TECHNICAL MEMORANDUM

DATE: June 2, 2014 **PROJECT**: 2011-006

TO: David Wood

FROM: Ulf Lindmark

RE: CCH – First 2014 Semiannual Groundwater Sampling Event and Evaluation of Soil Vapor and Groundwater Data

This technical memorandum presents the results of the first 2014 semiannual groundwater monitoring event at the California Car Hiker's site in Sun Valley (the site); see Figure 1, Attachment 1 for site location, adjacent sites and location of monitoring wells. The analytical results and field data are contained in Attachments 2 and 3, respectively, and all historic analytical data and groundwater elevations are contained in the tables in Attachment 4.

Also included is an evaluation of trichloroethylene (TCE) degradation products detected in groundwater and soil vapor to supplement Lindmark Engineering's (LE) May 15, 2012 *Site Assessment Report* (the 2012 report).

Table Revisions

Based on the most recent information LE has received from the Access database maintained by the EPA's contractor, CH2MHill, we have revised and updated the historical groundwater analytical tables for wells 4917A and 4917B. The revisions are important in order to determine when TCE degradation products were first detected in well 4917A, which EPA considers to be the well representative of site downgradient conditions.

For the six volatile organic compounds (VOCs) listed on the attached Table 2 (i.e., 1,1,1-tricholoroethane [1,1,1-TCA] through TCE), we previously queried the Access database to return the "best result" for each historical sampling date shown, for each well. We previously indicated either a numerical value for the result, zero, or a blank space. Based on the output, if the reported concentration was zero, no detection limit was indicated. The attached Table 2 has been updated to show the detection limits when the information is available.

Note that the Access database does not report the same list of VOCs for each sampling date. Therefore, for sampling dates on which a particular constituent is not listed in the database, it is not possible to determine whether the constituent was analyzed or not. It is possible that results for some constituents were not submitted to the database for each sampling date, and the data are missing altogether, or perhaps the constituent was not analyzed. For these cases in which the VOC is not listed in the database, we have indicated "NL" in Table 2. If no other VOCs are listed (for instance, some dates report only TCE results), we have indicated NL in the column "Selected Other VOCs."

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Evaluation of Soil-vapor and Groundwater Data

The 2012 report presented several lines of evidence showing that the site has not contributed to any VOC contamination of groundwater and specifically the persistent detections of TCE in well 4917A. The report included a discussion of vapor sampling results from a December 1989 sampling event at the site. The sampling was performed with the purpose to compare the composition of landfill gas with the chemical concentrations detected in well 4917A. The analytical results of the 1989 sampling event are contained in Attachment 5.

The results are listed in the table below, which also shows the maximum concentrations of VOCs detected in groundwater in well 4917A from 1988 to 2014 and from 1988 to 1990. The unit of measurement for the vapor samples has been converted from parts per billion (ppb) to micrograms per liter (µg/L) to allow for a better comparison between the vapor and groundwater results.

VOC Vapor Concentrations and Maximum VOC Groundwater Concentrations in Well 4917A			
Compound	**1989 Vapor Sample (µg/L)**	**1988–2014 Maximum Concentration in Well 4917A (µg/L)**	**1988–1990 Maximum Concentration in Well 4917A (µg/L)**
Xylenes	10.4	Not detected	Not detected
Ethyl benzene	6.08	Not detected	Not detected
Acetone	4.03	7.1	Not detected
Toluene	3.28	7	7
Methyl ethyl ketone	2.21	Not detected	Not detected
Benzene	1.56	Not detected	Not detected
Tetrachloroethylene (PCE)	1.22	2	2
Vinyl chloride	1.12	25.3	Not detected
Methyl isobutyl ketone	1.12	Not detected	Not detected
Cis-1,2-Dichloroethylene	0.99	14.3	Not detected
Chlorobenzene	0.46	Not detected	Not detected
TCE	0.37	200	200

As noted above, of the twelve detectable compounds in the 1989 vapor sample, the compound with the lowest detectable concentration (TCE) is the compound with the historically highest detectable groundwater concentration in well 4917A. This is in itself strong evidence that VOC

releases at the site have not caused the TCE detections in well 4917A if we hypothetically would assume that well 4917A is a representative downgradient well of the site.

LE also did a statistical evaluation of the correlation coefficients to determine how the soil-vapor data correlated linearly to the groundwater data for 4917A. Based on LE's calculation of correlation coefficients of the 1989 vapor data compared to the 1988 through 1990 and the 1988 through 2014 maximum VOC concentrations in 4917A, the correlation shows a weak negative linear relationship, which further confirms that the groundwater data are unrelated to the soil vapor data and that chemical releases at the site have not caused the VOC concentrations detected in 4917A (see Attachment 6).

As stated in the 2012 report, the detections of tetrachloroethylene (PCE), TCE and associated degradation compounds in the 1989 vapor sample collected at the site are likely the result of off-site migration from the neighboring Penrose Landfill site or other adjacent properties. The report identified several nearby sites with either documented use of chlorinated solvents, including TCE, or even reported dumping of TCE waste directly east of the site. However, the Penrose site is the most likely source of the VOCs detected in 1989, since in 1981 the PCE and TCE soil-vapor concentrations at Penrose were 53.3 times higher and 72.8 times higher, respectively, than those detected at the site. As additional evidence of a PCE source at Penrose, in 1993 a maximum PCE concentration of 3,200 µg/kg was detected in a soil-matrix sample at the Penrose site and from 1999 to 2002, large quantities of chlorinated solvent waste (including PCE) were generated.

Furthermore, just as at the site, the PCE vapor concentration at Penrose was significantly higher than the TCE concentration, indicating that the TCE had resulted from the degradation of PCE, which would have been accelerated due to the elevated methane concentrations beneath Penrose and the site.

As discussed in LE's 2012 report, assuming a maximum mass transfer from the vapor to the water phase, the detected TCE soil vapor concentration (0.37 µg/L) would have resulted in an insignificant groundwater concentration of 0.90 µg/L. Furthermore, while the PCE and TCE degradation products *cis*-1,2-dichloroethylene and vinyl chloride were present in the 1989 vapor sample at concentrations higher than the TCE concentrations, they were not present in well 4917A until 2007 when *cis*-1,2-dichloroethylene was first detected and in October 2011 when vinyl chloride was first detected. The detection of vinyl chloride occurred when a major change in the groundwater flow direction was observed. Based on these findings, the origin of TCE and its degradation products in well 4917A is from an off-site, upgradient source.

Since the degradation products of TCE were not detected in well 4917A in 1990 when they were initially included in the analytical program, but were detected in a soil-vapor sample collected in 1989, the origin of the VOC release (PCE or TCE) that caused the VOC contamination in well 4917A would have to be an off-site, upgradient source.

