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SITE INVESTIGATION REPORT

Alameda County Fairgrounds Pleasanton, California

Prepared for:

ALAMEDA COUNTY FAIRGROUNDS 4501 Pleasanton Avenue Pleasanton, California 94566

Prepared by:

Sellens Consulting LLC 5031 Lourina Court Fair Oaks, California 95628

Case # RO0002591

August 14, 2005

EXECUTIVE SUMMARY

On June 5, 2006, a site investigation was conducted at the site of the former

gasoline UST in the maintenance yard of the Alameda County Fairgrounds in Pleasanton

California. The work was conducted in general accordance with SC's approved Work

Plan, dated February 28, 2006. The site investigation consisted of the advancing of one

continuous core boring (B1), to a depth of 46 feet bgs, during which soil samples were

collected and selected for laboratory analysis. When groundwater was encountered, a grab

groundwater sample was collected using hydro-punch technology and submitted for

laboratory analyses. The investigations identified the following.

• Three soil samples (B1-10, B1-20, and B1-30) were selected from the vadose zone

of a boring (B1) drilled adjacent to the site of the former gasoline UST and

dispenser. Laboratory analysis did not report the presence of any petroleum

hydrocarbon in any of the soil samples.

• Groundwater was first encountered at a depth of approximately 45 feet bgs, but

prior to sampling, the water level inside of the drill rods rose to approximately 37

feet bgs. Laboratory analysis of the grab groundwater sample did not report any

TPH-G, BTEX, or fuel oxygenates.

The investigation concluded that the low levels of petroleum hydrocarbons identified in the

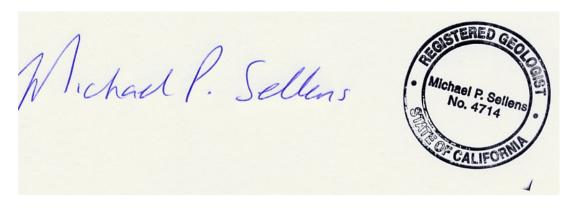
excavated soils during the removal of the Fairs UST have not migrated through the

underlying soils and into the groundwater. Therefore, there is no apparent threat to the

groundwater or human health. It is therefore proposed that no further action is required at

the site, and file closure should be processed.

Prepared by



Michael P. Sellens, REA, RG 4714

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1.0 INTRODUCTION

1.1 Introduction

The purpose of this report is to provide details regarding the June 2006 site investigation at the Alameda County Fairgrounds located at 4501 Pleasanton Avenue in Pleasanton, California 94566 (the Fair). Sellens Consulting LLC (SC) on behalf of the Alameda County Fair Association (ACFA) conducted the site investigation and has produced this "Site Investigation Report". The work was conducted following the general guidelines presented in the Site Investigation Workplan" of February 28, 2006. The location of the Fairgrounds is shown on Figure 1.

1.2 Background

On August 5, 2003, a 2,000-gallon double-walled steel UST with a fiberglass lining, was removed from the maintenance yard at the Fairgrounds. The UST had been used to store gasoline for maintenance equipment refueling. The UST had been installed in the 1980's, and had overspill containers and overfill preventive devices installed in 1998. In January 1999, the supply piping was converted to a suction system and the secondary containment piping was upgraded. Upon removal, the UST appeared in good condition with no evidence of corrosion.

Following the removal of the UST, a total of five (5) soil samples were collected and submitted for laboratory analysis. This included, two samples from the UST pit (S-1 and S-2), and one each from the site of the former dispense (S-3), the excavated soil from around the dispenser (SP-1), and the excavated pea gravel (SP-2). Laboratory analysis of the samples, did not report any contaminants in either sample from the tank excavation or the sample at the dispenser. Low levels of petroleum hydrocarbons were reported in the excavated materials, with xylenes (0.018 parts per million (ppm)) and toluene (0.013 ppm) reported in the pea gravel sample, and total petroleum hydrocarbons as gasoline (TPHg) at 26 parts per million (ppm), ethylbenzene at 0.034 ppm, xylenes at 0.3 ppm,

and t-Butyl alcohol at 0.20 ppm, in the soil removed from the dispenser area. Low levels

(<5 ppm) of lead were reported in three of the five samples, which are believed to be

background levels. The presence of the low levels of hydrocarbons in the excavated

material and their absence in the in-place material from the beneath the UST and

dispenser indicate ant contamination was removed and no contamination is present in the

subsurface. The analytical results from the UST removal are shown in Table 1, with the

sampling locations shown in Figure 3.

The excavated material, that reported the presence of the low levels of petroleum

hydrocarbons was stockpiled on site, mixed with organic material, and allowed to aerate

for approximately four weeks. After which the material was physically inspected by the

local regulatory agencies, and approved to be used to backfill in the former UST

excavation.

In a letter dated December 14, 2005, the Alameda County Health Care Services

Agency (ACHCSA) requested that as the site is located within the Livermore-Amador

Groundwater Basin, an active drinking water source, a subsurface investigation needs to

be conducted to assess the extent of any soil contamination and determine whether

groundwater at the site has been impacted. The Work Plan was prepared and submitted

to ACHCSA on February 28, 2006

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2.0 SUBSURFACE INVESTIGATION

This section describes the implementation and the findings of the site

investigation and groundwater sampling conducted at the site of the former UST in the

Fairground's maintenance yard. The fieldwork was conducted on June 5, 2006; in

general accordance with SC's approved Work Plan, dated February 28, 2006. Site

Photographs are included as Appendix A. Prior to commencing with the fieldwork, a

drilling permit was obtained from the Zone 7 Water Agency. A copy of the approved

permit is included as Appendix B.

2.1 Investigation Objectives

The objectives of the conducted site investigation at the Fair were as follows:

Determine if any subsurface contamination is present in the vicinity of the former

UST and dispenser. If soil contamination is present, delineate the vertical extent

of the contamination.

• Determine if the uppermost groundwater has been impacted with petroleum

hydrocarbons.

• Obtain adequate information to determine if any additional work is required, or if

no further action should be processed.

2.2 Scope of Work

To meet the objectives outlined above, the following activities were conducted.

One boring was drilled using a direct-push drilling rig, adjacent to the site of the

former UST and dispenser.

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• Soil samples were collected at three feet intervals to a total depth of 46 feet bags,

where groundwater was encountered. Base upon field observations, three soil

samples were submitted for laboratory analysis.

• A grab groundwater sample was collected and submitted for laboratory analysis.

Analyze and evaluate all collected data.

