KLEINFELDER

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

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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

Laurie Racca
Project Geologist

John A. Baker, P.E.
Regional Manager

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

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KLEINFELDER

RECORD OF WATER LEVEL MEASUREMENTS

Job Number: 23-48296S-PH2 Site: Livermore Property By: IZBZ

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 H2O LEVEL INDICATOR					
MW1-1		1313		T.O.C.	31.76			
MW1-2		1316			31.16			
MW1-3		1310			29.75			
				T.O.C. = TOP OF CASING				
				OPENED & LET WELLS EQUILIBRATE				
				~ 1/2 HR.				

Date: 7/17/97 Weather: Sunny - Windy - Hot Sheet 1 of 1

Project: LIVERMORE PROPERTY Submitted By: 1282 Date:

Project Number: 23-482965.1 [illegible] Approved By: Date:

PURGE CHARACTERIZATION AND SAMPLE LOG Well No. MW-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
TSP	Other	Other	Other	Other
Alconox	Steam	Steam	Steam	Steam
Other	Hot	Hot	Hot	Hot
	Cold	Cold	Cold	Cold
Vol. (gal):				

Water Source: N/A

Notes:

Last Calibration Check (include supporting documentation)

pH meter Date/Time: 7/17/97 Meter No. ORION 210A 7-10

Conductivity meter Date/Time: Meter No. YWR 2052 ✓ 7/Ou NS

Turbidity meter Date/Time: Meter No.

Other: (list in notes)

Military Time		1420	1430	1436	1447	1458	1508	Code
Gallons Purged		4	8	12	16	20	24	42
Purge Rate		Variable	→	→	→	→		21
pH	Tap	7.18	7.14	7.01	7.08	7.07	7.04	27
Temperature (C)	T	20	20	20	20	20	20	30
Cond. (umhos/cm)		2480	2596	2830	2950	2970	3040	33
Salinity (o/oo)		✓	✓	✓	✓	✓	✓	
Turbidity (NTU's)		>200	→	7200	>200	7200	→	
Color		LT. BW	→	LT BW	→	→	→	
Depth to Water	31.76	✓	✓	✓	✓	✓	✓	0
Reference Point:								

Sample Number	Time	Quantity	Type	Preserv.	Filtration	Analysis	Lab
	1515						G
16902	1515	2	G/AMB	✓	✓	8310	G
							G
							G
							G
							G
							G

T.D. Well: 37.76 1 Casing Volume: 5.18 3 Casing Volumes: 15.54

Notes: 635

NO ODOR
NO SHEEN

Date: 7/17/97 Weather: SUNNY - HOT - WINDY Sheet 1 of 1

Project: LIVERMORE PROBLEM Submitted By: 1282 Date:

Project Number: 23-4829.65-PH2 Approved By: Date:

PURGE CHARACTERIZATION AND SAMPLE LOG Well No. MW-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
TSP	Other	Other	Other	Other
Alconox	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: 7/17/97 Meter No. ORION 210A

Conductivity meter Date/Time: Meter No. YSI 2052

Turbidity meter Date/Time: NA Meter No.

Other: (list in notes)

Military Time		1525	1533	1640	1648			Code
Gallons Purged	↑	2.5	5	7.5	9.			42
Purge Rate	↑	Variable	→	→	→			21
pH	NA	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)	↓	~~>200~~	7200	—	—			
Color	↓	BLACK	Blk	cloudy	cloudy			
Depth to Water	31.16	—	—	—	—			0
Reference Point:								

Sample Number	Time	Quantity	Type	Preserv.	Filtration	Analysis	Lab
16943	1600	2	G/AMB	—	—	8310	

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

Notes:

ODOR
SHEEN
small Splotches 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: 23482965-1PH2 Approved By: Date:

PURGE CHARACTERIZATION AND SAMPLE LOG Well No. MW1-3

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	Rinse III
	DI	DI	DI	DI
	Tap	Tap	Tap	Tap
TSP	Other NA	Other	Other	Other
Alconox	Steam	Steam	Steam	Steam
Other	Hot	Hot	Hot	Hot
	Cold	Cold	Cold	Cold
Vol. (gal):				

Water Source: NA

Notes:

Last Calibration Check (include supporting documentation)

pH meter Date/Time: 7/17/97 Meter No. ORION 210A

Conductivity meter Date/Time: ↓ Meter No. YWR 205

Turbidity meter Date/Time: ↓ Meter No. —

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)		200 →		200 →				
Color	↓	cloudy →		cloudy →				
Depth to Water	29.75	/	/	/	/			0
Reference Point:								

Sample Number	Time	Quantity	Type	Preserv.	Filtration	Analysis	Lab
							CHROMALAB
16939	1355	2	G/A	6	—	8310 (PNA's)	

T.D. Well: 41.9 1 Casing Volume: 1.98 4 Casing Volumes: 7.93

Notes:

NO ODOR
NO SHEEN

KLEINFELDER

3-46799

PROJ. NO.	PROJECT NAME
23-48265 PHZ	
P.O. NO.:	SAMPLERS: (Signature/Number)

DATE MM/DD/YY	SAMPLE I.D. TIME HH:MM:SS	SAMPLE I.D.	NO. OF CONTAINERS	ANALYSIS: TPHg's by EPA 8310	REMARKS
7-17-97	1515	16902 MW-1	2	X	
	1600	16943 MW-2	2	X	
	1400	16939 MW-3	2	X	

Relinquished by: (Signature)	Date/Time	Received by: (Signature)
	7/17/97 1630	
Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Received for Laboratory by: (Signature)
		7/17/97 1627

Remarks: 24 HR RUSH T.A.T

Send Results To: LAURIE RACCA

KLEINFELDER
3077 FITE CIRCLE
SACRAMENTO, CA 95827
(916) 366-1701

M-60 White - Sampler Canary - Return Copy To Shipper Pink - Lab Copy

CHAIN OF CUSTODY

No. 10867

CHROMALAB, INC.

Environmental Services (SDB)

July 18, 1997 *Submission #:* 9707238

KLEINFELDER (SACRAMENTO)

Atten: Laurie Racca

Project: Not provided *Project#:* 23-482965-PH2
Received: July 17, 1997

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

Client Sample ID: 16943
Spl#: 140298 *Matrix:* WATER *Extracted:* July 18, 1997
Sampled: July 17, 1997 *Run#:* 7822 *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 for
Operations Manager

CHROMALAB, INC.

Environmental Services (SDB)

July 18, 1997 *Submission #:* 9707238

KLEINFELDER (SACRAMENTO)

Atten: Laurie Racca

Project: Not provided *Project#:* 23-482965-PH2
Received: July 17, 1997

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

Client Sample ID: 16902
Spl#: 140296 *Matrix:* WATER *Extracted:* July 18, 1997
Sampled: July 17, 1997 *Run#:* 7822 *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

CHROMALAB, INC.

Environmental Services (SDB)

July 18, 1997 *Submission #:* 9707238

KLEINFELDER (SACRAMENTO)

Atten: Laurie Racca

Project: Not provided *Project#:* 23-482965-PH2
Received: July 17, 1997

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

Client Sample ID: **16939**
Spl#: 140300 *Matrix:* WATER *Extracted:* July 18, 1997
Sampled: July 17, 1997 *Run#:* 7822 *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
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