Best regards,

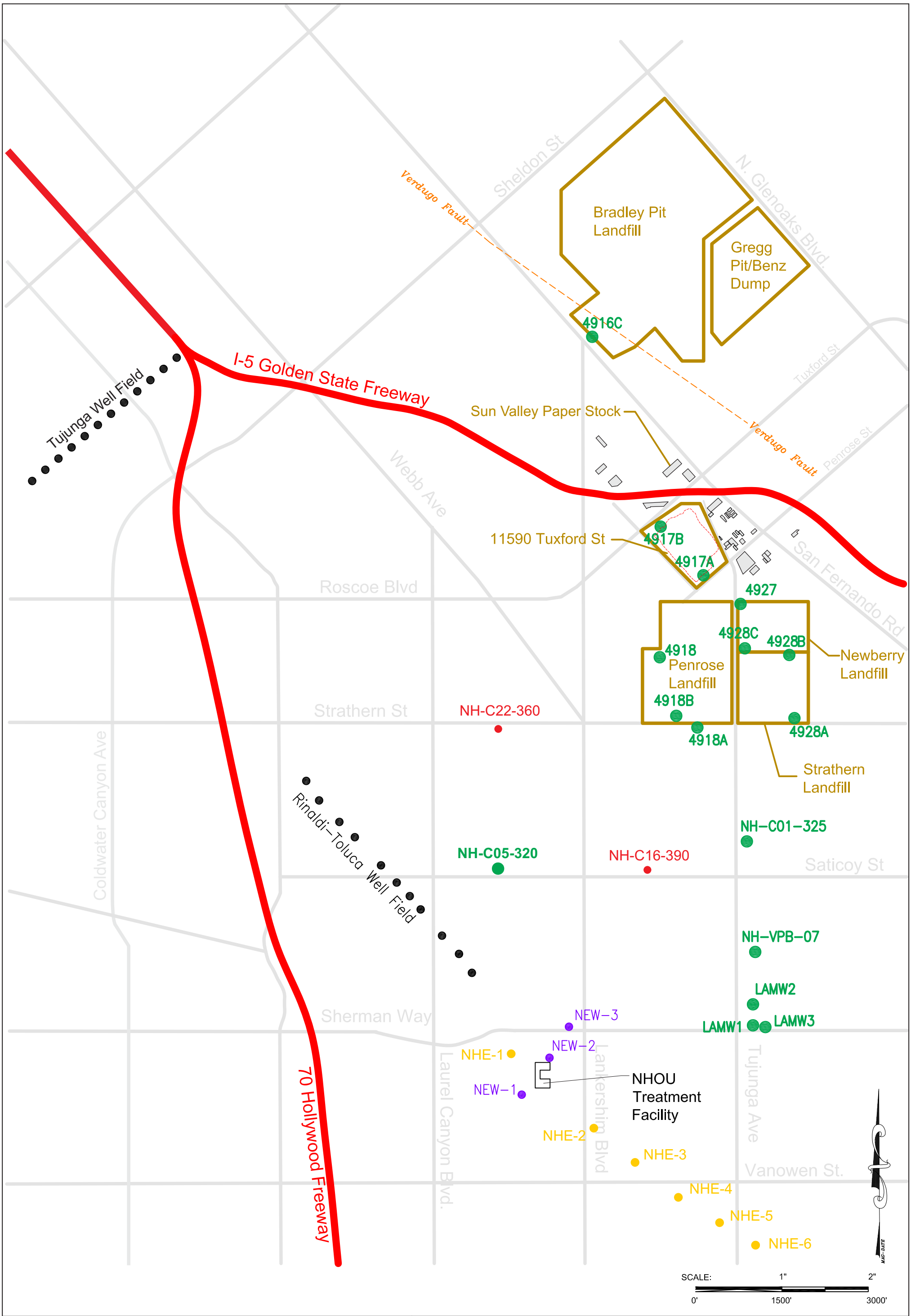
Ulf Lindmark, PE, BCEE
Senior Principal

Attachments:

1) Figure 1
2) Laboratory Analytical Results
3) Field Data
4) Tables
5) 1989 Soil Vapor Analytical Results
6) Statistical Evaluation

ATTACHMENT 1

Figure 1



LEGEND:

- Production Well
- Well Location
- Proposed NHOU Extraction Well
- NHOU Extraction Well
- New Monitoring Well
- Street
- Freeway
- Property Boundary

Figure 1: Well Fields, Monitoring and Extraction Wells

CLIENT: California Car Hikers	Approved: UL
	Drawn: DWS
SITE LOCATION : 11590 Tuxford Street, Sun Valley, California	Date: 1/12
	Project No.: 2011-006
	MAP NO: Well Field Map.cdr

ATTACHMENT 2

Laboratory Analytical Results

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Attn Ulf Lindmark

Number of Pages 11
Date Received 04/11/2014
Date Reported 05/02/2014

Job Number	Ordered	Client
60510	04/11/2014	LNDENG

Project ID: 11590 TUXFORD ROAD
Project Name:
Site: 11590 Tuxford Road
Sun Valley, CA 91352

Enclosed are the results of analyses on 2 samples analyzed as specified on attached chain of custody.

Wendy Lu
Organics Supervisor

American Scientific Laboratories, LLC (ASL) accepts sample materials from clients for analysis with the assumption that all of the information provided to ASL verbally or in writing by our clients (and/or their agents), regarding samples being submitted to ASL, is complete and accurate. ASL accepts all samples subject to the following conditions:
1) ASL is not responsible for verifying any client-provided information regarding any samples submitted to the laboratory.
2) ASL is not responsible for any consequences resulting from any inaccuracies, omissions, or misrepresentations contained in client-provided information regarding samples submitted to the laboratory.

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TECH SERVICES, INC.

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SAN JOSE, CALIFORNIA 95112-1105
FAX (408) 573-7771
PHONE (408) 573-0555

CHAIN OF CUSTODY BTS #

CLIENT: Lindmark Engineering

SITE: 11590 Tuxford Rd.
Sun Valley, CA 91352

LAB: ASL JOB # 60510

DHS #

Invoice and Report to: David Smith
Lindmark Engineering
2625 Towngate Rd, Suite 330
Westlake Village, CA 91361
dsmith@lindmarkeng.com

C = COMPOSITE ALL CONTAINERS

CONDUCT ANALYSIS TO DETECT

SAMPLE I.D.	DATE	TIME	MATRIX S = Soil W = H2O	CONTAINERS TOTAL	C = COMPOSITE ALL CONTAINERS	1,4 dioxane (8270C)	VOCs – EPA 8260	Total dissolved metals – EPA 6020/7470A	Chromium VI – EPA 7199	Perchlorate (314)	1,2,3 TCP (524M)	NDMA (1625)	ADD'L INFORMATION	STATUS	CONDITION	LAB SAMPLE #
4197A	4-11-14	0900	W	10		X	X	X	X	X	X	X				314014
4197B	↓	1125	↓	10		X	X	X	X	X	X	X				314015
Purge Water Sample	↓	—	↓	11									On Hold			314016

SAMPLING COMPLETED: DATE 4-11-14 TIME 1145 SAMPLING PERFORMED BY A Wolff

RESULTS NEEDED NO LATER THAN: Standard

RELEASED BY: Andy Wolff DATE 4-11-14 TIME 1245 → Janet Chin DATE 4-11-14 TIME 12:45

RELEASED BY: DATE TIME → DATE TIME

RELEASED BY: DATE TIME → DATE TIME

SHIPPED VIA: DATE SENT TIME SENT

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Page: **2**

Project ID: 11590 TUXFORD ROAD

ASL Job Number	Submitted	Client
60510	04/11/2014	LNDENG

Method: 1625M, NDMA

QC Batch No: 041514-1

Our Lab I.D.		**314014**	**314015**			
Client Sample I.D.		4197A	4197B			
Date Sampled		**04/11/2014**	**04/11/2014**			
Date Prepared		**04/15/2014**	**04/15/2014**			
Preparation Method						
Date Analyzed		**04/15/2014**	**04/15/2014**			
Matrix		Water	Water			
Units		ng/L	ng/L			
Dilution Factor		1	1			
Analytes	**PQL**	**Results**	**Results**			
N-Nitrosodimethylamine (NDMA)	**2.00**	**ND**	**ND**			

QUALITY CONTROL REPORT

QC Batch No: 041514-1

Analytes	LCS % REC	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit					
N-Nitrosodimethylamine (NDMA)	**114**	**105**	**8.2**	**50-150**	**<30**					

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Project ID: 11590 TUXFORD ROAD

ASL Job Number	Submitted	Client
60510	04/11/2014	LNDENG

Method: 314.0, Perchlorate by Ion Chromatography

QC Batch No: 041614-1

Our Lab I.D.		**314014**	**314015**			
Client Sample I.D.		4197A	4197B			
Date Sampled		**04/11/2014**	**04/11/2014**			
Date Prepared		**04/15/2014**	**04/15/2014**			
Preparation Method						
Date Analyzed		**04/16/2014**	**04/16/2014**			
Matrix		Water	Water			
Units		ug/L	ug/L			
Dilution Factor		1	1			
Analytes	**PQL**	**Results**	**Results**			
Conventionals						
Perchlorate	**2.00**	**ND**	**ND**			

QUALITY CONTROL REPORT

QC Batch No: 041614-1

Analytes	LCS % REC	LCS/LCSD % Limit								
Conventionals										
Perchlorate	**104**	**85-115**								

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Project ID: 11590 TUXFORD ROAD

ASL Job Number	Submitted	Client
60510	04/11/2014	LNDENG

Method: 524.2M, 1,2,3,-Trichloropropane by GC/MS SIM Mode

QC Batch No: 041614-1

Our Lab I.D.		**314014**	**314015**			
Client Sample I.D.		4197A	4197B			
Date Sampled		**04/11/2014**	**04/11/2014**			
Date Prepared		**04/16/2014**	**04/16/2014**			
Preparation Method						
Date Analyzed		**04/16/2014**	**04/16/2014**			
Matrix		Water	Water			
Units		ug/L	ug/L			
Dilution Factor		1	1			
Analytes	**PQL**	**Results**	**Results**			
1,2,3-Trichloropropane	**0.0050**	**0.0120**	**ND**			

QUALITY CONTROL REPORT

QC Batch No: 041614-1

Analytes	LCS % REC	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit					
1,2,3-Trichloropropane	**116**	**108**	**7.1**	**80-120**	**<20**					

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Project ID: 11590 TUXFORD ROAD

ASL Job Number	Submitted	Client
60510	04/11/2014	LNDENG

Method: 7199, Hexavalent Chromium by Ion Chromatography

QC Batch No: 041114-1

Our Lab I.D.		**314014**	**314015**			
Client Sample I.D.		4197A	4197B			
Date Sampled		**04/11/2014**	**04/11/2014**			
Date Prepared		**04/11/2014**	**04/11/2014**			
Preparation Method						
Date Analyzed		**04/11/2014**	**04/11/2014**			
Matrix		Water	Water			
Units		ug/L	ug/L			
Dilution Factor		1	1			
Analytes	**PQL**	**Results**	**Results**			
Conventionals						
Chromium (VI)	**1.00**	**ND**	**ND**			

QUALITY CONTROL REPORT

QC Batch No: 041114-1

Analytes	LCS % REC	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit					
Conventionals										
Chromium (VI)	**103**	**101**	**2.0**	**90-110**	**10**					

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Sun Valley, CA 91352

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Project ID: 11590 TUXFORD ROAD