2.3 Subsurface Investigation

2.3.1 Soil and Groundwater Sampling

On June 5, 2006, one, two-inch diameter, soil boring (B1) was drilled in the

Fairgrounds maintenance yard at the site of the former gasoline UST system. The boring

location is shown in Figure 3. The boring was drilled to a total depth of 46 feet bags,

using a continuous core hydraulic direct-push drilling rig. The surface four feet were

hand auger to confirm no underground utilities were present, after which a continuous

soil core was advanced in three foot intervals, with the soil cores being collected in clear

plastic liners. Soil samples were collected from the cores at five foot intervals. At each

five foot interval, the plastic liner tube was cut, after which the exposed ends were

covered with a Teflon sheet, sealed with plastic end caps, and the tube was labeled

appropriately. Following collection all soil samples were placed on ice in an insulated

cooler. The remained of the each core linear was opened and subjected to lithological

description and field screening. Based on the soil lithology interpretation a boring log

was produced. The boring log for B1 is included in Appendix C.

Soil samples inspected during the drilling did not exhibit any evidence of any soil

contamination. However, three soil samples were collected from depths of 10 feet bgs,

20 feet bgs, and 30 feet bgs and submitted for laboratory analysis. The remaining

samples were submitted to the laboratory but placed on hold.

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Groundwater was initially encountered at a depth of approximately 45 feet bgs.

When groundwater was encountered, the soil sampling equipment was removed, and

replaced with a hydro-punch sampling system. A groundwater sample was collected by

pneumatically advancing the geoprobe rods to a depth of 48 feet bgs, two feet below the

bottom of the soil boring. At the selected depth the outer sleeve of the geoprobe was

pulled-back to exposure a two foot screened section, through which water entered.

Groundwater was allowed to collect inside of the geoprobe rods, prior to a sample being

collected with a dedicated bailer. Prior to sampling, the water level in the geoprobe rods

had risen to approximately 37 feet bgs.

2.3.2 Laboratory Analysis

2.3.2.1 Soil Analytical Data

Three soil samples, from depths of 10 feet bgs, 20 feet, and 30 feet bgs from

boring B1 were submitted for laboratory analysis to McCampbell Analytical (DHS

Certification #1644) and analyzed for TPH-G, BTEX, and MTBE by Method 8021B. All

samples were handled in accordance with standard protocols and under a chain-of-

custody record. Laboratory analysis of all three soil samples did not report the presence

of any petroleum hydrocarbons. The laboratory results are summarized in Table 2, with

the laboratory report included in Appendix D.

2.4.2.2 Groundwater Analytical Data

A groundwater sample was collected from the borehole (B1) and submitted to

McCampbell Analytical and analyzed for TPH-G, BTEX with MTBE (Method

8021/8015Cm) and fuel oxygenates (Method 8260B). The samples were handled in

accordance with standard protocols and under a chain-of-custody record. Laboratory

analysis of the groundwater sample did not report any TPH-G, BTEX or fuel oxygenates.

The groundwater analytical results are summarized in Table 3, with the laboratory

analytical report, with the chain-of-custody record is included as Appendix E.

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2.3.3 Borehole Abandonment

Following the completion of the soil and groundwater sampling, all drilling and sampling equipment was removed from the boring and the boring was backfilled, using a tremie pipe, with a cement grout to just below the surface. The surface was patched with asphalt cold pattern to match the surrounding surface.

2.3.4 Site Sanitation

All drilling equipment and sampling equipment was cleaned prior to arriving on site. Sampling equipment was cleaned between sampling events, and all sampling equipment was either supplied by the laboratory, or was one-time use only. Due to the drilling method used, no drill cuttings were generated and soil cores not used were left on site. Equipment rinsate water was allowed to evaporate on-site

3.0 CONCLUSIONS

> 3.1 Conclusions

On June 5, 2006, a site investigation was conducted at the site of the former

gasoline UST system at the Alameda County Fairgrounds in Pleasanton California. The

work was conducted in general accordance with SC's approved Work Plan, dated

February 28, 2006. The investigation consisted of the advancing of one continuous core

boring, to a depth of 46 feet bgs, from which soil samples were collected and selected for

laboratory analysis. When groundwater was encountered, a grab groundwater sample

was collected using hydro-punch technology and submitted for laboratory analyses. The

investigations identified the following.

Three soil samples (B1-10, B1-20, and B1-30) were selected from the vadose

zone of a boring (B1) drilled adjacent to the site of the former gasoline UST and

dispenser. Laboratory analysis did not report the presence of any petroleum

hydrocarbon in any of the soil samples.

Groundwater was first encountered at a depth of approximately 45 feet bgs. Prior

to sampling, the water level inside of the drill rods rose to approximately 37 feet

bgs. Laboratory analysis of the grab groundwater sample did not report any TPH-

G, BTEX, or fuel oxygenates.

The conducted site investigation did not identify any petroleum hydrocarbons in

either the soil or groundwater at the Site.

3.2 Further Activities

The investigation concluded that the low levels of petroleum hydrocarbons identified in

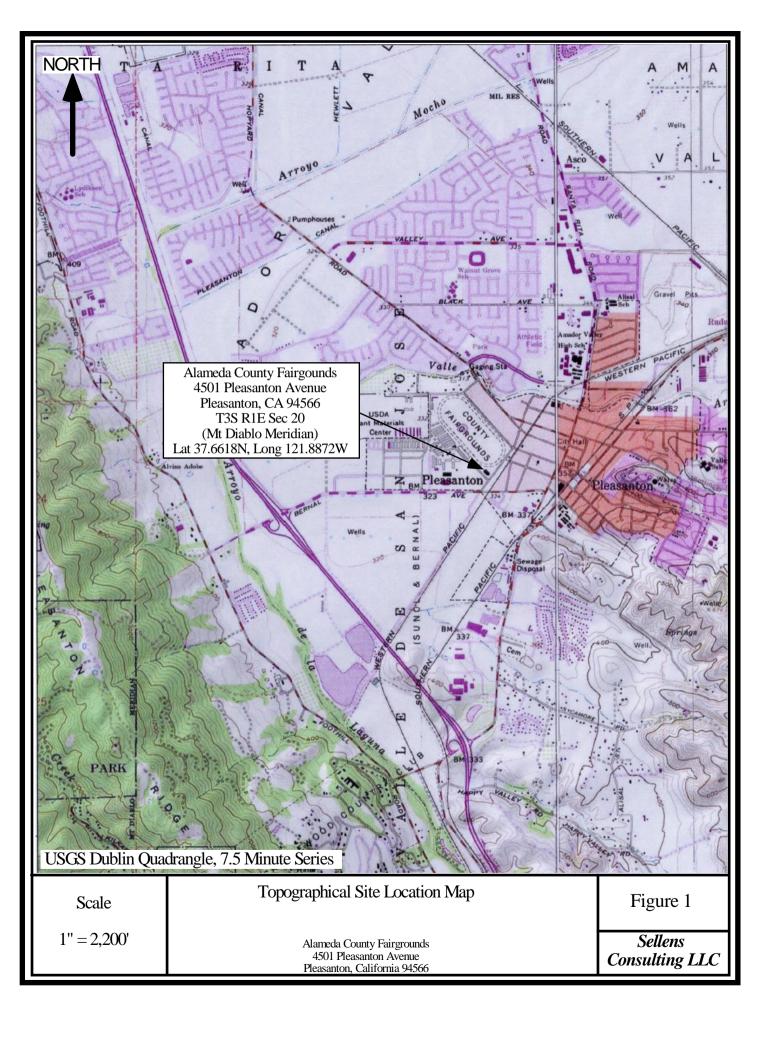
the excavated soils during the removal of the Fairs UST have not migrated through the

