as TPHg

The following is a reproduction of Table 4 present in the main text of this report for ease of formulae use.

Table 4

Summary of Contaminant Removal Calculations based on Analytical Data

Alaska Gas, Oakland, Ca

Date / Sample ID	*Hours of Blower Operation*	*Influent as TPHg (ug/L)*	*Air Flow (CFM)**	*VOCs Removed (lbs/day)*	*Total VOCs Removed (lbs)*
2/5/2008 Influent - 1 Hour	5.1	10000	69.0	61.91	13.155
2/6/2008 Influent - 2nd Day	1.25	10000	54.0	48.45	2.523
2/6/2008 Influent - 2nd Day @12 hrs	10.75	28000	66.2	166.35	74.512
Total pounds removed (vapor-phase)				***90.19***	
Total equivalent in gallons of product as gasoline				***14.59***	

Date	*Gallons of groundwater Removed*	*Influent as TPHg (ppb)*	*Pounds of Mass Removed as TPHg*	*Equivalent in Gallons*
2/5/2008 Session 1	3,000	38,000	0.951	0.154
2/6/2008 Session 2	5,500	15,000	0.688	0.111
Total pounds removed (liquid-phase)			***1.640***	
Total equivalent in gallons of product as gasoline			***0.265***	
			COMBINED TOTAL REMOVED (lbs)	**91.83**
			Equivalent in Gallons	**14.86**

* TPHg - Total Petroleum Hydrocarbons as Gasoline

* CFM - cubic feet per minute

* lbs/day - pounds (US) per day

* lbs - pounds (US)