ASL Job Number	Submitted	Client
60510	04/11/2014	LNDENG

Method: 7470A, Mercury (CVAA), Dissolved

QC Batch No: 041414-5

Our Lab I.D.		**314014**	**314015**			
Client Sample I.D.		4197A	4197B			
Date Sampled		**04/11/2014**	**04/11/2014**			
Date Prepared		**04/14/2014**	**04/14/2014**			
Preparation Method						
Date Analyzed		**04/15/2014**	**04/15/2014**			
Matrix		Water	Water			
Units		mg/L	mg/L			
Dilution Factor		1	1			
Analytes	**PQL**	**Results**	**Results**			
AA Metals						
Mercury	**0.0005**	**ND**	**ND**			

QUALITY CONTROL REPORT

QC Batch No: 041414-5

Analytes	LCS % REC	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit					
AA Metals										
Mercury	**101**	**94**	**7.0**	**80-120**	**20**					

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Project ID: 11590 TUXFORD ROAD

ASL Job Number	Submitted	Client
60510	04/11/2014	LNDENG

Method: 8260B, Volatile Organic Compounds

QC Batch No: W1B-041614

Our Lab I.D.		**314014**	**314015**			
Client Sample I.D.		4197A	4197B			
Date Sampled		04/11/2014	04/11/2014			
Date Prepared		04/16/2014	04/16/2014			
Preparation Method						
Date Analyzed		04/16/2014	04/16/2014			
Matrix		Water	Water			
Units		ug/L	ug/L			
Dilution Factor		1	1			
Analytes	**PQL**	**Results**	**Results**			
Acetone	5.00	ND	ND			
Benzene	1.00	ND	ND			
Bromobenzene (Phenyl bromide)	1.00	ND	ND			
Bromochloromethane (Chlorobromomethane)	1.00	ND	ND			
Bromodichloromethane (Dichlorobromomethane)	1.00	ND	ND			
Bromoform (Tribromomethane)	5.00	ND	ND			
Bromomethane (Methyl bromide)	3.00	ND	ND			
2-Butanone (MEK, Methyl ethyl ketone)	5.00	ND	ND			
n-Butylbenzene	1.00	ND	ND			
sec-Butylbenzene	1.00	ND	ND			
tert-Butylbenzene	1.00	ND	ND			
Carbon disulfide	1.00	ND	ND			
Carbon tetrachloride (Tetrachloromethane)	1.00	ND	ND			
Chlorobenzene	1.00	ND	ND			
Chloroethane	3.00	ND	ND			
2-Chloroethyl vinyl ether	5.00	ND	ND			
Chloroform (Trichloromethane)	1.00	ND	2.25			
Chloromethane (Methyl chloride)	3.00	ND	ND			
4-Chlorotoluene (p-Chlorotoluene)	1.00	ND	ND			
2-Chlorotoluene (o-Chlorotoluene)	1.00	ND	ND			
1,2-Dibromo-3-chloropropane (DBCP)	5.00	ND	ND			
Dibromochloromethane	1.00	ND	ND			
1,2-Dibromoethane (EDB, Ethylene dibromide)	1.00	ND	ND			
Dibromomethane	1.00	ND	ND			
1,2-Dichlorobenzene (o-Dichlorobenzene)	1.00	ND	ND			
1,3-Dichlorobenzene (m-Dichlorobenzene)	1.00	ND	ND			
1,4-Dichlorobenzene (p-Dichlorobenzene)	1.00	ND	ND			
Dichlorodifluoromethane	3.00	ND	ND			
1,1-Dichloroethane	1.00	ND	18.3			

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ANALYTICAL RESULTS

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Project ID: 11590 TUXFORD ROAD

ASL Job Number	Submitted	Client
60510	04/11/2014	LNDENG

Method: 8260B, Volatile Organic Compounds

QC Batch No: W1B-041614

Our Lab I.D.		314014	314015			
Client Sample I.D.		4197A	4197B			
Date Sampled		04/11/2014	04/11/2014			
Date Prepared		04/16/2014	04/16/2014			
Preparation Method						
Date Analyzed		04/16/2014	04/16/2014			
Matrix		Water	Water			
Units		ug/L	ug/L			
Dilution Factor		1	1			
Analytes	**PQL**	**Results**	**Results**			
1,2-Dichloroethane	1.00	ND	0.460J			
1,1-Dichloroethene (1,1-Dichloroethylene)	1.00	1.22	39.0			
cis-1,2-Dichloroethene	1.00	5.50	ND			
trans-1,2-Dichloroethene	1.00	4.14	ND			
1,2-Dichloropropane	1.00	ND	ND			
1,3-Dichloropropane	1.00	ND	ND			
2,2-Dichloropropane	1.00	ND	ND			
1,1-Dichloropropene	1.00	ND	ND			
cis-1,3-Dichloropropene	1.00	ND	ND			
trans-1,3-Dichloropropene	1.00	ND	ND			
Ethylbenzene	1.00	ND	ND			
Hexachlorobutadiene (1,3-Hexachlorobutadiene)	3.00	ND	ND			
2-Hexanone	5.00	ND	ND			
Isopropylbenzene	1.00	ND	ND			
p-Isopropyltoluene (4-Isopropyltoluene)	1.00	ND	ND			
MTBE	2.00	ND	ND			
4-Methyl-2-pentanone (MIBK, Methyl isobutyl ketone)	5.00	ND	ND			
Methylene chloride (Dichloromethane, DCM)	5.00	ND	ND			
Naphthalene	1.00	ND	ND			
n-Propylbenzene	1.00	ND	ND			
Styrene	1.00	ND	ND			
1,1,1,2-Tetrachloroethane	1.00	ND	ND			
1,1,2,2-Tetrachloroethane	1.00	ND	ND			
Tetrachloroethene (Tetrachloroethylene)	1.00	ND	ND			
Toluene (Methyl benzene)	1.00	ND	ND			
1,2,3-Trichlorobenzene	1.00	ND	ND			
1,2,4-Trichlorobenzene	1.00	ND	ND			
1,1,1-Trichloroethane	1.00	ND	5.90			
1,1,2-Trichloroethane	1.00	ND	ND			
Trichloroethene (TCE)	1.00	19.7	0.550J			
Trichlorofluoromethane	1.00	ND	ND			
1,2,3-Trichloropropane	1.00	ND	ND			
1,2,4-Trimethylbenzene	1.00	ND	ND			
1,3,5-Trimethylbenzene	1.00	ND	ND			
Vinyl acetate	5.00	ND	ND			

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ANALYTICAL RESULTS

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Project ID: 11590 TUXFORD ROAD

ASL Job Number	Submitted	Client
60510	04/11/2014	LNDENG

Method: 8260B, Volatile Organic Compounds

QC Batch No: W1B-041614

Our Lab I.D.		**314014**	**314015**			
Client Sample I.D.		4197A	4197B			
Date Sampled		04/11/2014	04/11/2014			
Date Prepared		04/16/2014	04/16/2014			
Preparation Method						
Date Analyzed		04/16/2014	04/16/2014			
Matrix		Water	Water			
Units		ug/L	ug/L			
Dilution Factor		1	1			
Analytes	**PQL**	**Results**	**Results**			
Vinyl chloride (Chloroethene)	3.00	18.8	0.340J			
o-Xylene	1.00	ND	ND			
m- & p-Xylenes	2.00	ND	ND			

Our Lab I.D.		**314014**	**314015**			
Surrogates	**% Rec.Limit**	**% Rec.**	**% Rec.**			
Surrogate Percent Recovery						
Bromofluorobenzene	70-120	106	107			
Dibromofluoromethane	70-120	116	118			
Toluene-d8	70-120	102	103			

QUALITY CONTROL REPORT

QC Batch No: W1B-041614

Analytes	MS % REC	MS DUP % REC	RPD %	MS/MSD % Limit	MS RPD % Limit					
Benzene	107	107	<1	75-120	15					
Chlorobenzene	118	119	<1	75-120	15					
1,1-Dichloroethene (1,1-Dichloroethylene)	98	99	1.0	75-120	15					
MTBE	97	102	5.0	75-120	15					
Toluene (Methyl benzene)	119	120	<1	75-120	15					
Trichloroethene (TCE)	104	104	<1	75-120	15					

AMERICAN SCIENTIFIC LABORATORIES, LLC
Environmental Testing Services
2520 N. San Fernando Rd., Los Angeles, CA 90065 Tel: (323) 223-9700 Fax: (323) 223-9500

ANALYTICAL RESULTS

Ordered By

Lindmark Engineering
2625 Townsgate Road Suite #330
Westlake Village, CA 91361-

Telephone: (818)707-6100
Attn: Ulf Lindmark

Site

11590 Tuxford Road
Sun Valley, CA 91352

Page: **10**

Project ID: 11590 TUXFORD ROAD

ASL Job Number	Submitted	Client
60510	04/11/2014	LNDENG

Method: 8270C, 1,4-Dioxane

QC Batch No: 041114-1

Our Lab I.D.		**314014**	**314015**			
Client Sample I.D.		4197A	4197B			
Date Sampled		04/11/2014	04/11/2014			
Date Prepared		04/11/2014	04/11/2014			
Preparation Method						
Date Analyzed		04/11/2014	04/11/2014			
Matrix		Water	Water			
Units		ug/L	ug/L			
Dilution Factor		1	1			
Analytes	**PQL**	**Results**	**Results**			
1,4-Dioxane	10.0	ND	ND			

Comment(s):
314014: Low surrogate recovery due to matrix.