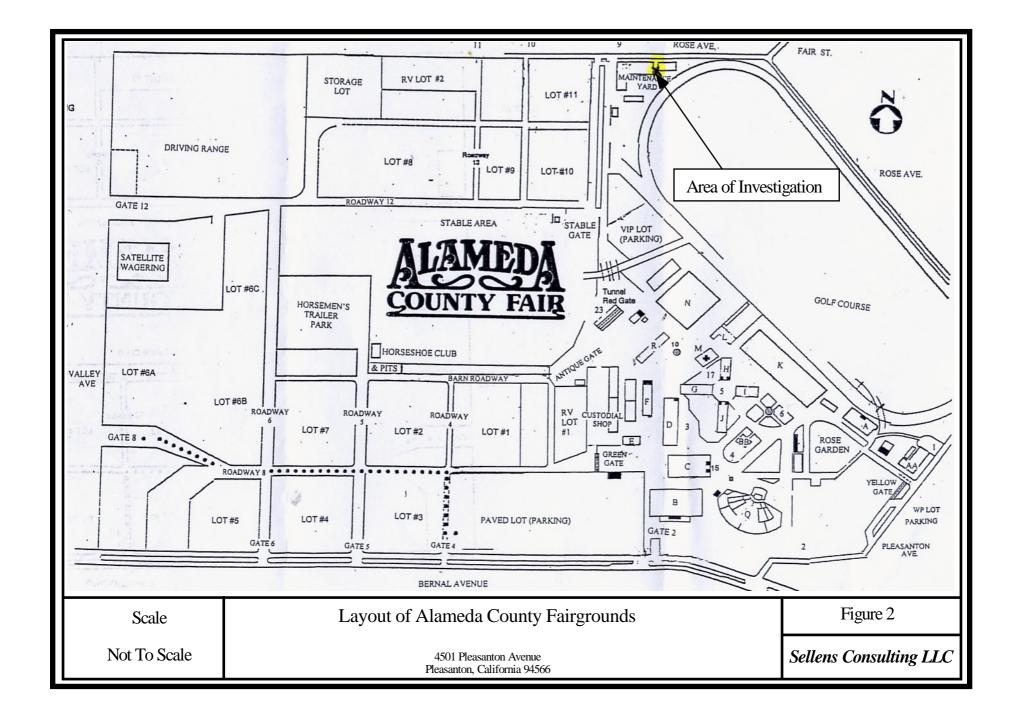
underlying soils and into the groundwater. Therefore there is no apparent threat to the

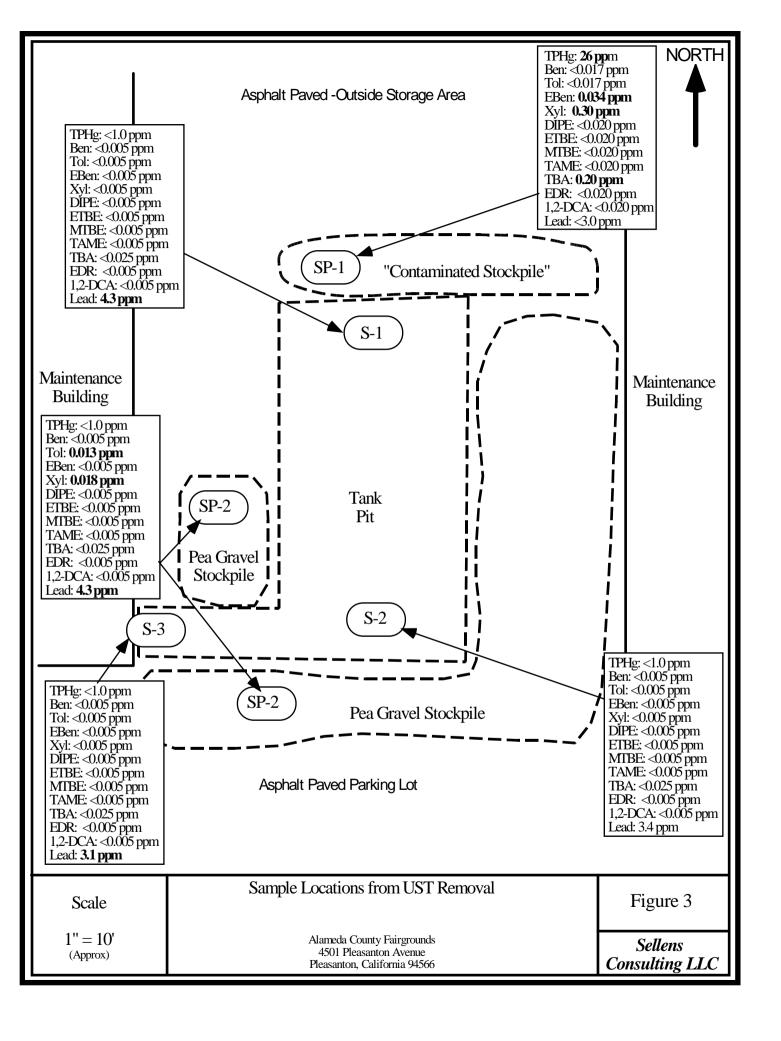
groundwater or human health. It is therefore proposed that no further action is required at

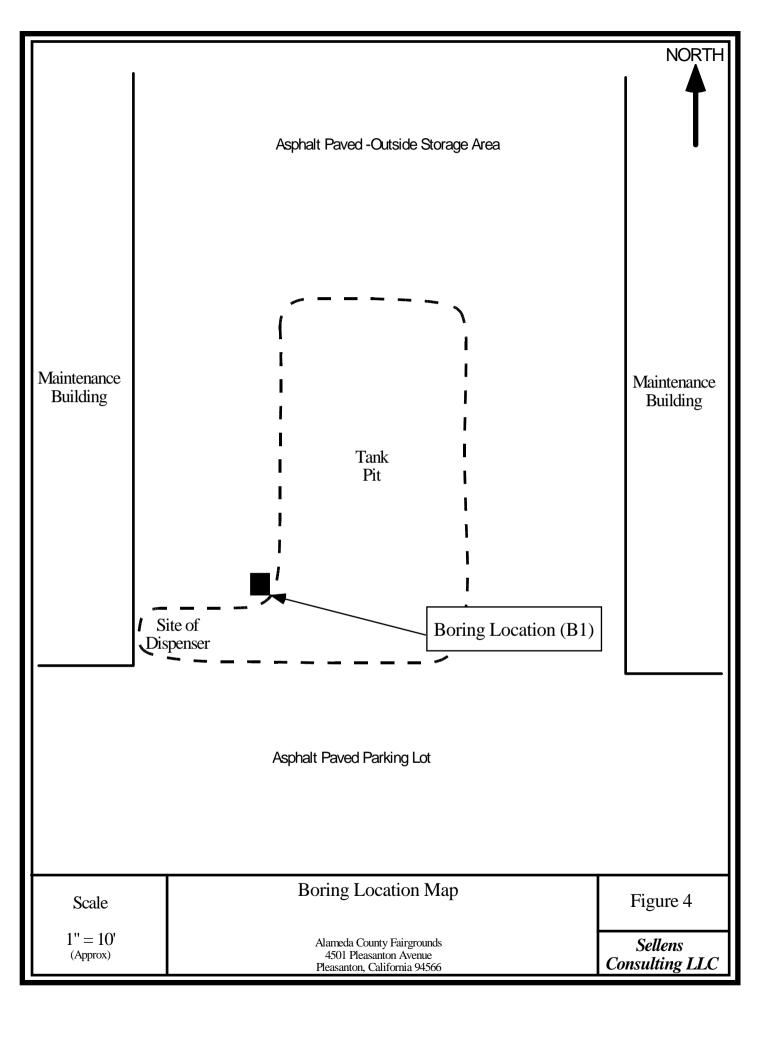
the site, and file closure should be processed.











