AVOCET
ENVIRONMENTAL, INC.

February 11, 2008 Project No. 1155.001

Ms. Jennifer L. Wiley, PG, CEM
THE BOEING COMPANY
Environment, Health & Safety – Environmental Remediation
4501 Conant Street
Long Beach, California 90808

Field Data Report
January 2008 Monthly WDR Sampling
Former Building 1/36 Biorecirculation Pilot Test
Waste Discharge Requirements Order No. R4-2007-0040
Boeing Corporate Real Estate Former C-6 Facility
Los Angeles, California

Dear Ms. Wiley:

This report has been prepared by Avocet Environmental, Inc. (Avocet) to summarize and present the field data collected during the January 2008 Monthly Waste Discharge Requirements (WDR) groundwater monitoring event at the Boeing Corporate Real Estate (BCRE) Former C-6 Facility in Los Angeles, California. This monitoring was conducted pursuant to and in accordance with the following:

Avocet Environmental, Inc., January 22, 2008, Technical Memorandum, January 2008 Monthly WDR Sampling and Analysis Plan, January 2008 Monitoring, Waste Discharge Requirements Order No. R4-2007-0040, Boeing Corporate Real Estate Former C-6 Facility, Los Angeles, California (Attachment 1).

California Regional Water Quality Control Board – Los Angeles Region, August 10, 2007, Waste Discharge Requirements for Pilot Tests to Evaluate Bioremediation of Volatile Organic Compounds (VOCs) in Groundwater, Boeing Realty Corporation, Former C-6 Facility, 19503 South Normandie, Los Angeles, California (File No. 95-036; SLIC No. 410; Site ID No. 1846000).

Field activities performed during the January 2008 Monitoring Program are discussed in the following sections. Figure 1 (Attachment 1) presents the locations of the groundwater monitoring wells included as part of this program.

GOUNDWATER SAMPLING ACTIVITIES

Nine out of 11 wells scheduled for ground water level measurement were gauged for depth to water and total depth on January 29 and 30, 2008 using Solinst water level and depth sounders.

16 Technology Drive, Suite 154 ▪ Irvine, California 92618-2327
Phone 949.296.0977 ▪ Fax 949.296.0978
www.avocetenv.com

Wells AW0066UB and AW0067UB were inaccessible due to active amendment injection. The wells were also inspected for any damage or missing materials. All eleven wells were in good condition, but all were missing the bolts that secure the lids. The wells are frequently accessed during the pilot test and it is suspected that the bolts were temporarily removed by the remediation contractor.

Seven wells were purged and sampled on January 29 and 30, 2008 using a QED Sample Pro low-flow bladder pump and flow-through cell. These wells were purged for sampling using the low-flow (0.22-0.34 liters/minute) method. Ferrous iron testing was performed in all wells using HACH DR/890 Colorimeter and the QED dissolved oxygen measurements were confirmed periodically using a CHEMetrics Inc. test kit. The field instruments were calibrated daily and the calibration data sheets are included in Attachment 2.

At the completion of low-flow purging, groundwater samples were collected in laboratory supplied containers, properly labeled, identified on the chain-of-custody, and submitted to TestAmerica Laboratory, an appropriately certified environmental testing laboratory located in Irvine, California. A normal 10-day turn-around time was requested for the lab analyses. The samples were analyzed for the following:

- Volatile organic compounds (VOCs) by EPA Method 8260B,
- Total organic carbon (TOC) by EPA Method 9060,
- Volatile fatty acids (VFAs) by IC Method 8M23G (subcontracted by TestAmerica to Microseeps, Inc., Pittsburg, PA),
- Dissolved gases (ethane, ethane, and methane) by RSK 175 (subcontracted by TestAmerica to Air Technology Laboratory, Inc., City of Industry, CA),
- Dissolved minerals (sulfate, nitrate, nitrite, and chloride) by EPA Method 300 Series,
- Total Alkalinity by EPA Method 310,
- Quantitative polymerase chain reaction (qPCR) analysis for DHC 16S rRNA gene and functional genes tceA, bvcA, and vcrA (subcontracted by TestAmerica to North Wind, Inc., Pocatello, ID), and
- Total dissolved solids (TDS) by EPA Method 160.1.