Our Lab I.D.		**314014**	**314015**			
Surrogates	**% Rec.Limit**	**% Rec.**	**% Rec.**			
Surrogate Percent Recovery						
2-Fluorophenol	21-105	8	31			
Phenol-d6	10-107	2	22			
2,4,6-Tribromophenol	10-123	33	49			
Nitrobenzene-d5	35-114	39	42			
2-Fluorobiphenyl	18-116	52	54			
Terphenyl-d14	33-141	68	69			

QUALITY CONTROL REPORT

QC Batch No: 041114-1

Analytes	LCS % REC	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit					
1,4-Dioxane	60	50	18.2	12-110	<30					
Acenaphthene	72	79	9.3	43-118	<30					
4-Chloro-3-methylphenol (p-Chloro-m-cresol)	63	67	6.2	23-117	<30					
2-Chlorophenol (o-Chlorophenol)	80	83	3.7	27-113	<30					
1,4-Dichlorobenzene	62	65	4.7	36-105	<30					
2,4-Dinitrotoluene	81	93	13.8	24-120	<30					
N-Nitroso-Di-n-propylamine	58	63	8.3	41-116	<30					
4-Nitrophenol	30	34	12.5	10-133	<30					
Pentachlorophenol	92	100	8.3	9-118	<30					
Phenol	35	39	10.8	12-110	<30					

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ANALYTICAL RESULTS

Page: **11**

Project ID: 11590 TUXFORD ROAD

ASL Job Number	Submitted	Client
60510	04/11/2014	LNDENG

Method: 8270C, 1,4-Dioxane

QUALITY CONTROL REPORT

QC Batch No: 041114-1

Analytes	LCS % REC	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit					
Pyrene	**110**	**103**	**6.6**	**26-127**	**<30**					
1,2,4-Trichlorobenzene	**84**	**89**	**5.8**	**39-98**	**<30**					

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Certificate of Analysis

Report Date: 05/05/14 13:03
Received Date: 04/14/14 12:40
Turnaround Time: Normal

Project: 60510

Phones: (323) 223-9700
Fax: (323) 223-9500

P.O. #:

Attn: Alen Hosepians

Client: American Scientific Laboratories
2520 N. San Fernando Road
Los Angeles, CA 90065-1324

Dear Alen Hosepians :

Enclosed are the results of analyses for samples received 4/14/2014 with the Chain of Custody document. The samples were received in good condition, at 1.9 °C and on ice. All analysis met the method criteria except as noted below or in the report with data qualifiers.

Lab Sample ID: 4D14036-01 **Sample ID: 314014** **Matrix:** Water
Sampled by: Client **Sampled: 04/11/14 09:00**

Analyte	Result	MDL	MRL	Units	Dil	Method	Prepared	Analyzed	Batch	Qualifier
Antimony, Dissolved	ND		0.50	ug/l	1	EPA 6020A	4/17/14	5/1/14 13:47	W4D0863	
Arsenic, Dissolved	ND		0.40	ug/l	1	EPA 6020A	4/17/14	5/1/14 13:47	W4D0863	
Barium, Dissolved	**170**		0.50	ug/l	1	EPA 6020A	4/17/14	5/1/14 13:47	W4D0863	
Beryllium, Dissolved	ND		0.10	ug/l	1	EPA 6020A	4/17/14	5/1/14 17:15	W4D0863	
Cadmium, Dissolved	ND		0.10	ug/l	1	EPA 6020A	4/17/14	5/1/14 13:47	W4D0863	
Chromium, Dissolved	ND		0.20	ug/l	1	EPA 6020A	4/17/14	4/30/14 18:05	W4D0863	
Cobalt, Dissolved	ND		0.10	ug/l	1	EPA 6020A	4/17/14	4/30/14 18:05	W4D0863	
Copper, Dissolved	ND		0.50	ug/l	1	EPA 6020A	4/17/14	5/1/14 13:47	W4D0863	
Lead, Dissolved	ND		0.20	ug/l	1	EPA 6020A	4/17/14	5/1/14 13:47	W4D0863	
Molybdenum, Dissolved	**1.3**		0.10	ug/l	1	EPA 6020A	4/17/14	5/1/14 13:47	W4D0863	
Nickel, Dissolved	**1.4**		0.80	ug/l	1	EPA 6020A	4/17/14	5/1/14 13:47	W4D0863	
Selenium, Dissolved	ND		0.40	ug/l	1	EPA 6020A	4/17/14	5/1/14 13:47	W4D0863	
Silver, Dissolved	ND		0.20	ug/l	1	EPA 6020A	4/17/14	5/1/14 13:47	W4D0863	
Thallium, Dissolved	ND		0.20	ug/l	1	EPA 6020A	4/17/14	5/1/14 13:47	W4D0863	
Vanadium, Dissolved	ND		0.50	ug/l	1	EPA 6020A	4/17/14	5/1/14 13:47	W4D0863	
Zinc, Dissolved	ND		5.0	ug/l	1	EPA 6020A	4/17/14	5/1/14 13:47	W4D0863	

Lab Sample ID: 4D14036-02 **Sample ID: 314015** **Matrix:** Water
Sampled by: Client **Sampled: 04/11/14 11:25**

Analyte	Result	MDL	MRL	Units	Dil	Method	Prepared	Analyzed	Batch	Qualifier
Antimony, Dissolved	ND		0.50	ug/l	1	EPA 6020A	4/17/14	5/1/14 13:54	W4D0863	
Arsenic, Dissolved	**0.63**		0.40	ug/l	1	EPA 6020A	4/17/14	5/1/14 13:54	W4D0863	
Barium, Dissolved	**260**		0.50	ug/l	1	EPA 6020A	4/17/14	5/1/14 13:54	W4D0863	
Beryllium, Dissolved	ND		0.10	ug/l	1	EPA 6020A	4/17/14	5/1/14 17:18	W4D0863	
Cadmium, Dissolved	ND		0.10	ug/l	1	EPA 6020A	4/17/14	5/1/14 13:54	W4D0863	
Chromium, Dissolved	ND		0.20	ug/l	1	EPA 6020A	4/17/14	4/30/14 18:09	W4D0863	
Cobalt, Dissolved	ND		0.10	ug/l	1	EPA 6020A	4/17/14	4/30/14 18:09	W4D0863	

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Lab Sample ID: 4D14036-02 **Sample ID: 314015** **Matrix:** Water
Sampled by: Client **Sampled: 04/11/14 11:25**

Analyte	Result	MDL	MRL	Units	Dil	Method	Prepared	Analyzed	Batch	Qualifier
Copper, Dissolved	ND		0.50	ug/l	1	EPA 6020A	4/17/14	5/1/14 13:54	W4D0863	
Lead, Dissolved	ND		0.20	ug/l	1	EPA 6020A	4/17/14	5/1/14 13:54	W4D0863	
Molybdenum, Dissolved	**1.7**		0.10	ug/l	1	EPA 6020A	4/17/14	5/1/14 13:54	W4D0863	
Nickel, Dissolved	ND		0.80	ug/l	1	EPA 6020A	4/17/14	5/1/14 13:54	W4D0863	
Selenium, Dissolved	ND		0.40	ug/l	1	EPA 6020A	4/17/14	5/1/14 13:54	W4D0863	
Silver, Dissolved	ND		0.20	ug/l	1	EPA 6020A	4/17/14	5/1/14 13:54	W4D0863	
Thallium, Dissolved	ND		0.20	ug/l	1	EPA 6020A	4/17/14	5/1/14 13:54	W4D0863	
Vanadium, Dissolved	**4.0**		0.50	ug/l	1	EPA 6020A	4/17/14	5/1/14 13:54	W4D0863	
Zinc, Dissolved	**7.3**		5.0	ug/l	1	EPA 6020A	4/17/14	5/1/14 13:54	W4D0863	

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Quality Control Section

Metals (Aqueous) by EPA 6000/7000 Series Methods - Quality Control

Batch W4D0863 - EPA 6020A

Blank (W4D0863-BLK1) — **Prepared: 04/17/14 Analyzed: 05/01/14 17:05**

Analyte	Sample Result	QC Result	Qualifier	Units	Spike Level	%REC	%REC Limits	RPD	RPD Limit
Beryllium, Dissolved		ND		ug/l					
Vanadium, Dissolved		ND		ug/l					
Chromium, Dissolved		ND		ug/l					
Cobalt, Dissolved		ND		ug/l					
Nickel, Dissolved		ND		ug/l					
Copper, Dissolved		ND		ug/l					
Zinc, Dissolved		ND		ug/l					
Arsenic, Dissolved		ND		ug/l					
Selenium, Dissolved		ND		ug/l					
Molybdenum, Dissolved		ND		ug/l					
Silver, Dissolved		ND		ug/l					
Cadmium, Dissolved		ND		ug/l					
Antimony, Dissolved		ND		ug/l					
Barium, Dissolved		ND		ug/l					
Thallium, Dissolved		ND		ug/l					
Lead, Dissolved		ND		ug/l					