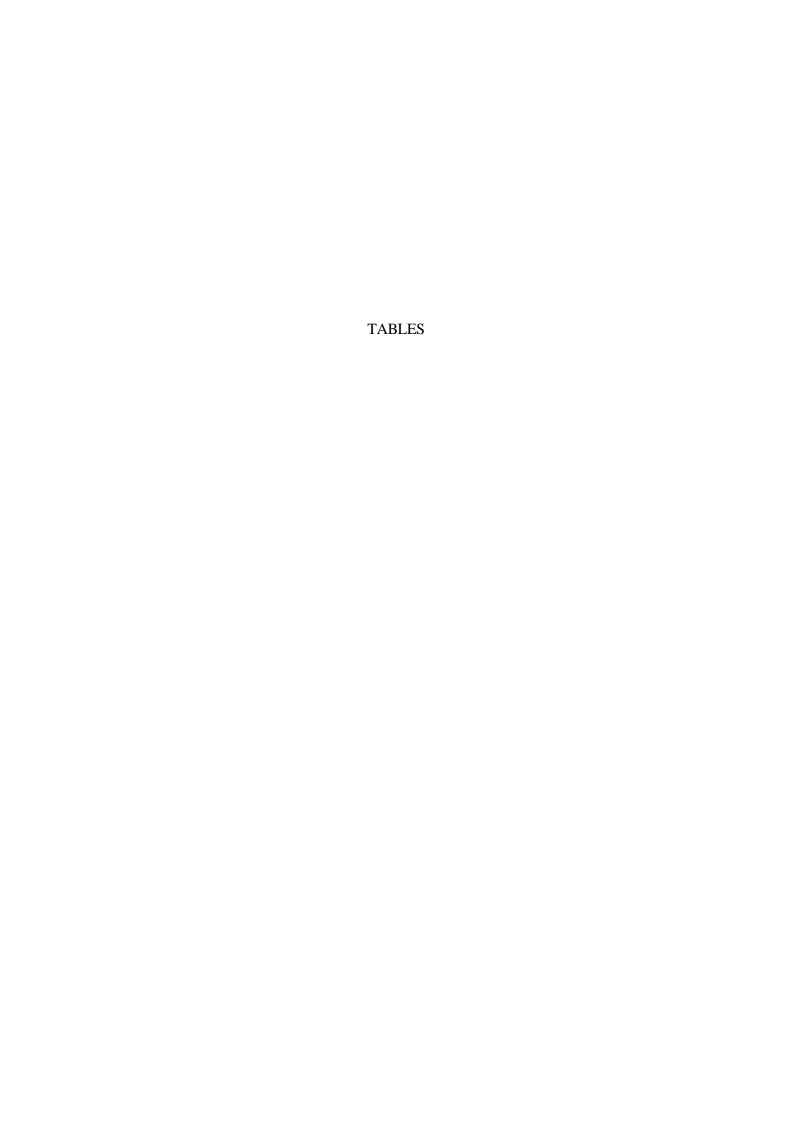


Table 1
Analytical Results for Soil Sample from UST Removal, August 2003

Alameda County Fairgrounds, Pleasanton, California

Sample ID	Sample Location	TPH-G (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	TAME (mg/kg)	TBA (mg/kg)	DIPE (mg/kg)	ETBE (mg/kg)	MTBE (mg/kg)	EDR (mg/kg)	1,2-DCA (mg/kg)	Lead (mg/kg)
S-1	North end of Tank Pit	ND <1.0	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.025	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	4.3
S-2	South end of Tank Pit	ND <1.0	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.025	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	3.4
S-3	Beneath Dispenser	ND <1.0	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.025	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	3.1
SP-1	"Contaminated Stockpile"	26	ND <0.017	ND <0.017	0.034	0.3	ND <0.005	0.2	ND <0.020	ND <0.020	ND <0.020	ND <0.020	ND <0.020	ND <3.0
SP-2	Pea Gravel Stockpile	ND <1.0	ND <0.005	0.013	ND <0.005	0.018	ND <0.005	ND <0.025	ND <0.005	ND <0.005	ND <0.005	ND <0.005	ND <0.005	4.3

mg/kg: micrograms per kilogram, equal to parts per million

ND: Not Detected

Table 2 Analytical Results Soil Sampling, June 2006

Alameda County Fairgrounds, Pleasanton, California

				Modi	fied EPA Method	1 8020	
	Sample	TPH-G	MTBE	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)
Sample ID	Depth (feet bgs)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
B1-10	10	ND <1.0	ND <0.050	ND <0.005	ND <0.005	ND <0.005	ND <0.005
B1-20	20	ND <1.0	ND <0.050	ND <0.005	ND <0.005	ND <0.005	ND <0.005
B1-30	30	ND <1.0	ND <0.050	ND <0.005	ND <0.005	ND <0.005	ND <0.005

mg/kg: micrograms per kilogram, equal to parts per million

Table 3
Analytical Results for Groundwater Sample, June 2006

Alameda County Fairgrounds, Pleasanton, California

			Method 80	15Cm/8021				N	1ethod SW8260)B	
Sample ID	TPH-G (ug/L)	MTBE (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Xylenes (ug/L)	TAME (ug/L)	TBA (ug/L)	DIPE (ug/L)	ETBE (ug/L)	MTBE (ug/L)
B1	ND <50	ND <5.0	ND <0.5	ND <0.5	ND <0.5	ND <0.5	ND <0.5	ND <5.0	ND <0.5	ND <0.5	ND <0.5

mg/L: micrograms per liter, equal to parts per billion (ppb)

ND: Not Detected

APPENDIX A

Site Photographs



Area of Investigation and Site of Former UST, looking North



Area of Investigation and Site of Former UST, looking North

APPENDIX B

Zone 7 Water Agency Drilling Permit

Accuracy-

Phone 925/426-7656

Zip CA 94566

Fax 916/966-6503

Phone_9.16/966-8502. Zip.CA-95628-

Geotechnical Investigation

Contamination

Well Destruction

Hollow Stem Auger . .

