

July 21, 1997
File No. 23-482965-PH2

Mr. Michael Willcoxon, Esq.
Attorney-at-Law
11555 Dublin Boulevard, Suite 201
Dublin, California 94568

**Subject: Addendum
Soil and Groundwater Assessment Report
Former Hummingbird Haven Glider Airport
8638 Patterson Pass Road (at Greenville Road)
Livermore, California**

Dear Mr. Willcoxon:

Kleinfelder is pleased to provide you with this report addendum describing the results of the additional groundwater sampling conducted at the above referenced site. The groundwater sampling was conducted in response to a request made by Ms. Eva Chou of the Alameda County Department of Environmental Health, Environmental Protection Division (ACDEH) during a meeting held Wednesday July 16, 1997. Ms. Chou requested that groundwater samples be collected from the three monitoring wells adjacent to the USTs on site, and that the samples be analyzed for the presence of polynuclear aromatic compounds, specifically benzo (a) pyrene.

FIELD ACTIVITIES

On July 18, 1997, Kleinfelder sampled the three monitoring wells previously installed in 1989 adjacent to the underground storage tanks. The samples were obtained using plastic disposable bailers. No equipment blanks or duplicate samples were collected.

The water samples were analyzed for polynuclear aromatic compounds (PNAs) by SW846 Method 8310. No detectable concentrations of PNAs were reported by the analytical laboratory. Copies of the sample logs, chain of custody documentation and analytical reports are attached.

Depth to groundwater (July 18, 1997) in the three wells was 31.76 (MWT-1), 31.16 (MWT-2) and 29.75 (MWT-3) feet below the top of the well casings. Depth to groundwater was measured from the red reference mark established by the well installer. The calculated groundwater gradient based on the available data is 0.028 ft/ft to the north-northwest. The flow direction has shifted slightly north of the previous flow direction obtained in March 1997.

LIMITATIONS

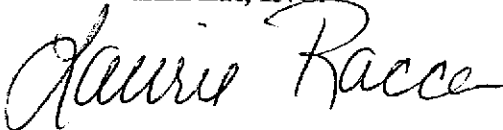
Kleinfelder has prepared this report addendum in accordance with the generally accepted standards of care which exist in Northern California at the time this work was completed. It should be recognized that definition and evaluation of geologic and chemical subsurface conditions are a difficult and inexact art. Judgments leading to conclusions and recommendations

are generally made with incomplete knowledge of the subsurface conditions present. The conclusions in this letter report are based on field observations and analytical results obtained from the water samples collected on-site. More extensive studies, including subsurface investigations, may be performed to reduce uncertainties. No warranty, expressed or implied, is made.

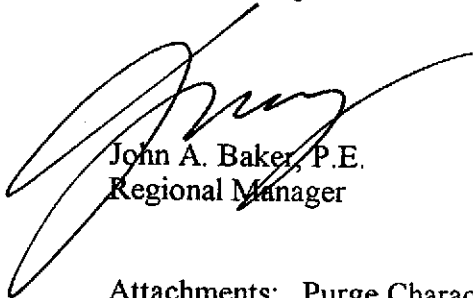
We appreciate the opportunity to work with you. If you have any questions or require additional services, please do not hesitate to contact me.

Sincerely,

KLEINFELDER, INC



Laurie Racca
Project Geologist



John A. Baker, P.E.
Regional Manager

Attachments: Purge Characterization and Sample Logs
Chain of Custody Form
Analytical Report



RECORD OF WATER LEVEL MEASUREMENTS

Job Number: 23-482965-PHZ Site: Livermore Property By: 1282

Well Number	Date	Time	Measuring Device/Setting	Measuring Point (M.P.)	Depth to Water from M.P.	M.P. Elevation	Water Level Elevation	Remarks
	7/17/97		CONDUCTIVITY BASED					
MWT-1	7/17/97	1313		T.O.C.	31.76			
MWT-2		1316	H ₂ O		31.16			
MWT-3		1310	T.O.C.		29.75			
			LEVEL					
			HI					
			T.O.C. = TOP OF CASING					
			OPENED 3 let wells Equilibrate to 1/2 Hr.					

