Mr. Paresh Khatri
Alameda County Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Re: Former Exxon Station
5175 Broadway
Oakland, California
ACHCSA Fuel Leak Case No. RO0000139
SFRWQCB Site No. 01-0958
UST Fund Claim No. 003406

Dear Mr. Khatri:

I, Mr. Gary Feiner of Rockridge Heights, LLC, have retained Pangea Environmental Services, Inc. (Pangea) as the environmental consultant for the project referenced above. Pangea is submitting the attached report on my behalf.

I declare, under penalty of perjury, that the information and/or recommendations contained in the attached report is true and correct to the best of my knowledge.

Sincerely,

Gary Feiner

Gary Feiner
Rockridge Heights, LLC

January 5, 2011

Ms. Flora Chan
Bay Area Air Quality Management District
Permit Services Division
939 Ellis Street
San Francisco, California 94109

Re: **SVE System Startup Results**
Soil Vapor Extraction (SVE) System
5175 Broadway, Oakland, California
Pangea Project # 1145.001
BAAQMD Plant No. 19914
BAAQMD Application No. 21115

Dear Ms. Chan:

Pangea Environmental Services (Pangea) is submitting startup test results for the soil vapor extraction (SVE) system in operation at the subject site. Startup testing was initiated on December 8, 2010. Described below are the system description, system startup and sampling, permit compliance, and future activities.

SYSTEM DESCRIPTION

The SVE system consists of a 400 cubic foot per minute (cfm) liquid-ring blower (S-1), thermal/ catalytic oxidizer (A-1), and emission stack (P-1). The SVE system is the vapor portion of the combined soil vapor/groundwater [dual phase extraction (DPE)] system. Soil vapor and groundwater is simultaneously extracted from the subsurface using PVC piping and drop-tube stingers in up to ten remediation wells. After extraction from the wells, the soil vapor/water stream passes through a 120-gallon vapor/liquid separator, where any entrained groundwater is separated out and treated. From the vapor/liquid separator, soil vapor passes through the liquid-ring blower and into the thermal/catalytic oxidizer before being discharged to the atmosphere. The unit is currently operating in catalytic oxidizer mode.

SYSTEM STARTUP AND SAMPLING

Pangea provided startup notification to Flora Chan on October 6, 2010. Influent and effluent vapor samples were collected on December 13, after approximately 80 hours of total operation at the site. SVE system performance data, flow rates, laboratory analytical data, organic vapor analyzer measurements, hydrocarbon removal rates, emission rates, and destruction efficiency are summarized on attached Table 1. Laboratory analytical results are included in Attachment A.

PERMIT COMPLIANCE

Compliance with permit conditions is summarized below on Table A. Given the influent vapor concentration of 430 ppmv TPHg (between 200 and 2,000 ppmv), the Permit-To-Operate (PTO) requires a minimum abatement/destruction efficiency of >97% for TPHg. Based on the startup data the equipment achieved abatement of > 98.4% for TPHg, which exceeds the permit requirement. As shown on attached Table 1, the TPHg and benzene removal rates from the subsurface were approximately 12.8 and 0.05 lbs/day, respectively. The estimated benzene emission rate was 0.002 lbs/day, substantially below the permit limit of 0.018 lbs/day. The PTO also requires a maximum flow rate of 410 scfm and minimum oxidizer temperature of 600 degrees Fahrenheit.

Table A – Compliance Evaluation for SVE Startup Data for 12/13/10

Sample Location	TPHg Concentration (ppmv)	Benzene Mass Removal/Emissions (lbs/day)	Flow Rate (scfm)	Temp (°F)*
Influent	430	0.05	93	670
Effluent	<7.0	0.002	93	635
Permit Limit	97% Abatement	0.018 lbs/day	410	>600
Pass/Fail	**Pass** (98.4%)	**Pass**	**Pass**	**Pass**

* Thermocouples in oxidizer chamber transmit temperature data to temperature controllers on oxidizer control panel.

PLANNED FUTURE ACTIVITIES

Pangea plans to operate the SVE system at the site for approximately six to twelve months and monitor the system on a bi-weekly basis. To monitor SVE system performance and abatement efficiency, Pangea plans to analyze influent and effluent samples for TPHg and BTEX compounds on a bi-weekly or reduced basis.

CLOSING

If you have any questions or comments, please feel free to contact me at (510) 435-8664 or briddell@pangeaenv.com.

Sincerely,
Pangea Environmental Services

Bob Clark-Riddell, P.E.