Purge water (48 liters) was transported to a storage tank located in the treatment compound. Field data forms are included in Attachment 2.

If you have any questions regarding this report or require additional information, please do not hesitate to call.

Respectfully submitted,

AVOCET ENVIRONMENTAL, INC.

Michael A. Rendina, C.Hg.
Principal

MAR:sh
Attachments:
Attachment 1: January 2008 Monthly WDR Sampling and Analysis Plan
Attachment 2: Field Data Forms

S:\Projects\1155 Boeing Former C-6 Facility\Groundwater Monitoring\January 2008\FDR_January 2008 021108.doc

Attachment 1

January 2008 Monthly WDR Sampling and Analysis Plan

AVOCET
ENVIRONMENTAL, INC.

AVOCET
ENVIRONMENTAL, INC.

January 24, 2008 Project No. 1155.003

Ms. Jennifer Wiley, P.G. (via electronic mail only)
THE BOEING COMPANY
Environment, Health & Safety –
Environmental Remediation
4501 East Conant Street, M/C D851-0097
Long Beach, California 90808

Technical Memorandum
January 2008 Monthly WDR Sampling and Analysis Plan
January 2008 Monitoring
Waste Discharge Requirements Order No. R4-2007-0040
Boeing Corporate Real Estate Former C-6 Facility
Los Angeles, California

Dear Ms. Wiley:

This memorandum has been prepared by Avocet Environmental, Inc. (Avocet) and presents the sampling and analysis plan (SAP) for conducting the January 2008 required monitoring at Boeing Corporate Real Estate's (BCRE's) Former C-6 Facility in Los Angeles, California. This monitoring is being conducted pursuant to and in accordance with California Regional Water Quality Control Board, Los Angeles Region (LARWQCB) general Waste Discharge Requirements (WDR) Order No. R4-2007-0040 (the WDR Order) and Monitoring and Reporting Program CI-9310. This memorandum discusses the ground water monitoring activities to be conducted and the analyses to be performed as pertains to the WDR Order. Additional details will be provided in the forthcoming Ground Water Monitoring Work Plan specific to 2008 ground water monitoring events at the Former C-6 Facility (the Work Plan).

Field Activities

In accordance with the WDR Order, 11 wells are to be monitored during January of 2008 including 4 wells for water level measurements only. A list of the wells to be monitored is provided in Table 1 and a map showing the well locations is provided in Figure 1. The scope of work will include all tasks associated with collecting the field measurements and laboratory samples required to comply with the WDR Order. In brief, these activities will include water level measurements, ground water well purging and sampling using low-flow methods, and sample analyses. Additional activities such as pre-field documentation, waste management, and reporting will be addressed in the Work Plan. Overall, the ground water monitoring activities associated with the WDR Order are as follows:

16 Technology Drive, Suite 154 ▪ Irvine, California 92618-2327
Phone 949.296.0977 ▪ Fax 949.296.0978
www.avocetenv.com

- Prior to any ground water disturbance, depth to water measurements will be taken from each of the 11 wells using a Solinst (or equivalent) well sounder. To minimize disturbance of the water column in wells scheduled for sampling, total depths in these wells will be verified after purging using a weighted depth sounder.

- Ground water samples will be collected from 7 wells during the January 2008 monitoring event (Table 1). Prior to sampling, the wells will be purged using low-flow methods to assure representative samples are collected from the formation. During purging, the flow rate at each location will be maintained between 0.1 and 0.5 L/min, dependent on site-specific and well-specific factors as drawdown is not to exceed 0.3 feet in any well.

- During well purging, biogeochemical parameters including pH, temperature, electric conductivity (EC), dissolved oxygen (DO), and oxygen-reduction potential (ORP) will be periodically measured using a flow-thru cell and QED multiparameter meter. In addition, ferrous iron (Fe(II)) will be measured using a Hach DR890 Colorimeter and the QED dissolved oxygen measurements will be confirmed using a CHEMetrics, Inc. test kit. Purging will continue until three consecutive measurements are within +/-0.2 for pH, +/-3% for EC, +/-10% for DO, and +/-20 mV for ORP (ATSM, 2002).