Date: 7/17/97 Weather: Sunny - Windy - Hot Sheet 1 of 1
 Project: LIVERMORE PROPERTY Submitted By: 1282 Date: _____
 Project Number: 23-482965-1012 Approved By: _____ Date: _____

PURGE CHARACTERIZATION AND SAMPLE LOG Well No. MWT-1

Purging Equipment	Bailer	Disposable Bailer	Bladder Pump	Dedicated Pump	Suction Pump	Other:
Sampling Equipment	Bailer	Disposable Bailer	Bladder Pump	Dedicated Pump	Other:	
Cleaning Methods	Wash		Rinse I	Rinse II	Rinse III	
	DI		DI	DI	DI	
	Tap		Tap	Tap	Tap	
	Other		Other	Other	Other	
	Steam		Steam	Steam	Steam	
TSP						
Alkonox						
Other						

Vol. (gal): _____

Water Source: WA

Notes: _____

Last Calibration Check (include supporting documentation)
 pH meter Date/Time: 7/17/97 Meter No. OR100 216A 7-10
 Conductivity meter Date/Time: 7/17/97 Meter No. VWR 2052 ✓ 9/10/97
 Turbidity meter Date/Time: 7/17/97 Meter No. _____
 Other: (list in notes) _____

Military Time		1420	1430	1436	1447	1458	1502	Code
Gallons Purged	<u>A</u>	4	8	12	16	20	24	42
Purge Rate	<u>C</u>	<u>Variable</u>						21
pH	<u>9 Ap</u>	7.18	7.14	7.01	7.08	7.07	7.09	27
Temperature (C)	<u>T</u>	20	20	20	20	20	20	30
Cond. (umhos/cm)	<u>T</u>	2480	2590	2830	2960	2970	3040	33
Salinity (o/oo)	<u>W</u>	/						
Turbidity (NTU's)	<u>W</u>	>200	→	7200	>200	7200	→	
Color	<u>W</u>	LT. BW	→	LT. BW	→	→	→	
Depth to Water	<u>31.76</u>	/						0
Reference Point:								

Sample Number	Time	Quantity	Type	Preserv.	Filtration	Analysis	Lab
16902	<u>1515</u> <u>1516</u>	<u>2</u>	<u>64/AMB</u>	<u>✓</u>	<u>✓</u>	<u>8310</u>	<u>4</u> <u>12</u> <u>9</u> <u>1</u> <u>3</u> <u>5</u>

T.D. Well: 2026 1 Casing Volume: 6.18 3 Casing Volumes: 16.54

Notes: 635

NO ODOR
NO STAIN

Date: 7/7/97 Weather: Sunny - Hot - Windy Sheet 1 of 1
 Project: LIVERMORE PROJECT Submitted By: 1282 Date:
 Project Number: 23-482965-PH2 Approved By: Date:

PURGE CHARACTERIZATION AND SAMPLE LOG

Well No. MWT-2

Purging Equipment	Bailer	Disposable Bailer	Bladder Pump	Dedicated Pump	Suction Pump	Other:
Sampling Equipment	Bailer	Disposable Bailer	Bladder Pump	Dedicated Pump	Other:	
Cleaning Methods	Wash		Rinse I	Rinse II	Rinse III	
	DI		DI	DI	DI	
	Tap		Tap	Tap	Tap	
	Other		Other	Other	Other	
TSP	Steam		Steam	Steam	Steam	
Other	Hot		Hot	Hot	Hot	
	Cold		Cold	Cold	Cold	

Vol. (gal): NA

Water Source:

Notes: NA

Last Calibration Check (include supporting documentation)

pH meter Date/Time: 7/7/97

Meter No. Ohio 210A

Conductivity meter Date/Time:

Meter No. VWR 2092

Turbidity meter Date/Time: ✓

Meter No.

Other: (list in notes)

Military Time		1525	1533	1540	1548			Code
Gallons Purged	↑	2.5	5	7.5	9			42
Purge Rate	↳	Variable				→		21
pH	↑	6.94	6.93	6.95	6.97			27
Temperature (C)	↑	20	21	20	20			30
Cond. (umhos/cm)		3860	3870	3910	3920			33
Salinity (o/oo)								
Turbidity (NTU's)	↓	2200	7200					
Color	↓	BLACK	BLK	cloudy	cloudy			
Depth to Water	31.6							0
Reference Point:								

Sample Number	Time	Quantity	Type	Preserv.	Filtration	Analysis	Lab
16943	1600	2	GL/AMB			8310	416 M C S

T.D. Well: 48.6 1 Casing Volume: 2.85 3# Casing Volumes: 8.54

Notes:

OPOR
SHEEM
Small splashes of product noted

Date: 7/17/97 Weather: Sunny-Windy-Hot Sheet 1 of 1
 Project: LIVERMORE Property Submitted By: 1282 Date: 7/17/97
 Project Number: 23482966-1PH2 Approved By: _____ Date: _____