LCS (W4D0863-BS1) — **Prepared: 04/17/14 Analyzed: 05/01/14 17:29**

Analyte	Sample Result	QC Result	Qualifier	Units	Spike Level	%REC	%REC Limits	RPD	RPD Limit
Beryllium, Dissolved		48.7		ug/l	50.0	97	80-120		
Vanadium, Dissolved		55.4		ug/l	50.0	111	80-120		
Chromium, Dissolved		48.3		ug/l	50.0	97	80-120		
Cobalt, Dissolved		49.2		ug/l	50.0	98	80-120		
Nickel, Dissolved		59.4		ug/l	50.0	119	80-120		
Copper, Dissolved		58.4		ug/l	50.0	117	80-120		
Zinc, Dissolved		49.4		ug/l	50.0	99	80-120		
Arsenic, Dissolved		48.9		ug/l	50.0	98	80-120		
Selenium, Dissolved		53.4		ug/l	50.0	107	80-120		
Molybdenum, Dissolved		51.9		ug/l	50.0	104	80-120		
Silver, Dissolved		54.7		ug/l	50.0	109	80-120		
Cadmium, Dissolved		50.9		ug/l	50.0	102	80-120		
Antimony, Dissolved		50.6		ug/l	50.0	101	80-120		
Barium, Dissolved		50.6		ug/l	50.0	101	80-120		
Thallium, Dissolved		51.0		ug/l	50.0	102	80-120		
Lead, Dissolved		50.0		ug/l	50.0	100	80-120		

Matrix Spike (W4D0863-MS1) — **Source: 4D14036-02** — **Prepared: 04/17/14 Analyzed: 05/01/14 17:22**

Analyte	Sample Result	QC Result	Qualifier	Units	Spike Level	%REC	%REC Limits	RPD	RPD Limit
Beryllium, Dissolved	ND	48.9		ug/l	50.0	98	75-125		
Vanadium, Dissolved	4.05	55.6		ug/l	50.0	103	75-125		
Chromium, Dissolved	0.142	50.3		ug/l	50.0	100	75-125		
Cobalt, Dissolved	0.0323	49.9		ug/l	50.0	100	75-125		

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Metals (Aqueous) by EPA 6000/7000 Series Methods - Quality Control

Batch W4D0863 - EPA 6020A

Matrix Spike (W4D0863-MS1) **Source: 4D14036-02** **Prepared: 04/17/14** **Analyzed: 05/01/14 14:01**

Analyte	Sample Result	QC Result	Qualifier	Units	Spike Level	%REC	%REC Limits	RPD	RPD Limit
Nickel, Dissolved	0.440	46.9		ug/l	50.0	93	75-125		
Copper, Dissolved	0.450	43.9		ug/l	50.0	87	75-125		
Zinc, Dissolved	7.32	50.5		ug/l	50.0	86	75-125		
Arsenic, Dissolved	0.630	48.7		ug/l	50.0	96	75-125		
Selenium, Dissolved	ND	50.1		ug/l	50.0	100	75-125		
Molybdenum, Dissolved	1.69	54.1		ug/l	50.0	105	75-125		
Silver, Dissolved	ND	48.8		ug/l	50.0	98	75-125		
Cadmium, Dissolved	0.0400	49.3		ug/l	50.0	98	75-125		
Antimony, Dissolved	0.170	49.6		ug/l	50.0	99	75-125		
Barium, Dissolved	259	310		ug/l	50.0	103	75-125		
Thallium, Dissolved	ND	50.4		ug/l	50.0	101	75-125		
Lead, Dissolved	0.0500	48.8		ug/l	50.0	98	75-125		

Matrix Spike Dup (W4D0863-MSD1) **Source: 4D14036-02** **Prepared: 04/17/14** **Analyzed: 05/01/14 17:25**

Analyte	Sample Result	QC Result	Qualifier	Units	Spike Level	%REC	%REC Limits	RPD	RPD Limit
Beryllium, Dissolved	ND	49.2		ug/l	50.0	98	75-125	0.5	20
Vanadium, Dissolved	4.05	55.2		ug/l	50.0	102	75-125	0.8	20
Chromium, Dissolved	0.142	51.9		ug/l	50.0	103	75-125	3	20
Cobalt, Dissolved	0.0323	49.9		ug/l	50.0	100	75-125	0.09	20
Nickel, Dissolved	0.440	46.0		ug/l	50.0	91	75-125	2	20
Copper, Dissolved	0.450	43.2		ug/l	50.0	86	75-125	2	20
Zinc, Dissolved	7.32	50.7		ug/l	50.0	87	75-125	0.4	20
Arsenic, Dissolved	0.630	49.3		ug/l	50.0	97	75-125	1	20
Selenium, Dissolved	ND	50.0		ug/l	50.0	100	75-125	0.2	20
Molybdenum, Dissolved	1.69	54.3		ug/l	50.0	105	75-125	0.3	20
Silver, Dissolved	ND	49.0		ug/l	50.0	98	75-125	0.4	20
Cadmium, Dissolved	0.0400	49.4		ug/l	50.0	99	75-125	0.2	20
Antimony, Dissolved	0.170	49.8		ug/l	50.0	99	75-125	0.5	20
Barium, Dissolved	259	314		ug/l	50.0	110	75-125	1	20
Thallium, Dissolved	ND	51.2		ug/l	50.0	102	75-125	2	20
Lead, Dissolved	0.0500	48.8		ug/l	50.0	98	75-125	0	20

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Notes:
The Chain of Custody document is part of the analytical report.
Any remaining sample(s) for testing will be disposed of one month from the final report date unless other arrangements are made in advance.
All results are expressed on wet weight basis unless otherwise specified.

An Absence of Total Coliform meets the drinking water standards as established by the State of California Department of Health Services.
The Reporting Limit (RL) is referenced as laboratory's Practical Quantitation Limit (PQL).
For Potable water analysis, the Reporting Limit (RL) is referenced as Detection Limit for reporting purposes (DLRs) defined by EPA.

If sample collected by Weck Laboratories, sampled in accordance to lab SOP MIS002

Authorized Signature
Contact: Kim G Tu
(Project Manager)

ELAP # 1132
LACSD # 10143
NELAC # 04229CA

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Weck Laboratories certifies that the test results meet all requirements of NELAC unless noted in the Case Narrative. This analytical report must be reproduced in its entirety.

Flags for Data Qualifiers:

ND	NOT DETECTED at or above the Reporting Limit. If J-value reported, then NOT DETECTED at or above the Method Detection Limit (MDL).
Sub	Subcontracted analysis, original report enclosed.
DL	Method Detection Limit
RL	Method Reporting Limit
MDA	Minimum Detectable Activity
NR	Not Reportable

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ATTACHMENT 3

Field Data

WELL GAUGING DATA

Project # 140411-tw1 Date 4-11-14 Client Lindmark Eng

Site Lindmark Eng @ Sun Valley

Well ID	Time	Well Size (in.)	Sheen / Odor	Depth to Immiscible Liquid (ft.)	Thickness of Immiscible Liquid (ft.)	Volume of Immiscibles Removed (ml)	Depth to water (ft.)	Depth to well bottom (ft.)	Survey Point: TOB or TOC	Notes
4197A	0804	8					329.18	373.69	↓	
4197B	1000	8					345.26	372.48	↓	

LOW FLOW WELL MONITORING DATA SHEET

Project #: 140411-AW1	Client: Lindmark Eng.
Sampler: AW	Gauging Date: 4-11-14
Well I.D.: 4197B	Well Diameter (in.): 2 3 4 6 8 ____
Total Well Depth (ft.): 372.48	Depth to Water (ft.): 345.26
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	Flow Cell Type: YSI-Pro Plus

Purge Method: 2" Grundfos Pump Peristaltic Pump Bladder Pump

Sampling Method: Dedicated Tubing New Tubing Other ____

Start Purge Time: 1058 Flow Rate: 300 ml/min Pump Depth: 356'

Time	Temp. (°C or °F)	pH	Cond. (mS/cm or µS/cm)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Depth to Water (ft.)
- System vol = 2920 ml								
1108	22.2	6.71	1602	2	0.78	92.1	3000	345.30
1111	22.2	6.71	1601	2	0.58	93.1	3900	345.30
1114	22.6	6.71	1599	2	0.57	93.0	4800	345.30
1117	22.4	6.71	1598	2	0.49	93.2	5700	345.30
1120	22.2	6.71	1600	2	0.46	93.2	6600	345.30

Did well dewater? Yes No	Amount actually evacuated: 6600
Sampling Time: 1125	Sampling Date: 4-11-14
Sample I.D.: 4197B	Laboratory: ASL
Analyzed for: TPH-G BTEX MTBE TPH-D	Other: See COC
Equipment Blank I.D.: @ Time	Duplicate I.D.:

LOW FLOW WELL MONITORING DATA SHEET

Project #: 140411-AW1	Client: Lindmark Eng
Sampler: AW	Gauging Date: 4-11-14
Well I.D.: 4197A	Well Diameter (in.): 2 3 4 6 8 ___
Total Well Depth (ft.):	Depth to Water (ft.): 329.18
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	Flow Cell Type: YSI-ProPlus

Purge Method: 2" Grundfos Pump Peristaltic Pump Bladder Pump
Sampling Method: Dedicated Tubing New Tubing Other ___

Start Purge Time: 0837 Flow Rate: 225 ml/min System vol: 2430 ml Pump Depth: 340'

Time	Temp. (°C or °F)	pH	Cond. (mS/cm or µS/cm)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (gals. or mL)	Depth to Water (ft.)
0845	23.3	6.67	1223	2	0.72	2.8	1800	329.21
0848	23.1	6.67	1224	2	0.54	3.5	2475	329.21
0851	23.1	6.67	1221	2	0.46	1.4	3150	329.21
0854	23.0	6.67	1223	2	0.34	1.5	3825	329.21
0857	22.9	6.67	1221	2	0.30	-0.8	4500	329.21

Did well dewater? Yes No	Amount actually evacuated: 4500
Sampling Time: 0900	Sampling Date: 4-11-14
Sample I.D.: 4197A	Laboratory: ASL
Analyzed for: TPH-G BTEX MTBE TPH-D	Other: See COC
Equipment Blank I.D.: @ Time	Duplicate I.D.:

BLAINE
TECH SERVICES, INC.