- At the completion of purging, groundwater samples will be collected in laboratory-supplied containers, labeled in accordance with Boeing's Data Management Plan (CH2M Hill, 2007), placed on ice in a cooler, identified on the chain-of-custody, submitted to appropriately certified environmental testing laboratories, and analyzed for the following:

  - volatile organic compounds (EPA Method 8260B);
  - total organic carbon (EPA 9060);
  - volatile fatty acids by IC Method 8M23G (Microseeps, Inc., Pittsburg, PA);
  - dissolved hydrocarbon gases (ethene, ethane, and methane by RSK 175);
  - dissolved minerals (sulfate, nitrate, nitrite, and chloride by EPA Method 300 Series);
  - total alkalinity (EPA Method 310.1);
  - total dissolved solids (EPA Method 160.1) and
  - Quantitative Polymerase Chain Reaction (qPCR) analysis for DHC 16S rRNA gene and functional genes tceA, bvcA, and vcrA (North Wind, Inc., Pocatello, ID).

A summary of the analytical program is presented in Table 1.

Closing Remarks

Ground water monitoring is scheduled to take place at the site on Tuesday, January 29, 2008. Avocet Environmental, Inc. appreciates the opportunity to be of service to Boeing Corporate Real Estate. If you have any questions, please do not hesitate to call.

Respectfully submitted,

AVOCET ENVIRONMENTAL, INC.

Michael A. Rendina

Michael A. Rendina, P.G.
Principal

MAR:sh
Enclosure

cc: Mr. Joe Wiedmann – Haley & Aldrich
Mr. Ravi Subramanian - CDM

S:\Projects\1155 Boeing Former C-6 Facility\Groundwater Monitoring\SAP 1Q08 1155\Technical Memorandum_SAP_020708.doc

Table

AVOCET
ENVIRONMENTAL, INC.

Table 1
January 2008 WDR Groundwater Monitoring Program
BCRE Former C-6 Facility,
Los Angeles, California

Well Information		Field Program				Laboratory Program								Comments
Well Name	Hydrostratigraphic Unit	Total Select VOCs Concentration (µg/l)	Sampling Order	Water Level Measurement	Field Parameters	VOCs EPA 8260B	TOC EPA 9060 Modified	Volatile Fatty Acids IC Method 8M23G (Microseeps)	Dissolved Hydrocarbon Gases (DHGs) Methane, Ethane, Ethene RSK 175	Alkalinity EPA 310.1	Anions (NO_3, NO_2, Cl, SO_4) EPA 300.0	Total Dissolved Solids EPA 160.1	DHC 16S rRNA gene and functional genes tceA, bvcA, and vcrA: by qPCR analysis (North Wind)	
Group A Wells														
AW0064UB	B-Sand			x										Water level measurement only
AW0065UB	B-Sand			x										Water level measurement only
AW0066UB	B-Sand			x										Water level measurement only
AW0067UB	B-Sand			x										Water level measurement only
Group B Wells														
AW0074UB	B-Sand	2,625	3	x	x	x	x	x	x	x	x	x	x	
AW0075UB	B-Sand	7,502	5	x	x	x	x	x	x	x	x	x	x	
AW0076UB	B-Sand	11,448	7	x	x	x	x	x	x	x	x	x	x	
AW0077UB	B-Sand	9,241	6	x	x	x	x	x	x	x	x	x	x	
WCC_6S	B-Sand	1,490	1	x	x	x	x	x	x	x	x	x	x	
EWB002	B-Sand	6,766	4	x	x	x	x	x	x	x	x	x	x	
AW0073C	C-Sand	1,624	2	x	x	x	x	x	x	x	x	x	x	
Group C Wells														
TMW_7	B-Sand													Not monitored in January
WCC_12S	B-Sand													Not monitored in January
Group D Well														
AW0055UB	B-Sand													Not monitored in January
Quality Control Samples														
Duplicates (1 per 20 wells)						x (est. 1)								
Rinsate Blanks (1 per day)						x (est. 1)								
Trip Blanks (1 per cooler)						x (est. 1)								
		Totals:		11	7	10	7	7	7	7	7	7	7	