ATTACHMENTS

Table 1 – SVE Performance Data

Attachment A – Laboratory Analytical Results

cc: SWRCB Geotracker Database (electronic copy)

Pangea

Table 1. SVE (DPE) Performance Data - 5175 Broadway, Oakland, CA

Date	Wells	Oxidizer Hr Meter Reading (hours)	Total Time (days)	Interval Time (days)	System Vapor Flow Rate (cfm)	Applied Vacuum ("Hg)	Lab Sample ID	Influent TPHg Lab (ppmv)	Influent Benzene Lab Data (ppmv)	Influent OVA Reading (ppmv)	Removal: SVE TPHg Removal Rate (lbs/day)	Removal: SVE Benzene Removal Rate (lbs/day)	Removal: Cumulative SVE TPHg Removal (lbs)	Removal: Cumulative SVE Benzene Removal (lbs)	Emission Reporting: Effluent TPHg Lab (ppmv)	Emission Reporting: Effluent Benzene Lab Data (ppmv)	Emission Reporting: TPHg Abatement Efficiency (lbs/day)	Emission Reporting: Benzene Abatement Efficiency (lbs/day)	Emission Reporting: Benzene Emission Rate (lbs/day)	Emission Reporting: Cumulative Vapor Flow (cf)
12/08/10	DPE-1, MW-3A, 4A, 8A	5040.8	0.0	0.0	65	22	INF-V	**1,300**	**6.4**	1,270	27.1	0.12	0.0	0	---	---	---	---	---	0
12/10/10	DPE-1, MW-3A, 4A, 8A	5051.8	0.5	0.5	65	22	---	900	5.7	916	18.8	0.11	8.6	0.05	---	---	---	---	---	42,900
12/13/10	DPE-1, MW-3A, 4A, 8A	5120.8	3.3	2.9	93	20	INF-V	**430**	**1.7**	---	12.8	0.05	45.5	0.18	< **7.0**	< **0.077**	> **98.4**	> **95.5**	**0.002**	427,920
12/22/10	DPE-1, MW-3A, 4A, 8A	5337.2	12.4	9.0	125	17	INF-V	**460**	**5.2**	758	18.4	0.19	211.8	1.89	---	---	---	---	---	2,050,920

Notes:
ALL = Wells DPE-1 through DPE-6, MW-3A, MW-4A, MW-7B and MW-8A
NA = not analyzed; NM = not measured; --- = not available
System data estimated when specific data not available.
cfm = actual cubic feet (cf) per minute based on anemometer readings (from vacuum side of vacuum pump during SVE).
ppmv = parts per million on volume to volume basis. Actual lab data shown in **bold.** Lab data estimated for dates without lab data to allow mass removal calculation.
lbs = Pounds
"Hg = Inches of mercury vacuum
SVE = Soil Vapor Extraction
OVA = Organic Vapor Analyzer (Horiba Model MEXA 324JU)
TPHg and Benzene Removal Rates = For dates where no laboratory analytical data was collected, the lab data is estimated based on prior lab data and OVA readings to calculate period and cumulative mass removal.
Hydrocarbon Removal/Emission Rate = Rate based on Bay Area Air Quality Management District's Manual of Procedures for Soil Vapor Extraction dated July 17, 1991.
Rate = lab concentration (ppmv) x system flowrate (scfm) x (1lb-mole/386 ft³) x molecular weight (86 lb/lb-mole for TPH-Gas hexane) x 1440 min/day x 1/1,000,000.

ATTACHMENT A

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

Pangea Environmental Svcs., Inc.	Client Project ID: 5175 Broadway; Rockridge Heights	Date Sampled: 12/14/10
		Date Received: 12/14/10
1710 Franklin Street, Ste. 200	Client Contact: Morgan Gillies	Date Reported: 12/20/10
Oakland, CA 94612	Client P.O.:	Date Completed: 12/20/10

WorkOrder: 1012489

December 20, 2010

Dear Morgan:

Enclosed within are:

1) The results of the **3** analyzed samples from your project: **5175 Broadway; Rockridge Heights,**
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.

10124589

McCAMPBELL ANALYTICAL, INC.

1534 Willow Pass Rd.
Pittsburg, CA 94565
Website: www.mccampbell.com Email: main@mccampbell.com
Telephone: (925) 252-9262 Fax: (925) 252-9269

CHAIN OF CUSTODY RECORD

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

EDF Required? Coelt (Normal) No Write On (DW) No

Report To: Morgan Gillies Bill To: Pangea

Company: Pangea Environmental Services, Inc.