General

Groundwater Monitoring

Irrigation

Direct Push

Remediation

·Other ·····

PRECISION SAMPLING

Maximum

Maximum Depth 50

Number ONE



California Coordinates Source

Address 4501 Pleasanton Ave.

Name_Sellens Consulting LLC

Address 5031 Lourina Court

Cathodic Protection

City_Pleasanton___

Name Alameda County Fairgrounds

CLIENT

APPLICANT

City_Fair_Oaks_ TYPE OF PROJECT

Well Construction

Water Supply

PROPOSED WELL USE

DRILLING METHOD:

DRILLING COMPANY DRILLER'S LICENSE NO.

Casing Diameter

Surface Seal Depth

County Ordinance No. 73-68,

Number of Borings_ONE

Hole Diameter 2.5-inch ESTIMATED STARTING DATE

Drill Hole Diameter

WELL PROJECTS

SOIL BORINGS

APPLICANTS SIGNATURE

Monitoring

New Domestic

Municipal

Industrial

Dewatering

Mud Rotary

Cable Tool

ZONE 7 WATER AGENCY

100 NORTH CANYONS PARKWAY, LIVERMORE, CALIFORNIA 94551 VOICE (925) 454-5000 FAX (925) 454-5728

DRILLING PERMIT APPLICATION

FOR	APPI	JCAN	T TO	COMP	LETE

LOCATION OF PROJECT_Alameda County Fairgrounds 4501 Pleasanton Ave. Pleasanton, CA 94566

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	tocation	sketch for	aeotechnic	cal projects.		
	3. Permit i	s void if pro	pject not b	egun withir	90 days	of approva
	date.			- '		
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	Son Silv Hat					

FOR OFFICE USE

ESTIMATED COMPLETION DATE JUNE I hereby agree to comply with all requirements of this permit and Alameda

Michael P. Sellens

No. 4714

ATTACH SITE PLAN OR SKETCH

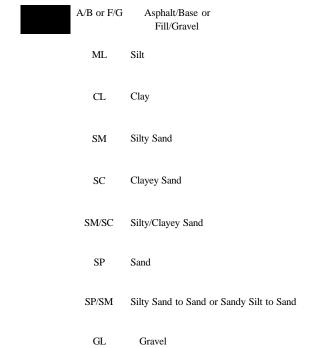
Michael Sellens

Revised: April 27, 2005

APPENDIX C

Borehole Log

Legend for Soil Boring Logs



Gradational Contact

Abrupt or Clear Contact



Stabilized Water Reading



Initial Water Reading

]	Bor	ing Lo	og		Sell	lens C	onsulti	ngLLC	<u>Client</u> AlamedaCountyFair	Boring No. B-1					
Job Site/ Ad						J			ıks, CA 95628	Job#:	Sheet					
4501 Pleasa	inton Av	e Plea	asanton C	A 94566			66-8502		sbcglobal.net	Date: 6/5/2006	1 of 2					
			tion of Bo			. ,		ORMATI			NFORMATION					
					Drilling (onSamplin		Project Manager:	MichaelSellens					
					Rig Oper					Geologist:	MichaelSellens					
(31 =	1111	-	BIRLS !	P1	Drilling N	lethod:	Continu	ıousCore		Sampler:	MichaelSellens					
-	P 3				Drill Rig	Туре:	Direct-	Push		Sampling Method:						
	u,	N.	7-1	. 35	$\overline{\mathbb{Y}}$	<u>A</u>	pproximat	e Initial Wat	ter Level	Time Start:	10:00 AM					
			3 . 4		三			.5 feet bgs		Time Stop:	12:15 PM					
100H	400		3 8		$\overline{\mathbf{Y}}$	Apr		Stabilized W	ater Level	Boring Diameter:	2.25 inch					
	400		h					feet bgs		Boring Depth:	46 feet					
. 100	20.0	NO PERSON		Y	Northing	: N	/A	Easting:	N/A	A Elevation	: N/A					
ling	Vater ;s)	evel	feet)	IPLE	Graphi	c Represen	tation	_								
PID Reading (ppm)	Depth to Water (feet bgs)	Water Level	DEPTH (feet)	SOIL SAMPLE LOCATION	GRAVEL	FINES	SANDS	GROUP	SYMBOL	FIELD NOTES						
			0					AB		0-1' Asphalt/Base						
			2					+	ı	1-3' Gravel (Fill)						
			4					1		3-4' Silty Clay. Dark brown, p	lastic, damp, no odor					
			6					ML								
			8													
			10	*						4-12' Clayey Silt. Brown, v. pl	astic, damp, no odor					
			10	*												
			12							12-13.5' Gravels . Multi-colored	d coarse (1/8" dia) angular					
			14							loose, no odor	a, course (1/0 dia), angular,					
			16					1								
			10							12.5.251 694 Class M. F. av. 1	and the state of t					
			18							13.5-25' Silty Clay. Medium b	rown, v. plastic, v. damp, no odor					
			20	*						some gravels at 19'						
			22					ML		firmer and not so damp @ 21'						
			24					1								
			26													
			28]		25-37' Silty Clay. Medium brodamp, no odor	wn to grey-brown, v. plastic, v.					
								1		damp, no odor						
			30	*				-								
			32													
			34					1								
			36					ML								
			38					-		37-40' Clayey Silt. Medium br no odor	own to grey brown, firm, damp,					
			40													
Comment	s:			1	1		1	1		1						

]	Bor	ing Lo	og		Sel	lens C	onsultin	gLLC	<u>Client</u> AlamedaCountyFai	Boring No. B-1
Job Site/ Ac						5031 La	urina Coi	urt, Fair Oak	s, CA 95628	Job#:	Sheet
4501 Pleasa						. ,		_	sbcglobal.net	Date: 6/5/2006	2 of 2
			tion of Bo					ORMATIO			TINFORMATION
-	-		No. of Concession, Name of Street, or other Designation, Name of Stree	-	Drilling C		Precisio	nSampling	5	Project Manager:	Michael Sellens RG
1					Rig Opera		C .:			Geologist:	Michael Sellens RG
A NO.				B1	Drilling N					Sampler:	MichaelSellensRG
	3	3 7	17-1		Drill Rig		Direct-I		T1	Sampling Method:	Cont Core
	= 7	4	3 31			A	-	e Initial Wate	er Levei	Time Start:	10:00 AM 12:15 PM
			-		$\vdash = \vdash$	Anr		37.5 bgs Stabilized Wa	oton I ovol	Time Stop: Boring Diameter:	2.25 inch
A.	-		LIL	100	$rac{1}{2}$	Дрі		feet bgs	iter Lever	Boring Depth:	46 feet
AND S		MD +C 10 C	the se		Northing	· N	/A	Easting:	N/A		
	1			E	1	c Represen		Lasting.	14/1	Elevat	1011.
ding	Wate gs)	evel	feet	ION ION		Represen	I	<u> </u>			
PID Reading (ppm)	Depth to Water (feet bgs)	Water Level	DEPTH (feet)	SOIL SAMPLE LOCATION	GRAVEL	FINES	SANDS	GROUP	SYMBOL	FIEI	LDNOTES
								ML			
			42		 					42 45! Sand Mark and	fine to medium, subrounded, loose,
		Ţ	44					SP		free water at 44', no odor	fille to friedriff, subfounded, foose,
			46							45-46'. Gravel . As sand, ce	emented, hard
			48					GL			
										Drill to 46', use hydro-put	nch to 48' and collect groundwater
			50								sample.
			52								
			54								
			56								
			58								
			60								
			62								
			64								
			66					1			
			68								
			70]			
			72								
			74								
			76								
			78								
			80								
Comment	ts:										