Notes: Field Parameters = pH, DO, ORP, EC, temp, turb, and ferrous iron.
pH = Potential of Hydrogen
DO = Dissolved Oxygen
ORP = Oxidation Reduction Potential
EC = Electrical Conductivity
Temp = Temperature
Turb = Turbidity
µg/l = Micrograms per liter
Select VOCs for Total VOC calculation include PCE, TCE, cis-1,2-DCE, trans-1,2-DCE, and VC (June 2007).

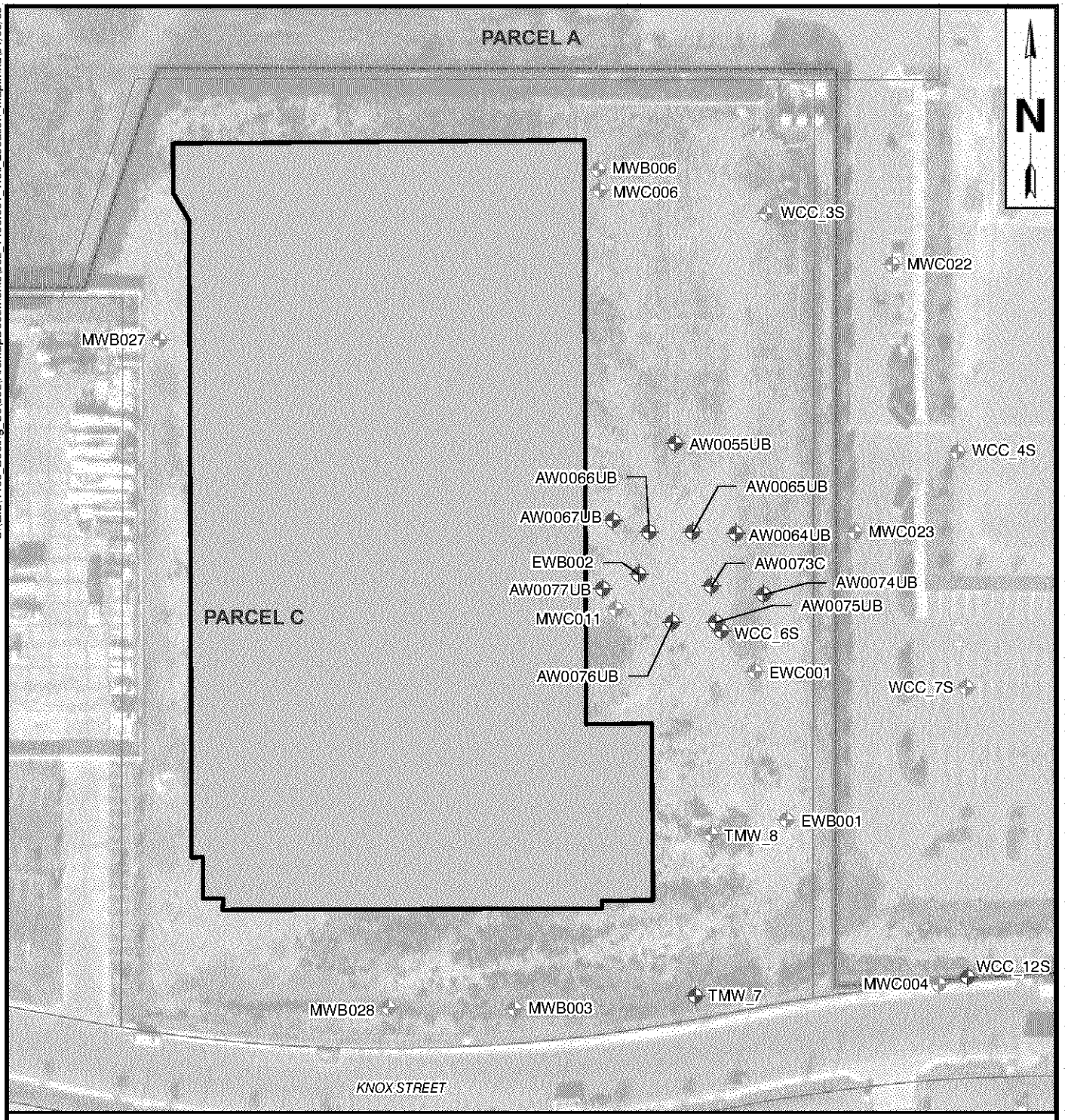
VOCs = Volatile organic compounds
EPA = U.S. Environmental Protection Agency
TOC = Total Organic Carbon
DHGs = Dissolved hydrocarbon gases
NO_3 = Nitrate, NO_2 = Nitrite, Cl = Chloride, SO_4 = Sulfate
DHC = *dehalococcoides spp.* strains
qPCR = Quantitative Polymerase Chain Reaction