1680 ROGERS AVENUE
SAN JOSE, CALIFORNIA 95112-1105
FAX (408) 573-7771
PHONE (408) 573-0555

CHAIN OF CUSTODY
BTS #

CLIENT: Lindmark Engineering

SITE: 11590 Tuxford Rd.
Sun Valley, CA 91352

CONDUCT ANALYSIS TO DETECT

LAB: ASL

DHS #

Invoice and Report to: David Smith
Lindmark Engineering
2625 Towngate Rd, Suite 330
Westlake Village, CA 91361
dsmith@lindmarkeng.com

SAMPLE I.D.	DATE	TIME	MATRIX (S = Soil, W = H2O)	CONTAINERS TOTAL		C = COMPOSITE ALL CONTAINERS	1,4 dioxane (8270C)	VOCs – EPA 8260	Total dissolved metals – EPA 6020/7470A	Chromium VI – EPA 7199	Perchlorate (314)	1,2,3 TCP (524M)	NDMA (1625)	ADD'L INFORMATION	STATUS	CONDITION	LAB SAMPLE #
4197A	4-11-14	0900	W	10			X	X	X	X	X	X	X				
4197B	↓	1125	↓	10			X	X	X	X	X	X	X				
Purge Water Sample	↓	—	↓	11										On Hold			

SAMPLING COMPLETED	DATE	TIME	SAMPLING PERFORMED BY
	4-11-14	1145	A Wolff

RESULTS NEEDED NO LATER THAN: Standard

RELEASED BY	DATE	TIME			DATE	TIME
[signature]	4-11-14	1245	→	Janet Chin	4-11-14	12:45
RELEASED BY	DATE	TIME	→		DATE	TIME
RELEASED BY	DATE	TIME	→		DATE	TIME

SHIPPED VIA	DATE SENT	TIME SENT

WELLHEAD INSPECTION CHECKLIST

Client Lindmark Eng Date 4-11-14

Site Address Sun Valley

Job Number 140411-AW1 Technician AW

Well ID	Well Inspected - No Corrective Action Required	WELL IS SECURABLE BY DESIGN (12"or less)	WELL IS CLEARLY MARKED WITH THE WORDS "MONITORING WELL" (12"or less)	Water Bailed From Wellbox	Wellbox Components Cleaned	Cap Replaced	Lock Replaced	Other Action Taken (explain below)	Well Not Inspected (explain below)	Repair Order Submitted
4197A	✓	✓	✓							
4197B	✓	✓	✓							

NOTES:

TEST EQUIPMENT CALIBRATION LOG

PROJECT NAME	Sun Valley			PROJECT NUMBER	140411-AW1		
EQUIPMENT NAME	EQUIPMENT NUMBER	DATE/TIME OF TEST	STANDARDS USED	EQUIPMENT READING	CALIBRATED TO: OR WITHIN 10%:	TEMP. °C	INITIALS
YSI Pro Plus	14A 102845	4-11-14 0745	4 pH 7 10	3.96 6.92 10.03	✓ ✓ ✓	18.7 18.3 19.0	AW
			3900 us/cm 240 mV 100% DO	3912 239.6 89.7	✓ ✓ ✓	18.2 18.6 18.3	AW

ATTACHMENT 4

Tables

Table 1

Groundwater Elevations - 4917A and 4917B

Date	Top of Casing Elevation	Depth to Groundwater	Potentiometric Groundwater Elevation
	(ft AMSL)	(ft)	(ft AMSL)
4917A (Screened: 160-358)			
4/29/1988	832.80	307.23	525.57
7/29/1988	832.80	307.56	525.24
11/8/1988	832.80	314.71	518.09
2/7/1989	832.80	320.52	512.28
12/12/1989	832.80	339	493.80
5/16/1990	832.80	331.14	501.66
8/21/1990	832.80	341.1	491.70
10/2/1990	832.80	345.55	487.25
11/1/2006	832.80	326.75	506.05
12/17/2010	832.01	335.53	496.48
4/1/2011	832.01	332.78	499.23
10/19/2011	832.01	319.02	512.99
4/6/2012	832.01	315.21	516.80
10/19/2012	832.01	319.04	512.97
4/11/2013	832.01	321.11	510.90
10/1/2013	832.01	325.60	506.41
4/11/2014	832.01	329.18	502.83
4917B (Screened: 160-375)			
4/29/1988	848.69	318.1	530.59
7/29/1988	848.69	320.42	528.27
11/8/1988	848.69	328.27	520.42
2/7/1989	848.69	334.21	514.48
11/1/2006	848.69	341.50	507.19
12/17/2010	848.56	350.66	497.90
4/1/2011	848.56	346.62	501.94
10/19/2011	848.56	337.9	510.66
4/6/2012	848.56	329.82	518.74
10/19/2012	848.56	334.27	514.29
4/11/2013	848.56	336.78	511.78
10/1/2013	848.56	341.52	507.04
4/11/2014	848.56	345.26	503.30

Table 2
VOC Concentrations in Groundwater
(µg/l)

Date	1,1,1-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	1,4-Dioxane	Tetrachloroethylene	Trichloroethylene	Selected Other VOCs
4917A							
4/29/1988	ND<1	ND<1	ND<1	NL	ND<1	98.00	Toluene = 7 µg/L Acetone, dichloromethane, vinyl chloride, and chloroform = ND Cis-1,2-DCE and trans-1,2-DCE = NL
7/29/1988	NL	NL	NL	NL	ND<1	200.00	NL
11/8/1988	NL	NL	NL	NL	ND<1	170.00	NL
2/7/1989	NL	NL	NL	NL	ND<1	180.00	NL
12/14/1989	NL	NL	NL	NL	2.00	12.00	NL
5/16/1990	ND<0.5	ND<0.5	ND<0.5	NL	1.00	43.00	Acetone, Chloroform, Cis-1,2-DCE, Dichloromethane, toluene, trans-1,2-DCE, and vinyl chloride = ND
8/21/1990	ND<1	ND<1	ND<1	NL	ND<1	36.00	Acetone, Chloroform, Cis-1,2-DCE, Dichloromethane, toluene, trans-1,2-DCE, and vinyl chloride = ND
10/2/1990	ND<0.5	ND<0.5	ND<0.5	NL	0.80	50.00	Chloroform = 2 µg/L Dichloromethane and vinyl chloride = ND Acetone, Cis-1,2-DCE, trans-1,2-DCE, and toluene = NL
3/19/1993	NL	NL	NL	NL	NL	110.00	NL
6/16/1993	NL	NL	NL	NL	NL	130.00	NL
9/29/1993	NL	NL	NL	NL	NL	87.00	NL
11/17/1993	NL	NL	NL	NL	NL	100.00	NL
7/31/2007	ND<0.5	ND<0.5	ND<0.5	ND<2	0.12	11.00	Acetone = 7.1 µg/L Cis-1,2-DCE = 1.3 µg/L Dichloromethane = 1.8 µg/L Trans-1,2-DCE, vinyl chloride, toluene, and chloroform = ND
9/4/2007	ND<0.5	ND<0.5	ND<0.5	ND<0.5	0.47	16.00	Acetone = 6 µg/L Cis-1,2-DCE = 1.1 µg/L Dichloromethane = 1.1 µg/L Toluene = 0.2J µg/L Trans-1,2-DCE, vinyl chloride, and chloroform = ND
12/17/2010	ND<0.45	ND<0.37	ND<0.40	ND<2	ND<0.51	1.8	Cis-1,2-DCE = 3.1 µg/L N-NDMA = 6.3 ng/L
4/1/2011	ND<0.45	ND<0.37	ND<0.40	NA	ND<0.51	26	1-4-dichlorobenzene = 0.40 µg/L
10/19/2011	ND<1	ND<1	ND<1	NA	ND<1	31.8	Cis-1,2,-DCE = 4.95 trans-1,2-DCE = 0.340J Vinyl chloride = 1.55J
4/6/2012	ND<0.150	ND<0.372	1.61	ND<2.00	ND<0.421	39.8	Cis-1,2-DCE = 5.50 µg/L trans-1,2-DCE = 0.270J µg/L Vinyl chloride= 7.42
10/19/2012	ND<1.00	ND<1.00	3.02	NA	ND<1.00	17	Cis-1,2-DCE = 14.3 µg/L Vinyl chloride= 17.4 µg/L