PURGE CHARACTERIZATION AND SAMPLE LOG Well No. MWT-3

Purging Equipment	Bailer	Disposable Bailer	Bladder Pump	Dedicated Pump	Suction Pump	Other:
Sampling Equipment	Bailer	Disposable Bailer	Bladder Pump	Dedicated Pump	Other:	
Cleaning Methods	Wash		Rinse I		Rinse II	
	DI		DI		DI	
	Tap		Tap		Tap	
	Other		Other		Other	
	Steam		Steam		Steam	
TSP	Hot		Hot		Hot	
Akron	Cold		Cold		Cold	
Other	Cold		Cold		Cold	

Vol. (gal): _____

Water Source: WA

Notes: _____

Last Calibration Check (include supporting documentation)
 pH meter Date/Time: 7/17/97 Meter No. Oriou 210A
 Conductivity meter Date/Time: _____ Meter No. VWR 2052
 Turbidity meter Date/Time: _____ Meter No. 2
 Other: (list in notes)

Military Time		1331	1338	1344	1350		Code
Gallons Purged	↑	2	4	6	8		42
Purge Rate	↔	variable					21
pH	↔	6.95	6.99	7.01	7.03		27
Temperature (C)	↔	20	20	20	20		30
Cond. (umhos/cm)	↔	3820	3840	3830	3860		33
Salinity (o/oo)							
Turbidity (NTU's)	↓	700	→	700	→		
Color	↓	cloudy	→	cloudy	→		
Depth to Water	29.75						0
Reference Point:							

Sample Number	Time	Quantity	Type	Preserv.	Filtration	Analysis	Lab
16939	1355	2	GLA	0	0	8310 (PNA'S)	CHROMALAB

T.D. Well: 4/9 1 Casing Volume: 1.98 4 Casing Volumes: 7.93

Notes: _____

NO ODOB
NO STEAM

7-18-1997 4:08PM

FROM

P. 1

CHROMALAB, INC.

Environmental Services (SOB)

July 18, 1997

Submission #: 9707238

KLEINFELDER (SACRAMENTO)

Atten: Laurie Racca

Project: Not provided
Received: July 17, 1997

Project#: 23-482965-PH2

re: One sample for Polynuclear Aromatics (PNAs) analysis.
Method: SW846 Method 8310 Sept 1986

Client Sample ID: 16943

Spl#: 140298

Sampled: July 17, 1997

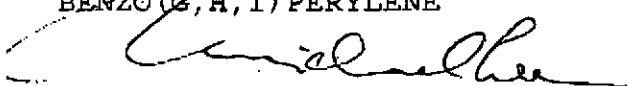
Matrix: WATER

Run#: 7822


Extracted: July 18, 1997

Analyzed: July 18, 1997

ANALYTE	RESULT (ug/L)	REPORTING LIMIT (ug/L)	BLANK RESULT (ug/L)	BLANK SPIKE (%)	DILUTION FACTOR
NAPHTHALENE	N.D.	2.0	N.D.	60.0	1
ACENAPHTHENE	N.D.	3.5	N.D.	--	1
ACENAPHTHYLENE	N.D.	1.7	N.D.	--	1
FLUORENE	N.D.	0.30	N.D.	--	1
PHENANTHRENE	N.D.	0.15	N.D.	67.8	1
ANTHRACENE	N.D.	0.070	N.D.	--	1
FLUORANTHENE	N.D.	0.15	N.D.	--	1
PYRENE	N.D.	0.32	N.D.	70.0	1
BENZO (A) ANTHRACENE	N.D.	0.15	N.D.	--	1
CHRYSENE	N.D.	0.35	N.D.	68.2	1
BENZO (B) FLUORANTHENE	N.D.	0.050	N.D.	--	1
BENZO (K) FLUORANTHENE	N.D.	0.050	N.D.	--	1
BENZO (A) PYRENE	N.D.	0.15	N.D.	61.6	1
INDENO (1, 2, 3-CD) PYRENE	N.D.	0.16	N.D.	--	1
DIBENZO (A, H) ANTHRACENE	N.D.	4.6	N.D.	--	1
BENZO (G, H, I) PERYLENE	N.D.	0.67	N.D.	--	1



Michael Lee
Chemist



Chip Poalinelli
Operations Manager

7-18-1997 4:09PM

FROM

P. 2

CHROMALAB, INC.