AVOCET ENVIRONMENTAL, INC.

Figure

AVOCET
ENVIRONMENTAL, INC.

S:\GIS\1155_Boeing_C6\002\ArcMapDocuments\002_1155.001_Well_Location_Map.mxd\01/09/08



0 100 200

SCALE

LEGEND

- WDR Groundwater Monitoring Well
- Non-WDR Groundwater Monitoring Well
- 1451 Knox St.
- Parcel Boundary

FIGURE 1

WDR WELL LOCATION MAP

BCRE FORMER C-6 FACILITY
LOS ANGELES, CALIFORNIA

AVOCET ENVIRONMENTAL, INC.

Attachment 2

Field Data Forms

AVOCET
ENVIRONMENTAL, INC.

AVOCET ENVIRONMENTAL, INC.

GROUNDWATER SAMPLING DATA SHEET

Project Name: Boeing Former C-6 - January 2008 WDR	**Date:** Jan 29, 2008
Project No.: 1155.003	**Prepared by:** Brian Barsumian
Well Identification EWB002	**Weather:** Overcast
Measurement Point Description TOC-N	**Pump Intake:** 75' **Screen:** 60-90'

A	B	C	D	E	G				
Depth to LNAPL (ft-bmp)	**Depth to Static Water Level** (ft-bmp)	**Well Total Depth** (ft-bmp)	**Water Column Height** (ft) (C-B=D)	**LNAPL Thickness** (ft) (B-A=E)	**One Casing Volume** (gallons) (DxF=G)	**Three Casing Volumes** (gallons) (Gx3)	**One-Half Casing Volume** (G/2)	**Above Screen Volume** (top screen - DTW) x F	**Screen Volume** (screen length x F)
—	60.71	94.34	33.63	—	NA	NA	NA	NA	NA

	Gallons/Foot			
Well Diameter (inches)	0.75	2	4	6
(F) - **Gallons per foot of casing**	0.02	0.16	0.65	1.47

Field Equipment: QED multi-parameter meter,
Purge Method: Low Flow - dedicated tubing - Bladder Pump
Well Condition: Well cover not bolted down

Time	Casing/ Screen	Volume Purged ~~(gallons)~~ L	Flow Rate ~~(gpm)~~ (ml/min)	Water Level (ft-bmp)	pH	Temperature (°C)	Turbidity (NTU)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	ORP (mV)	Observations
1245		0	340 ml/m	< 60.75	6.63	21.66	-	2.88	1.44	-234	moderate sewage odor, m. grey
1250		1.7 L	↓	↓	6.64	21.67	-	2.89	0.33	-243	↓
1255		3.4			6.62	21.65	-	2.90	0.52	-246	
1300		5.1			6.65	21.68	-	2.93	0.37	-251	
* 1257		4.4			6.63	21.68	-	2.91	0.45	-248	
* 1300		5.1			6.65	21.68	-	2.93	0.37	-251	
* 1303		6.1	↓	↓	6.65	21.67	-	2.94	0.30	-252	↓

Purge Start Time	Purge End Time	Average Flow ~~(gpm)~~ (ml/min)	Total ~~Gallons~~ L Purged	Total Casing Volumes Purged	80% Recovery Water Level Depth (Dx0.20) + B	Water Level at Sampling Time (ft bmp)	Sample Collection Time	Sample Identification
1245	1303	340 ml/m	6.1 L	NA	NA	< 60.75	1307	EWB002_WG20080129-0001

Notes: Ferrous Iron = 3.30 mg/L
PID = 18.7 ppm
* Achieved stability
Duplicate samples collected (as above) -0002

12:25 - moved transducer in EWB002

BOE-C6-0056487

AVOCET ENVIRONMENTAL, INC.