1710 Franklin Street, Suite 200, Oakland, CA 94612

E-Mail: mgillies@pangeaenv.com

Tele: (510) 836-3702 Fax: (510) 836-3709

Project #: 5175 Broadway Project Name: Rockridge Heights

Project Location: 5175 Broadway, Oakland, CA

Sampler Signature:

SAMPLE ID (Field Point Name)	LOCATION	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
INF-W	INF	12/14	1030	5	VOAs Amber	X					X	X		
EFF-V	EFF	12/13	1400	1	Tedlar			X						
INF-V	INF	↓	1405	1	↓			X						

Analysis Request	Other	Comments
BTEX & TPH as Gas (602/8020 + 8015)/MTBE		Filter Samples for Metals analysis: Yes / No
TPH as Diesel (8015) with Silica Gel Cleanup		
Total Petroleum Oil & Grease (5520 E&F/B&F)		
Total Petroleum Hydrocarbons (418.1)		
EPA 601 / 8010 / 8021		
BTEX ONLY (EPA 602 / 8020)		
EPA 608 / 8081		
EPA 608 / 8082 PCB's ONLY		
EPA 8140 / 8141		
EPA 8150 / 8151		
EPA 524.2 / 624 / 8260		
EPA 525 / 625 / 8270		
PAH's / PNA's by EPA 625 / 8270 / 8310		
CAM-17 Metals (6010 / 6020)		
LUFT 5 Metals (6010 / 6020)		
Lead (200.8 / 200.9 / 6010)		
	5 Oxygenates(TAME, TBA, DIPE, ETBE, MTBE) by 8260.	

Relinquished By:	Date:	Time:	Received By:
	12/14/10	1600	
Relinquished By:	Date:	Time:	Received By:
	12/14/10	1730	
Relinquished By:	Date:	Time:	Received By:

ICE/t° 1.0 C

COMMENTS:

GOOD CONDITION

HEAD SPACE ABSENT

DECHLORINATED IN LAB

APPROPRIATE CONTAINERS

PRESERVED IN LAB

	VOAS	O&G	METALS	OTHER
PRESERVATION			pH<2	

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

CHAIN-OF-CUSTODY RECORD

WorkOrder: 1012489 **ClientCode: PEO**

☐ WaterTrax ☐ WriteOn ☑ EDF ☐ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Report to:
Morgan Gillies
Pangea Environmental Svcs., Inc.
1710 Franklin Street, Ste. 200
Oakland, CA 94612
(510) 836-3700 FAX (510) 836-3709

Email: mgillies@pangeaenv.com
cc:
PO:
ProjectNo: 5147 Broadway; Rockridge Heights

Bill to:
Bob Clark-Riddell
Pangea Environmental Svcs., Inc.
1710 Franklin Street, Ste. 200
Oakland, CA 94612

Requested TAT: 5 days

Date Received: **12/14/2010**
Date Printed: **12/14/2010**

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below)											
					1	2	3	4	5	6	7	8	9	10	11	12
1012489-001	INF-W	Water	12/14/2010 10:30	☐		B	A	A								
1012489-002	EFF-V	Air	12/13/2010 14:00	☐	A											
1012489-003	INF-V	Air	12/13/2010 14:05	☐	A											

Test Legend:

1	G-MBTEX_AIR	2	G-MBTEX_W	3	PREDF REPORT	4	TPH(D)WSG_W	5	
6		7		8		9		10	
11		12							

The following SampIDs: 002A, 003A contain testgroup.

Prepared by: Ana Venegas

Comments:

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.

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"When Quality Counts"

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

Sample Receipt Checklist

Client Name: **Pangea Environmental Svcs., Inc.**
Date and Time Received: **12/14/2010 6:13:00 PM**

Project Name: **5147 Broadway; Rockridge Heights**
Checklist completed and reviewed by: Ana Venegas

WorkOrder N°: **1012489** 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: 6.8°C		NA ☐
Water - VOA vials have zero headspace / no bubbles?	Yes ☐	No ☐	No VOA vials submitted ☑
Sample labels checked for correct preservation?	Yes ☑	No ☐	
Metal - pH acceptable upon receipt (pH<2)?	Yes ☐	No ☐	NA ☑
Samples Received on Ice?	Yes ☑	No ☐	

(Ice Type: WET ICE)

** NOTE: If the "No" box is checked, see comments below.*

Client contacted: Date contacted: Contacted by:

Comments:

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Pangea Environmental Svcs., Inc.	Client Project ID: 5175 Broadway; Rockridge Heights	Date Sampled: 12/14/10
		Date Received: 12/14/10
1710 Franklin Street, Ste. 200	Client Contact: Morgan Gillies	Date Extracted: 12/17/10
Oakland, CA 94612	Client P.O.:	Date Analyzed: 12/17/10

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

Extraction method: SW5030B Analytical methods: SW8021B/8015Bm Work Order: 1012489

Lab ID	Client ID	Matrix	TPH(g)	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes	DF	% SS	Comments
001B	INF-W	W	300	ND	4.6	1.5	1.6	10	1	100	d1

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	µg/L
	S	1.0	0.05	0.005	0.005	0.005	0.005	mg/Kg

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

cluttered chromatogram; sample peak coelutes w/surrogate peak; low surrogate recovery due to matrix interference.

%SS = Percent Recovery of Surrogate Standard; DF = Dilution Factor

+The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation:

d1) weakly modified or unmodified gasoline is significant

DHS ELAP Certification 1644

Angela Rydelius, Lab Manager

McCampbell Analytical, Inc.
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		Date Received: 12/14/10
1710 Franklin Street, Ste. 200	Client Contact: Morgan Gillies	Date Extracted: 12/14/10
Oakland, CA 94612	Client P.O.:	Date Analyzed 12/15/10

Total Extractable Petroleum Hydrocarbons with Silica Gel Clean-Up*

Extraction method SW3510C/3630C Analytical methods: SW8015B Work Order: 1012489

Lab ID	Client ID	Matrix	TPH-Diesel (C10-C23)	DF	% SS	Comments
1012489-001A	INF-W	W	260	1		e2,e4

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

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

cluttered chromatogram resulting in coeluted surrogate and sample peaks, or; surrogate peak is on elevated baseline, or; surrogate has been diminished by dilution of original extract/matrix interference.

%SS = Percent Recovery of Surrogate Standard. DF = Dilution Factor

+The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation:

e2) diesel range compounds are significant; no recognizable pattern
e4) gasoline range compounds are significant.

DHS ELAP Certification 1644

Angela Rydelius, Lab Manager

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Pangea Environmental Svcs., Inc.	Client Project ID: 5175 Broadway; Rockridge Heights	Date Sampled: 12/13/10
		Date Received: 12/14/10
1710 Franklin Street, Ste. 200	Client Contact: Morgan Gillies	Date Extracted: 12/15/10-12/17/10
Oakland, CA 94612	Client P.O.:	Date Analyzed: 12/15/10-12/17/10

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

Extraction method: SW5030B Analytical methods: SW8021B/8015Bm Work Order: 1012489

Lab ID	Client ID	Matrix	TPH(g)	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes	DF	% SS	Comments
002A	EFF-V	A	ND	ND	ND	ND	ND	ND	1	101	
003A	INF-V	A	1500	ND<10	5.6	1.9	2.4	5.7	4	107	d1

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	µg/L
	S	1.0	0.05	0.005	0.005	0.005	0.005	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.

%SS = Percent Recovery of Surrogate Standard
DF = Dilution Factor

+The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation:

d1) weakly modified or unmodified gasoline is significant

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Angela Rydelius, Lab Manager

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		Date Received: 12/14/10
1710 Franklin Street, Ste. 200	Client Contact: Morgan Gillies	Date Extracted: 12/15/10-12/17/10
Oakland, CA 94612	Client P.O.:	Date Analyzed: 12/15/10-12/17/10

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

Extraction method: SW5030B Analytical methods: SW8021B/8015Bm Work Order: 1012489

Lab ID	Client ID	Matrix	TPH(g)	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes	DF	% SS	Comments
002A	EFF-V	A	ND	ND	ND	ND	ND	ND	1	101	
003A	INF-V	A	430	ND<2.7	1.7	0.49	0.54	1.3	4	107	d1

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.

%SS = Percent Recovery of Surrogate Standard
DF = Dilution Factor

+The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation:

d1) weakly modified or unmodified gasoline is significant

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Angela Rydelius, Lab Manager

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Pangea Environmental Svcs., Inc.	Client Project ID: 5175 Broadway; Rockridge Heights	Date Sampled: 12/14/10
		Date Received: 12/14/10
1710 Franklin Street, Ste. 200	Client Contact: Morgan Gillies	Date Extracted: 12/14/10
Oakland, CA 94612	Client P.O.:	Date Analyzed 12/15/10

Total Extractable Petroleum Hydrocarbons with Silica Gel Clean-Up*

Extraction method SW3510C/3630C Analytical methods: SW8015B Work Order: 1012489

Lab ID	Client ID	Matrix	TPH-Diesel (C10-C23)	DF	% SS	Comments
1012489-001A	INF-W	W	260	1	100	e2,e4

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

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

cluttered chromatogram resulting in coeluted surrogate and sample peaks, or; surrogate peak is on elevated baseline, or; surrogate has been diminished by dilution of original extract/matrix interference.