Table 2
VOC Concentrations in Groundwater
(µg/l)

Date	1,1,1-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	1,4-Dioxane	Tetrachloroethylene	Trichloroethylene	Selected Other VOCs
4/11/2013	ND<1.00	ND<1.00	6.95	ND<2.00	ND<1.00	32.6	Cis-1,2-DCE = 8.70 µg/L Chloroform = 1.41 µg/L trans-1,2-DCE = 1.64 µg/L Vinyl chloride= 25.3 µg/L
10/1/2013	ND<1.00	ND<1.00	ND<1.00	ND<2.00	ND<1.00	27.0	cis-1,2-DCE = 2.80 µg/L trans-1,2-DCE = 1.12 µg/L Vinyl chloride= 6.82 µg/L
4/11/2014	ND<1.00	ND<1.00	1.22	ND<10.0	ND<1.00	19.7	1,2,3-TCP = 0.0120 µg/L cis-1,2-DCE = 5.50 µg/L trans-1,2-DCE = 4.14 µg/L Vinyl chloride= 18.8 µg/L
4917B							
11/8/1988	NL	NL	NL	NL	2.00	ND<1	NL
2/7/1989	NL	NL	NL	NL	3.00	ND<1	NL
3/18/1993	NL	NL	NL	NL	NL	0.00	NL
6/16/1993	NL	NL	NL	NL	NL	0.00	NL
9/29/1993	NL	NL	NL	NL	NL	1.10	NL
11/17/1993	NL	NL	NL	NL	NL	3.00	NL
9/20/1995	ND<10	ND<10	ND<10	NL	4.00	6.00	No other VOCs detected
7/31/2007	250.00	17.00	510.00	7.50	2.60	3.90	Bromodichloromethane = 0.38J µg/L Chloroform = 1.5 µg/L Cis-1,2-dichloroethene = 0.11J µg/L Dichloromethane = 60 µg/L Perchlorate = 3.1 µg/L
9/4/2007	160.00	15.00	260.00	2.20	1.90	3.10	Acetone = 2.6J µg/L Bromodichloromethane = 0.27J µg/L Chloroform = 1.2 µg/L Cis-1,2-dichloroethene = ND Dichloromethane = ND Perchlorate = 2.8 µg/L
12/17/2010	85	22	280	ND<2	1.6	<0.30	Chloroform = 3.6 µg/L Perchlorate = 1.6 µg/L Cr-VI = 0.048 µg/L
4/1/2011	33	35	190	NA	0.67	0.85	Bromodichloromethane = 0.64 µg/L Chloroform = 3.2 µg/L Perchlorate = 2.3 µg/L
10/19/2011	13.4	6.3	83.4	NA	ND<1	ND<1	Bromodichloromethane = 3.80 µg/L Chloroform = 14.8 µg/L Dibromodichloromethane = 0.560J µg/L
4/6/2012	12.1	6.91	106	ND<2.00	ND<0.421	0.160J	Bromodichloromethane = 3.61 µg/L Chloroform = 13.9 µg/L Dibromochloromethane = 0.360J µg/L 1,2-DCA = 0.830J µg/L
10/19/2012	7.00	11.1	66.0	NA	ND<1.00	ND<1.00	Bromodichloromethane = 1.00 µg/L Chloroform = 6.77 µg/L

Table 2
VOC Concentrations in Groundwater
(µg/l)

Date	1,1,1-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	1,4-Dioxane	Tetrachloroethylene	Trichloroethylene	Selected Other VOCs
4/11/2013	ND<1.00	8.00	29.4	ND<2.00	ND<1.00	ND<1.00	Chloroform = 6.77 µg/L N-NDMA = 4.90 ng/L
10/19/2012	7.00	11.1	66.0	-	ND<1.00	ND<1.00	Bromodichloromethane = 1.00 µg/L Chloroform = 6.77 µg/L
4/11/2013	ND<1.00	8.00	29.4	ND<2.00	ND<1.00	ND<1.00	Chloroform = 1.41 µg/L N-NDMA = 4.90 ng/L
10/1/2013	5.73	10.8	35.5	ND<2.00	ND<1.00	0.330J	Chloroform = 3.15 µg/L
4/11/2014	5.90	18.3	39.0	ND<10.0	ND<1.00	0.550J	Chloroform = 2.25 µg/L 1,2-Dichloroethane = 0.460J Vinyl chloride= 0.340J µg/L

Notes:

ND	Not detected at or above detection limits
NA	Not analyzed
NL	Not listed in the EPA database (for Selected Other VOCs, no other VOCs listed in the database)
µg/L	microgram per liter
ng/L	nanogram per liter
TCP	Trichloropropane

J-flagged results are between the practical quantitation limit, and method detection limit

Table 3

Laboratory Analytical Results of Title 22 Metals in Groundwater

EPA Method 6020/7470A/7199

(µg/L)

Sample Date	Mercury	Antimony	Arsenic	Barium	Beryllium	Cadmium	Total Chromium	Chromium VI	Cobalt	Copper	Lead	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
4917A																		
04/06/12	ND	ND	0.62	140	ND	ND	ND	ND	ND	0.580	ND	1.50	0.890	ND	ND	ND	1.10	5.70
10/19/12	ND	ND	ND	68	ND	ND	ND	ND	0.11	ND	ND	0.57	ND	ND	ND	ND	ND	ND
04/11/13	ND	0.12J	0.57	130	ND	ND	0.15	ND	0.20	0.43J	ND	1.2	1.0	ND	0.060J	ND	ND	2.2J
10/01/13	ND	0.108J	ND	161	ND	ND	1.69	ND	0.382J	0.717J	ND	1.2	5.1	ND	ND	ND	ND	17.9
04/11/14	ND	ND	ND	170	ND	ND	ND	ND	ND	ND	ND	1.3	1.4	ND	ND	ND	ND	ND
4917B																		
04/06/12	ND	ND	0.93	190	ND	ND	0.200	ND	ND	0.980	ND	1.10	ND	ND	ND	ND	4.70	12.0
10/19/12	ND	ND	0.64	240	ND	ND	ND	ND	0.13	0.60	ND	1.5	1.0	ND	ND	ND	3.3	10
04/11/13	ND	0.25J	1.1	210	ND	ND	0.25	ND	0.020J	0.47J	ND	2.3	0.61J	ND	0.040J	ND	3.3	2.0J
10/01/13	ND	0.267J	ND	250	ND	ND	1.87	ND	0.373J	0.648J	0.114J	1.54	6.99	ND	ND	ND	2.76	56.2
04/11/14	ND	ND	0.63	260	ND	ND	ND	ND	ND	ND	ND	1.7	ND	ND	ND	ND	4.0	7.3
PQL/MRL (µg/L)	0.5	0.50	0.40	0.50	0.10	0.10	0.20	1.0	0.10	0.50	0.20	0.10	0.80	0.40	0.20	0.20	0.50	5.0
RL (µg/L)	NA	1.00	1.00	1.00	1.00	1.00	1.00	NA	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	5.0
MCL (µg/L)	2.0	6.0	10.0	1,000.0	4.0	5.0	50.0	50.0	--	1,300.0	15.0	--	100.0	50.0	--	2.0	--	--

Notes:
PQL = Practical Quantitation Limit (American Scientific Laboratories)
MRL = Method Reporting Limit (Weck Laboratories)
RL = Reporting Limit (Calscience)
MCL = Maximum Contaminant Level (California EPA)
-- = No MCL
µg/l = Micrograms per liter
J-flagged results are between the PQL/MRL and method detection limit (not shown)
NA = Not Applicable

Table 4
Well Purging Records

Date	Temperature (˚C)	pH	Conductivity (µS/cm)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Water Removed (mL)	Depth to Water (ft.)
4917A								
12/17/2010	22.0	6.78	561	4	0.38	-122.1	5750	335.54
4/1/2011	24.0	6.84	987	3	0.65	-48.7	5400	332.19
10/19/2011	23.38	6.90	1024	4	1.26	-93.2	5400	373.45
4/6/2012	22.7	6.67	1061	20	0.76	-64.3	5600	315.30
10/19/2012	23.75	6.6	1137	4	0.60	-76.1	5000	319.04
4/11/2013	23.5	6.53	1079	25	0.40	-57.9	4500	321.13
10/1/2013	24.02	6.52	1252	4	1.00	-200.3	5000	325.78
11/4/2014	22.90	6.67	1221	2	0.30	-0.8	5400	329.21
4917B								
12/17/2010	21.4	6.72	1363	16	0.43	42.3	5200	350.66
4/1/2011	22.3	6.85	1567	9	0.74	-42.6	6000	346.62
10/19/2011	22.37	6.69	1244	4	1.37	-26.9	6000	372.43
4/6/2012	21.3	6.66	1279	5	0.73	84.0	5600	329.91
10/19/2012	21.73	6.6	1521	6	0.66	37.4	5100	339.27
4/11/2013	22.5	6.54	1579	3	0.81	96.3	4500	336.80
10/1/2013	23.91	6.53	1550	3	1.13	-169.7	5400	341.53
11/4/2014	22.20	6.71	1600	2	0.46	93.2	6600	345.30

Values listed are measured at the end of purging.