GROUNDWATER SAMPLING DATA SHEET

Project Name: BOEING FORMER C-6 - JANUARY 2008 WDR	Date: JANUARY 29, 2008
Project No.: 1155.003	Prepared by: DAB + CBJ
Well Identification ~~[illegible]~~ WCC_06S	Weather: ~~Sunny/Cool~~ OVERCAST
Measurement Point Description TOC-N	Pump Intake: 75' / Screen: 60'-90'

A	B	C	D	E	G				
Depth to LNAPL (ft-bmp)	Depth to Static Water Level (ft-bmp)	Well Total Depth (ft-bmp)	Water Column Height (ft) (C-B=D)	LNAPL Thickness (ft) (B-A=E)	One Casing Volume (gallons) (DxF=G)	Three Casing Volumes (gallons) (Gx3)	One-Half Casing Volume (G/2)	Above Screen Volume (top screen - DTW) x F	Screen Volume (screen length x F)
—	59.79	85.05	25.26	—	N/A	N/A	N/A	N/A	N/A

	Gallons/Foot			
Well Diameter (inches)	0.75	2	(4)	6
(F) - Gallons per foot of casing	0.02	0.16	0.65	1.47

Field Equipment: QED MULTIPARAMETER METER
Purge Method: QED SAMPLE PRO PNEUMATIC BLADDER PUMP
Well Condition: GOOD - NO BOLTS

Time	Casing/ Screen	Volume Purged ~~(gallons)~~ L	Flow Rate ~~(gpm)~~ (ml/min)	Water Level (ft-bmp)	pH	Temperature (°C)	Turbidity (NTU)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	ORP (mV)	Observations
8:33		0	280	59.79	7.16	20.19	—	0.139	6.71	59	Clear
8:36		0.84	280	<60.10	7.60	20.77	—	0.136	5.91	70	Clear
8:39		1.7	280	<60.10	7.79	20.75	—	0.136	5.49	77	Clear
8:42		2.5	280	<60.10	7.72	20.75	—	0.136	5.41	79	
8:45		3.4	280	<60.10	7.78	20.68	—	0.138	5.41	81	Clear
8:48		4.2	280	<60.10	7.83	20.83	—	0.138	5.36	80	
8:51		5.0	280	<60.10	7.83	20.75	—	0.138	5.31	79	Clear

Purge Start Time	Purge End Time	Average Flow ~~(gpm)~~ (ml/min)	Total ~~Gallons~~ L Purged	Total Casing Volumes Purged	80% Recovery Water Level Depth (Dx0.20) + B	Water Level at Sampling Time (ft bmp)	Sample Collection Time	Sample Identification
8:33	8:51	280	5.0	N/A	N/A	<60.10	8:51	WCC_06S_WG20080129_0001

Notes: FERROUS IRON = 3.16 mg/L
PID = 0.0 ppm
CHEMETRICS D.O. NM mg/L at NM (TIME)

BOE-C6-0056488

AVOCET ENVIRONMENTAL, INC.

GROUNDWATER SAMPLING DATA SHEET

Project Name: BOEING FORMER C-6 - JANUARY 2008 WDR	Date: JANUARY 29, 2008
Project No.: 1155.003	Prepared by: DAB + CBJ
Well Identification AW0073C	Weather: ~~SUNNY/COOL~~ OVERCAST
Measurement Point Description TOC-N	Pump Intake: 106' / Screen: 96'-116'