%SS = Percent Recovery of Surrogate Standard. DF = Dilution Factor

+The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation:

e2) diesel range compounds are significant; no recognizable pattern
e4) gasoline range compounds are significant.

DHS ELAP Certification 1644

Angela Rydelius, Lab Manager

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QC SUMMARY REPORT FOR SW8021B/8015Bm

W.O. Sample Matrix: Water QC Matrix: Water BatchID: 55010 WorkOrder 1012489

EPA Method SW8021B/8015Bm **Extraction SW5030B** **Spiked Sample ID: 1012468-002A**

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	99.8	99.4	0.414	97.7	100	2.42	70 - 130	20	70 - 130	20
MTBE	ND	10	118	119	1.09	118	123	4.55	70 - 130	20	70 - 130	20
Benzene	ND	10	113	113	0	110	117	5.77	70 - 130	20	70 - 130	20
Toluene	ND	10	100	99.1	1.13	99	103	4.43	70 - 130	20	70 - 130	20
Ethylbenzene	ND	10	98.3	98.2	0.111	98.3	102	3.44	70 - 130	20	70 - 130	20
Xylenes	ND	30	112	111	1.11	111	115	3.15	70 - 130	20	70 - 130	20
%SS:	99	10	104	104	0	103	107	3.28	70 - 130	20	70 - 130	20

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:
NONE

BATCH 55010 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
1012489-001B	12/14/10 10:30 AM	12/17/10	12/17/10 4:56 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.

N/A = not enough sample to perform matrix spike and matrix spike duplicate.

NR = matrix interference and/or analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix or sample diluted due to high matrix or analyte content, or inconsistency in sample containers.

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

QC SUMMARY REPORT FOR SW8021B/8015Bm

W.O. Sample Matrix: Air QC Matrix: Water BatchID: 55059 WorkOrder 1012489

EPA Method SW8021B/8015Bm **Extraction SW5030B** **Spiked Sample ID: 1012512-008A**

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	88.6	85.5	3.52	87.6	95	8.06	70 - 130	20	70 - 130	20
MTBE	ND	10	101	93.5	8.19	96.9	102	5.27	70 - 130	20	70 - 130	20
Benzene	ND	10	93.4	86.4	7.86	91.7	95.6	4.23	70 - 130	20	70 - 130	20
Toluene	ND	10	93.3	87.1	6.87	92.4	96.4	4.26	70 - 130	20	70 - 130	20
Ethylbenzene	ND	10	91.8	86.6	5.90	91.7	95.3	3.90	70 - 130	20	70 - 130	20
Xylenes	ND	30	95.1	89.2	6.37	94.1	98	4.03	70 - 130	20	70 - 130	20
%SS:	105	10	97	97	0	97	98	0.829	70 - 130	20	70 - 130	20

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:
NONE

BATCH 55059 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
1012489-002A	12/13/10 2:00 PM	12/17/10	12/17/10 2:27 AM	1012489-002A	12/13/10 2:00 PM	12/17/10	12/17/10 2:27 AM
1012489-003A	12/13/10 2:05 PM	12/15/10	12/15/10 1:04 PM	1012489-003A	12/13/10 2:05 PM	12/15/10	12/15/10 1:04 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.

N/A = not enough sample to perform matrix spike and matrix spike duplicate.

NR = analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix or sample diluted due to high matrix or analyte content.

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QC SUMMARY REPORT FOR SW8015B

W.O. Sample Matrix: Water QC Matrix: Water BatchID: 55003 WorkOrder 1012489

EPA Method SW8015B **Extraction SW3510C/3630C** **Spiked Sample ID: N/A**

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-Diesel (C10-C23)	N/A	1000	N/A	N/A	N/A	102	103	0.694	N/A	N/A	70 - 130	30
%SS:	N/A	625	N/A	N/A	N/A	88	88	0	N/A	N/A	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 55003 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
1012489-001A	12/14/10 10:30 AM	12/14/10	12/15/10 7:01 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.

N/A = not enough sample to perform matrix spike and matrix spike duplicate.

NR = analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix or sample diluted due to high matrix or analyte content.