APPENDIX D

Analytical Laboratory Report for Soil Samples

McCAMPBELL ANALYTICAL, INC.

110 2nd AVENUE SOUTH, #D7 PACHECO, CA 94553-5560

Website: www.mccampbell.com Email: main@mccampbell.com Telephone: (877) 798-1620 Fax: (925) 798-1622

CHAIN OF CUSTODY RECORD

TURN AROUND TIME

72 HR 5 DAY

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

Report To: MIC	HMEL SE	ELLEN	Bi	ll To														A	nal	ysis	Rec	ues	t						(Other	Comments
Company: SEL	LOURINA COURT OAVES, CA 95628E-Mail: Mselle 966-8502 Fax: (916) 96 Project Name: Al														6					rs				12							Filter
5031 L	OURINA	Coc	IRT										8015) / MTBE		B&F		1.2			gene											Samples
FAIR C	Aves,	CA 9	5628E	-Mai	1:m	sell	en	50	sh	96	bul	_	Z Z		20 E/					Con						(03	(0				for Metals
Tele: (9/6) 96	66-850	2	F	ax: (916)91	66	-65	03	1	n-e	1	3015		/ 552	(1)	(\$)	(17)		ors/		(\$3				/ 602	602				analysis:
Project #:			P	ojec	t Nan	1e: [-	Ha	ma	da	FR	in		+		1664	(418.	000	2 / 80	es)	rocl		icide			NAS	0109	010				Yes / No
Project Location:	Alame	eda 1	AIR										802		se ()	ons	1 (H	09 1	ticid	Y; A	des)	Herb	Cs))Cs)	Is / F	.8/	9/8	9020			
Sampler Signatur	e: ////	. Sel	Len.										(602 / 8021 +		Grea	carb	802	(EP/	l Pes	ONE	stici	CID	(VO	(SVC	PAF	/ 200	200	10/0			
		SAMPLING E MATRIX PRES							8	15))il &	lydro	8010	NLY	81 (C	CB's	VP Pe	Acidio	8260	8270	8310 (2.00	00.7	8 / 60							
SAMPLE ID	LOCATION/ Field Point Name	Date	Time	# Containers	in the second se						Other	TPH as	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)				
B1-5		6/5/06	10:10	1	S		4						T																		HOLD
131-10		11	10:15	(5		X						×	1																	
BI - 15		3 (10:25	1	3		<																								Has
B1-20		11	10:35	1	5		X						X																		
B1-25 B1-30 B1-35		4.1	10:42	1	S																										HOLD
B1-30		1 *	11:00	1	5		1						\rightarrow	1																1	
B1-35		. 1	11:20	1	S	>						Ι.																			HOCD
B1-40		15	11:33	1	S	×	-																								Hoct
													_					_	_					_			-		_		
					-		-	-		-		-	_	-					_						-	-	-		_		
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Relinguished/By:		Deter	Time:	Des	oland T							\perp	1	TE 449														0)(1)	AENT	rc.	
Kennquished by:	M	Date: 6/5/07		Rec	Received By:						G	OOI	CO	NDI	TION	V_V				٠					C	OIVLIV	IEN	15:			
Relinquished By:	700	Date:	Time:						D	ECH	SPA ILOR OPR	INA	TED	IN	LAB		_/	/													
Relinquished By:	nquished By: Date: Time: Received By:								ERV						-																
Kennquished by:	Reiniquished by.										V	OAS	0	&G	M	ETA	LS	ОТ	HEI	R											
							P	RES	ERV	ATIC	ON_				pН	<2															

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

06/05/2006

110 Second Avenue South, #D7 Pacheco, CA 94553-5560 (925) 798-1620

WorkOrder: 0606085 ClientID: MSFO EDF: YES

Report to: Bill to: Requested TAT: 5 days

Michael SellensTEL:(916) 966-8502Accounts PayableMichael SellensFAX:(916) 966-6503Michael Sellens

5031 Lourina Ct ProjectNo: Alameda Fair 5031 Lourina Court Date Received:

Fair Oaks, CA 95628 PO: Fair Oaks, CA 95628 *Date Printed:* **06/05/2006**

								Re	quested	Tests (See lege	end belo	ow)			
Sample ID	ClientSampID	Matrix	Collection Date H	-lold	1	2	3	4	5	6	7	8	9	10	11	12
0606085-002	B1-10	Soil	6/5/06 10:15:00 AM		Α	Α										
0606085-004	B1-20	Soil	6/5/06 10:35:00 AM		Α											
0606085-006	B1-30	Soil	6/5/06 11:00:00 AM		Α											

Test Legend:

1 G-MBTEX_S	2 PREDF REPORT	3	4	5	
6	7	8	9	10	
11	12				

Prepared by: Melissa Valles

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.



110 2nd Avenue South, #D7, Pacheco, CA 94553-5560 Telephone: 925-798-1620 Fax: 925-798-1622 Website: www.mccampbell.com E-mail: main@mccampbell.com

Michael Sellens	Client Project ID: Alameda Fair	Date Sampled: 06/05/06				
5031 Lourina Ct		Date Received: 06/05/06				
Fair Oaks, CA 95628	Client Contact: Michael Sellens	Date Extracted: 06/05/06				
Tun Ouks, C/1 /3020	Client P.O.:	Date Analyzed: 06/06/06				
Caralina Danas (CC	C12) V-1-41. H-1					

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

Extraction method: SW5030B Analytical methods: SW8021B/8015Cm Work Order: 0606085

Lab ID	Client ID	Matrix	TPH(g)	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes	DF	% SS
002A	B1-10	S	ND	ND	ND	ND	ND	ND	1	83
004A	B1-20	S	ND	ND	ND	ND	ND	ND	1	94
006A	B1-30	S	ND	ND	ND	ND	ND	ND	1	85
Re	porting Limit for DF =1;	W	NA	NA	NA	NA	NA	NA	1	ug/L
	means not detected at or bove the reporting limit	S	1.0	0.05	0.005	0.005	0.005	0.005	1	mg/Kg

above the reporting limit S 1.0 0.05 0.005 0.005 0.005 0.005 1 mg/Kg	ND means not detected at or	W	NA NA	NA NA	NA	NA	NA NA	NA	1	ug/L
		S	1.0	0.05	0.005	0.005	0.005	0.005	1	mg/Kg

^{*} water and vapor samples and all TCLP & SPLP extracts are reported in µg/L, soil/sludge/solid samples in mg/kg, wipe samples in µg/wipe, product/oil/nonaqueous 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) value derived using a client specified carbon range; o) results are reported on a dry weight basis.