Notes:

˚C	Degrees in Celcius
µS/cm	Microsiemens per centimeter
NTUs	Nephelometric Turbidity Units
D.O.	Dissolved Oxygen
mg/L	Milligram Per Liter
mV	Millivolt
mL	Milliliter
ft.	Feet

ATTACHMENT 5

1989 Soil Vapor Analytical Results

BROWN AND CALDWELL LABORATORIES

801 WESTERN AVENUE, GLENDALE, CA 91201
(818) 247-5737

FAX: (818) 247-9797

ANALYTICAL REPORT

LOG NO: G89-12-335

Received: 19 DEC 89
Reported: 27 DEC 89

Ms. Alice Campbell
Law Environmental
3320 N. San Fernando Rd.
Burbank, CA 91504

Purchase Order: 58-9696

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, VAPOR OR AIR SAMPLES	DATE SAMPLED
12-335-1	S #1 / Tuxford	19 DEC 89

PARAMETER	12-335-1
Vol.Pri.Poll. (EPA-8240)	
Date Analyzed	12/20/89
Dilution Factor, Times 1	1
1,1,1-Trichloroethane, ppb	<50
1,1,2,2-Tetrachloroethane, ppb	<50
1,1,2-Trichloroethane, ppb	<50
1,1-Dichloroethane, ppb	<50
1,1-Dichloroethene, ppb	<50
1,2-Dichloroethane, ppb	<50
1,2-Dichlorobenzene, ppb	<50
1,2-Dichloropropane, ppb	<50
1,3-Dichlorobenzene, ppb	<50
cis-1,3-Dichloropropene, ppb	<50
1,4-Dichlorobenzene, ppb	<50
2-Chloroethylvinylether, ppb	<50
2-Hexanone, ppb	<1000
Acetone, ppb	1700
Acrolein, ppb	<1000
Acrylonitrile, ppb	<1000
Bromodichloromethane, ppb	<50
Bromomethane, ppb	<50
Benzene, ppb	490
Chlorobenzene, ppb	80
Carbon Tetrachloride, ppb	<50
Chloroethane, ppb	<50
Bromoform, ppb	<50
Chloroform, ppb	<50

BROWN AND CALDWELL LABORATORIES

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(818) 247-5737

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ANALYTICAL REPORT

LOG NO: G89-12-335

Received: 19 DEC 89
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Ms. Alice Campbell
Law Environmental
3320 N. San Fernando Rd.
Burbank, CA 91504

Purchase Order: 58-9696

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, VAPOR OR AIR SAMPLES	DATE SAMPLED
12-335-1	S #1 / Tuxford	19 DEC 89

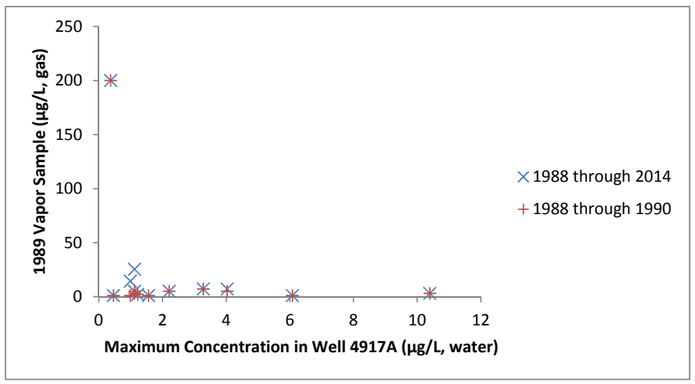
PARAMETER	12-335-1
Chloromethane, ppb	<100
Carbon Disulfide, ppb	<100
Dibromochloromethane, ppb	<50
Ethylbenzene, ppb	1400
Freon 113, ppb	<50
Methyl isobutyl ketone, ppb	270
Methyl ethyl ketone, ppb	750
Methylene chloride, ppb	<50
Tetrachloroethene, ppb	180
Styrene, ppb	<50
Trichloroethene, ppb	70
Trichlorofluoromethane, ppb	<50
Toluene, ppb	870
Vinyl acetate, ppb	<250
Vinyl chloride, ppb	440
Total Xylene Isomers, ppb	2400
trans-1,2-Dichloroethene, ppb	<50
trans-1,3-Dichloropropene, ppb	<50
cis-1,2-Dichloroethene, ppb	250
Other Vol.Pri.Poll. (EPA-8240)	---

Jeffrey A. Erion, Laboratory Manager

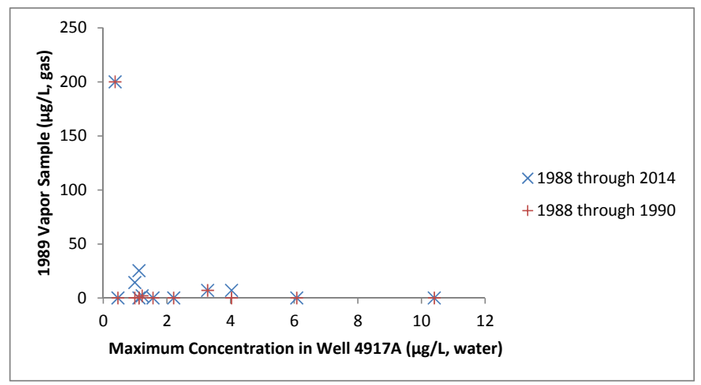
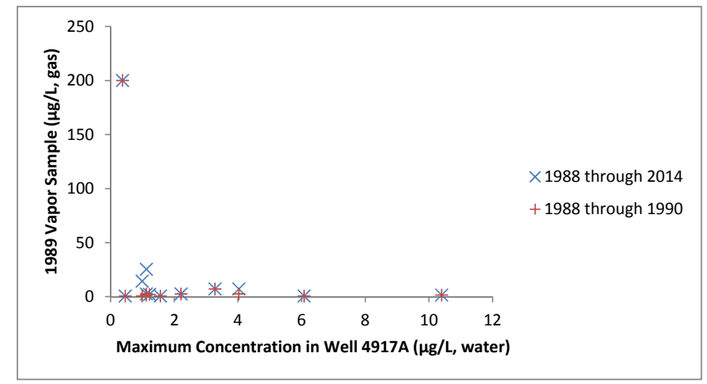
ATTACHMENT 6

Statistical Evaluation

Conservative - ND's Handled as DLs			
Compound	µg/L, gas	Maximum Concentration (µg/L, water)	
	1989 Vapor Sample (ug/L)	1988 through 2014	1988 through 1990
Xylenes	10.4	3	3
Ethyl benzene	6.08	1	1
Acetone	4.03	7.1	5
Toluene	3.28	7	7
Methyl ethyl ketone	2.21	5	5
Benzene	1.56	1	1
Tetrachloroethylene	1.22	2	2
Vinyl Chloride	1.12	25.3	3
Methyl Isobutyl Ketone	1.12	5	5
Cis-1,2 Dichloroethylene	0.99	14.3	1
Chlorobenzene	0.46	1	1
Trichloroethylene	0.37	200	200
Correlation Coefficient		-0.284310094	-0.250602756



Best Case - ND's Handled as Zeros			
Compound	µg/L, gas	Maximum Concentration (µg/L, water)	
	1989 Vapor Sample (ug/L)	1988 through 2014	1988 through 1990
Xylenes	10.4	0	0
Ethyl benzene	6.08	0	0
Acetone	4.03	7.1	0
Toluene	3.28	7	7
Methyl ethyl ketone	2.21	0	0
Benzene	1.56	0	0
Tetrachloroethylene	1.22	2	2
Vinyl Chloride	1.12	25.3	0
Methyl Isobutyl Ketone	1.12	0	0
Cis-1,2 Dichloroethylene	0.99	14.3	0
Chlorobenzene	0.46	0	0
Trichloroethylene	0.37	200	200
Correlation Coefficient		-0.28835773	-0.254217763



Average Case - ND's Handled as DL/2			
Compound	µg/L, gas	Maximum Concentration (µg/L, water)	
	1989 Vapor Sample (ug/L)	1988 through 2014	1988 through 1990
Xylenes	10.4	1.5	1.5
Ethyl benzene	6.08	0.5	0.5
Acetone	4.03	7.1	2.5
Toluene	3.28	7	7
Methyl ethyl ketone	2.21	2.5	2.5
Benzene	1.56	0.5	0.5
Tetrachloroethylene	1.22	2	2
Vinyl Chloride	1.12	25.3	1.5
Methyl Isobutyl Ketone	1.12	2.5	2.5
Cis-1,2 Dichloroethylene	0.99	14.3	0.5
Chlorobenzene	0.46	0.5	0.5
Trichloroethylene	0.37	200	200
Correlation Coefficient		-0.286381546	-0.252455851