Environmental Services (SDB)

July 18, 1997

Submission #: 9707238

KLEINFELDER (SACRAMENTO)

Atten: Laurie Racca

Project: Not provided
Received: July 17, 1997

Project#: 23-482965-PH2

re: One sample for Polynuclear Aromatics (PNAs) analysis.
Method: SW846 Method 8310 Sept 1986

Client Sample ID: 16902

Spl#: 140296

Sampled: July 17, 1997


Matrix: WATER

Run#: 7822

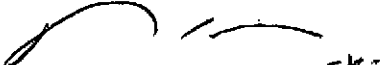
Extracted: July 18, 1997

Analyzed: July 18, 1997

ANALYTE	RESULT (ug/L)	REPORTING LIMIT (ug/L)	BLANK RESULT (ug/L)	BLANK SPIKE SPIKE (%)	DILUTION FACTOR
NAPHTHALENE	N.D.	2.0	N.D.	60.0	1
ACENAPHTHENE	N.D.	3.5	N.D.	--	1
ACENAPHTHYLENE	N.D.	1.7	N.D.	--	1
FLUORENE	N.D.	0.30	N.D.	--	1
PHENANTHRENE	N.D.	0.15	N.D.	67.8	1
ANTHRACENE	N.D.	0.070	N.D.	--	1
FLUORANTHENE	N.D.	0.15	N.D.	--	1
PYRENE	N.D.	0.32	N.D.	70.0	1
BENZO (A) ANTHRACENE	N.D.	0.15	N.D.	--	1
CHRYSENE	N.D.	0.35	N.D.	68.2	1
BENZO (B) FLUORANTHENE	N.D.	0.050	N.D.	--	1
BENZO (K) FLUORANTHENE	N.D.	0.050	N.D.	--	1
BENZO (A) PYRENE	N.D.	0.15	N.D.	61.6	1
INDENO (1, 2, 3-CD) PYRENE	N.D.	0.16	N.D.	--	1
DIBENZO (A, H) ANTHRACENE	N.D.	4.6	N.D.	--	1
BENZO (G, H, I) PERYLENE	N.D.	0.67	N.D.	--	1



Michael Lee
Chemist



Chip Poalinelli
Operations Manager

7-18-1997 4:09PM

FROM

P. 3

CHROMALAB, INC.

Environmental Services (SDB)

July 18, 1997

Submission #: 9707238

KLEINFELDER (SACRAMENTO)

Atten: Laurie Racca

Project: Not provided
Received: July 17, 1997

Project#: 23-482965-PH2

re: One sample for Polynuclear Aromatics (PNAs) analysis.
Method: SW846 Method 8310 Sept 1986

Client Sample ID: 16939

Spl#: 140300

Sampled: July 17, 1997

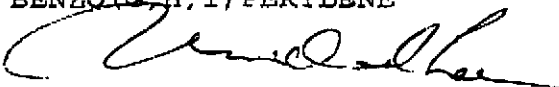
Matrix: WATER

Run#: 7822

Extracted: July 18, 1997

Analyzed: July 18, 1997

ANALYTE	RESULT (ug/L)	REPORTING LIMIT (ug/L)	BLANK RESULT (ug/L)	BLANK SPIKE SPIKE (%)	DILUTION FACTOR
NAPHTHALENE	N.D.	2.0	N.D.	60.0	1
ACENAPHTHENE	N.D.	3.5	N.D.	--	1
ACENAPHTHYLENE	N.D.	1.7	N.D.	--	1
FLUORENE	N.D.	0.30	N.D.	--	1
PHENANTHRENE	N.D.	0.15	N.D.	67.8	1
ANTHRACENE	N.D.	0.070	N.D.	--	1
FLUORANTHENE	N.D.	0.15	N.D.	--	1
PYRENE	N.D.	0.32	N.D.	70.0	1
BENZO (A) ANTHRACENE	N.D.	0.15	N.D.	--	1
CHRYSENE	N.D.	0.35	N.D.	68.2	1
BENZO (B) FLUORANTHENE	N.D.	0.050	N.D.	--	1
BENZO (K) FLUORANTHENE	N.D.	0.050	N.D.	--	1
BENZO (A) PYRENE	N.D.	0.15	N.D.	61.6	1
INDENO (1, 2, 3-CD) PYRENE	N.D.	0.16	N.D.	--	1
DIBENZO (A, H) ANTHRACENE	N.D.	4.6	N.D.	--	1
BENZO (G, H, I) PERYLENE	N.D.	0.67	N.D.	--	1



Michael Lee
Chemist

Chip Poalinelli *to*
Operations Manager