110 2nd Avenue South, #D7, Pacheco, CA 94553-5560 Telephone: 925-798-1620 Fax: 925-798-1622 Website: www.mccampbell.com E-mail: main@mccampbell.com

QC SUMMARY REPORT FOR SW8021B/8015Cm

W.O. Sample Matrix: Soil QC Matrix: Soil WorkOrder: 0606085

EPA Method: SW8021B/80150	Cm E	xtraction:	SW5030I	В	Batch	nID: 22024		Spiked Sample ID: 0606087-002a					
Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance	Criteria (%)			
, mary to	mg/Kg	mg/Kg	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	LCS / LCSD			
TPH(btex) [£]	ND	0.60	105	102	2.70	98.4	100	1.60	70 - 130	70 - 130			
MTBE	ND	0.10	101	95.4	5.47	97.1	96.6	0.583	70 - 130	70 - 130			
Benzene	ND	0.10	95.6	92.6	3.17	90.4	91.3	0.911	70 - 130	70 - 130			
Toluene	ND	0.10	94.6	91.9	2.89	90.1	90.8	0.798	70 - 130	70 - 130			
Ethylbenzene	ND	0.10	93.2	92.9	0.339	90.6	91.9	1.38	70 - 130	70 - 130			
Xylenes	ND	0.30	89.7	89.3	0.372	85.3	88.7	3.83	70 - 130	70 - 130			
%SS:	97	0.10	106	88	18.6	98	104	5.94	70 - 130	70 - 130			

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

NONE

BATCH 22024 SUMMARY

Sample ID	Date Sampled D	Date Extracted	Date Analyzed	Sample ID	Date Sampled	Date Extracted	Date Analyzed
0606085-002A	6/05/06 10:15 AM	6/05/06	6/06/06 6:18 PM	0606085-004A	6/05/06 10:35 AM	6/05/06	6/06/06 9:22 PM
0606085-006A	6/05/06 11:00 AM	6/05/06	6/06/06 6:12 PM				

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

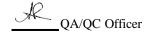
MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the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



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

APPENDIX E

Analytical Laboratory Report for Groundwater Sample

Sellens Environmental: 5031 Lourina Court, Fair Oaks, CA 95628: (916) 966-8502

McCAMPBELL ANALYTICAL, INC. 110 2nd AVENUE SOUTH, #D7 PACHECO, CA 94553-5560

Website: www.mccampbell.com Email: main@mccampbell.com

Telephone: (877) 798-1620 Fax: (925) 798-1622

CHAIN OF CUSTODY RECORD

TURN AROUND TIME

72 HR 5 DAY

RUSH 24 HR 48 HR 72 HR 5 D

GeoTracker EDF ☑ PDF ☑ Excel □ Write On (DW) □

	reiepnor	ie: (877) 798	-1020			F	ax: (925)	/90	3-10	22				G	CUI	14	CIXC	1 1		7000		ıD	. /	300000	LA	CCI	-	ta v	, , ,		п (Б	Y) ====
l	Report To: M.	SELLEN	71	В	ill To	:														A	nal	ysis	Rec	ues	t						0	ther	Comments
	Company: SEL	LENS C	ansul	TING											6)		6					ers											Filter
	5031	LOURINGA	Coun	7											TBE		B&I		4			gene								1			Samples
ı	FAIR OF Tele: (9/6) 96 Project#: /	ans c	195	328 E	-Mai	1: MS	elle	ence	951	bog	lob	al.	nel	(N N		20 E					Cor						(02	(0		2298		for Metals
	Tele: (9/6)96	6-8502		F	ax: (916)9	66	- 6	55	23				8015		/ 55.	=	(s)	(17)		ors/		(sa	20			/ 60	/ 602		9		analysis:
	Project #: /	1		P	rojec	t Nan	1e:	Flo	in	ne	6	A	172	_	+		1664	(418. IVOC	000	2 / 80	es)	rocl		icid			NA	9010	010		00		Yes / No
	Project Location:		ada	FAIN											807		ase (Suoo	11 (H	4 60	ticid	Y; 4	des)	Herk	Cs)	OCs)	Is / I	.8/	9/8	6020	$\overline{}$		
	Sampler Signatur	e: ///	P- Vc	llen								TOTAL S	YOR		(602 / 8021 + 8015) / MTBE		Gre	car	/ 802	(EP.	l Pes	ONI	estici	CCI	(V)	(SV	(PAI	/ 200	/ 200	10/	7		
			SAMP	LING	8	ers	N	TAN	RIX	K			HOD RVE	CD	S	15)	Sil &	Hydro	8010	NLY	81 (C	CB's	NP P	Acidi	8260	8270	8310	200.7	7.00	8 / 60	0		
	SAMPLE ID	LOCATION/ Field Point Name	Date	Time	# Containers	Type Containers	Water	Soil	Sludge	Other	ICE	HCL	HNO ₃	Other	BTEX & TPH as	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 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)	Fuer	-	
5	131		6/5/06	12:10	4	W	X								X																X		
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	Relinquished By:	,	Date:	Time:	Rec	eived B	v://	1		1	1		10	+	ICI	E/t°	_	1			/	1					_		CC	MM	ENTS	S:	
	1111 1. 514	l	6/5/06	14:15	+		1/6	9		V	a	/	P		GO	OD	CO	TIO	ION		/			•									
	Relinquished By:	7	Date:	Time:	Rec	eived B	y:						1		DE	CHL	OR	CE A INAT	ED	INI	AB			/									
																		ATE ED IN			INE	RS_	V	_									
	Relinquished By:		Date:	Time:	Rec	eived B	y:									التاليد		AL AL			/ .					0.00							
															PR	ESEI	RVA	TIO		QAS	0	&G	M. pH		LS	OT	HEF	(
																			-	-				-			distance of the	-					

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

5 days

110 Second Avenue South, #D7 Pacheco, CA 94553-5560 (925) 798-1620

WorkOrder: 0606092

ClientID: MSFO

EDF: YES

Requested TAT:

Report to:

Michael Sellens

Michael Sellens

5031 Lourina Ct

TEL:

(916) 966-8502

FAX: (916) 966-6503 ProjectNo: Alameda Fair

Fair Oaks, CA 95628 PO:

Bill to:
Accounts Payable

Michael Sellens

5031 Lourina Court

Fair Oaks, CA 95628

Date Received: 06/05/2006

Date Printed: 06/05/2006

							Re	questec	l Tests	See leg	end bel	ow)			
Sample ID	ClientSamplD	Matrix	Collection Date Ho	d 1	2	3	4	5	6	7	8	9	10	11	12
0606092-001	B1	Water	6/5/06 12:10:00 PM] B	А	Α									

Test Legend:

1 5-OXYS_W	2 G-MBTEX_W	3 PREDF REPORT	4	5
6	7	8	9	10
11	12			

Prepared by: Melissa Valles

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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LY

110 2nd Avenue South, #D7, Pacheco, CA 94553-5560 Telephone: 925-798-1620 Fax: 925-798-1622 Website: www.mccampbell.com E-mail: main@mccampbell.com

Michael Sellens	Cli	ient Pro	oject ID: Alame	Date Sampled:	Date Sampled: 06/05/06				
5031 Lourina Ct					Date Received:	06/05/06			
Fair Oaks, CA 95628	Cli	ient Co	ntact: Michael S	Sellens	Date Extracted:	06/05/06			
Tun Gans, Cripso20	Cli	ient P.0	O.:		Date Analyzed:	06/05/06			
Extraction Method: SW5030B	Oxygenated		tile Organics by		MS*	Work Ord	er: 0606092		
Lab ID	0606092-0	001B							
Client ID	B1					Reporting	Limit for		
Matrix	W					DF	=1		
DF	1					S	W		
Compound			Conce	ntration		ug/kg	μg/L		
tert-Amyl methyl ether (TAME)	ND					NA	0.5		
t-Butyl alcohol (TBA)	ND					NA	5.0		
Diisopropyl ether (DIPE)	ND					NA	0.5		
Ethyl tert-butyl ether (ETBE)	ND					NA	0.5		
Methyl-t-butyl ether (MTBE)	ND					NA	0.5		
		Surro	gate Recoveries	(%)					
%SS1:	104								
Comments	i								

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

ND means not detected above the reporting limit; N/A means analyte not applicable to this analysis.

[#] surrogate diluted out of range or surrogate coelutes with another peak.

h) lighter than water immiscible sheen/product is present; i) liquid sample that contains greater than ~1 vol. % sediment; j) sample diluted due to high organic content/matrix interference; k) reporting limit near, but not identical to our standard reporting limit due to variable Encore sample weight; m) reporting limit raised due to insufficient sample amount; n) results are reported on a dry weight basis; p) see attached narrative.



110 2nd Avenue South, #D7, Pacheco, CA 94553-5560 Telephone: 925-798-1620 Fax: 925-798-1622 Website: www.mccampbell.com E-mail: main@mccampbell.com

Michael Sellens	Client Project ID: Alameda Fair	Date Sampled: 06/05/06
5031 Lourina Ct		Date Received: 06/05/06
Fair Oaks, CA 95628	Client Contact: Michael Sellens	Date Extracted: 06/08/06
1 un ound, C11 / 5020	Client P.O.:	Date Analyzed: 06/08/06

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

Analytical methods: SW8021B/8015Cm Extraction method: SW5030B Work Order: 0606092

Latraction				dicai memous. 5 w	0021B/0013CIII		WOIK OIGEL 0000092					
Lab ID	Client ID	Matrix	TPH(g)	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes	DF	% SS		
001A	B1	W	ND,i	ND	ND	ND	ND	ND	1	106		
Re ND	porting Limit for DF =1; o means not detected at or	W	50	5.0	0.5	0.5	0.5	0.5	1	μg/L		
	bove the reporting limit	S	NA	NA	NA	NA	NA	NA	1	mg/Kg		

ļ	ND means not detected at or above the reporting limit	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 nontarget isolated peaks subtracted out of the TPH(g) concentration at the client's request; p) see attached narrative.

110 2nd Avenue South, #D7, Pacheco, CA 94553-5560 Telephone: 925-798-1620 Fax: 925-798-1622

Website: www.mccampbell.com E-mail: main@mccampbell.com

QC SUMMARY REPORT FOR E502.2

WorkOrder: 0606092 W.O. Sample Matrix: Water QC Matrix: Water

EPA Method: SW8260B	Method: SW8260B Extraction: SW5030B					BatchID: 22026			Spiked Sample ID: 0606092-001B		
Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance	Criteria (%)	
, and yet	μg/L	μg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	LCS / LCSD	
tert-Amyl methyl ether (TAME)	ND	10	94	93.7	0.384	97.5	98.9	1.36	70 - 130	70 - 130	
t-Butyl alcohol (TBA)	ND	50	104	103	1.09	98.8	97.7	1.06	70 - 130	70 - 130	
Diisopropyl ether (DIPE)	ND	10	101	101	0	104	104	0	70 - 130	70 - 130	
Ethyl tert-butyl ether (ETBE)	ND	10	89.7	89.5	0.268	93.1	93.6	0.490	70 - 130	70 - 130	
Methyl-t-butyl ether (MTBE)	ND	10	92.2	90.9	1.45	94.8	95.7	0.933	70 - 130	70 - 130	
%SS1:	104	10	97	95	1.86	102	101	1.75	70 - 130	70 - 130	

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

BATCH 22026 SUMMARY

Sample ID	Date Sampled	Date Extracted	Date Analyzed	Sample ID	Date Sampled	Date Extracted	Date Analyzed
0606092-001B	6/05/06 12:10 PM	6/05/06	6/05/06 8:02 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.

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.

Laboratory extraction solvents such as methylene chloride and acetone may occasionally appear in the method blank at low levels

_QA/QC Officer

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QC SUMMARY REPORT FOR SW8021B/8015Cm

W.O. Sample Matrix: Water QC Matrix: Water WorkOrder: 0606092

EPA Method:SW8021B/8015	BatchID: 22028			Spiked Sample ID 0606105-002A						
Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance	Criteria (%)
, mary to	μg/L	μg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS/MSD	LCS/LCSD
TPH(btex ^f)	ND	60	105	113	7.31	105	110	4.44	70 - 130	70 - 130
MTBE	ND	10	93.8	96.3	2.58	101	112	10.4	70 - 130	70 - 130
Benzene	ND	10	97.6	103	5.14	85.4	102	17.9	70 - 130	70 - 130
Toluene	ND	10	89.6	97.3	8.29	84.3	95.8	12.8	70 - 130	70 - 130
Ethylbenzene	ND	10	97.5	104	6.45	98.2	101	3.32	70 - 130	70 - 130
Xylenes	ND	30	90.7	95.3	5.02	90.7	95.3	5.02	70 - 130	70 - 130
%SS:	105	10	101	104	2.95	98	100	1.76	70 - 130	70 - 130

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

BATCH 22028 SUMMARY

Sample ID	Date Sampled	Date Extracted	Date Analyzed	Sample ID	Date Sampled	Date Extracted	Date Analyzed
0606092-001A	6/05/06 12:10 PM	1 6/08/06	6/08/06 6:53 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 applicable or not enough sample to perform matrix spike and matrix spike duplicate.