A	B	C	D	E	G				
Depth to LNAPL (ft-bmp)	Depth to Static Water Level (ft-bmp)	Well Total Depth (ft-bmp)	Water Column Height (ft) (C-B=D)	LNAPL Thickness (ft) (B-A=E)	One Casing Volume (gallons) (DxF=G)	Three Casing Volumes (gallons) (Gx3)	One-Half Casing Volume (G/2)	Above Screen Volume (top screen - DTW) x F	Screen Volume (screen length x F)
—	60.55	117.50	56.95	—	N/A	N/A	N/A	N/A	N/A

	Gallons/Foot			
Well Diameter (inches)	0.75	(2)	4	6
(F) - Gallons per foot of casing	0.02	0.16	0.65	1.47

Field Equipment: QED MULTIPARAMETER METER
Purge Method: QED SAMPLE PRO PNEUMATIC BLADDER PUMP
Well Condition: GOOD - NOT BOLTED

Time	Casing/ Screen	Volume Purged ~~(gallons)~~ L	Flow Rate ~~(gpm)~~ (ml/min)	Water Level (ft-bmp)	pH	Temperature (°C)	Turbidity (NTU)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	ORP (mV)	Observations
11:15		0	220	60.55	6.83	20.29	-	1.072	3.75	-251	GRAY, mod H_2S odor
11:24		2.25	250	<60.75	7.04	21.26	-	1.099	1.81	-255	Gray
11:29		3.50	250	<60.75	7.06	21.79	-	1.128	1.14	-269	mod. H_2S odor
11:34		4.75	250	<60.75	7.06	21.69	-	1.093	0.75	-271	Gray
11:39		6.0	250	<60.75	7.06	21.58	-	1.057	0.52	-282	H_2S Odor
11:44		7.25	250	<60.75	7.10	21.57	-	1.007	0.33	-294	↓
11:48		8.5	250	<60.75	7.10	21.59	-	0.999	0.25	-293	↓

Purge Start Time	Purge End Time	Average Flow ~~(gpm)~~ (ml/min)	Total ~~Gallons~~ L Purged	Total Casing Volumes Purged	80% Recovery Water Level Depth (Dx0.20) + B	Water Level at Sampling Time (ft bmp)	Sample Collection Time	Sample Identification
11:15	11:48	250	8.5	N/A	N/A	<60.75	11:53	AW0073C_WG20080129_0001

Notes: FERROUS IRON = 2.70 mg/L
PID = 9.5 ppm
CHEMETRICS D.O. 0.4 mg/L at 11:51 (TIME)

BOE-C6-0056489

AVOCET ENVIRONMENTAL, INC.

GROUNDWATER SAMPLING DATA SHEET

Project Name: BOEING FORMER C-6 - JANUARY 2008 WDR	Date: JANUARY 29, 2008
Project No.: 1155.003	Prepared by: DAB + CBJ
Well Identification AW0074UB	Weather: ~~SUNNY/COOL~~ OVERCAST
Measurement Point Description TOC-N	Pump Intake: 80' Screen: 70' - 90'

A	B	C	D	E	G				
Depth to LNAPL (ft-bmp)	Depth to Static Water Level (ft-bmp)	Well Total Depth (ft-bmp)	Water Column Height (ft) (C-B=D)	LNAPL Thickness (ft) (B-A=E)	One Casing Volume (gallons) (DxF=G)	Three Casing Volumes (gallons) (Gx3)	One-Half Casing Volume (G/2)	Above Screen Volume (top screen - DTW) x F	Screen Volume (screen length x F)
—	59.89	88.55	28.66	—	N/A	N/A	N/A	N/A	N/A

	Gallons/Foot			
Well Diameter (inches)	0.75	(2)	4	6
(F) - Gallons per foot of casing	0.02	0.16	0.65	1.47

Field Equipment: QED MULTIPARAMETER METER
Purge Method: QED SAMPLE PRO PNEUMATIC BLADDER PUMP
Well Condition: GOOD - NOT BOLTED - SOME STANDING WATER

Time	Casing/ Screen	Volume Purged ~~(gallons)~~ L	Flow Rate ~~(gpm)~~ (ml/min)	Water Level (ft-bmp)	pH	Temperature (°C)	Turbidity (NTU)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	ORP (mV)	Observations
09:51		0.0	240	59.89	6.91	21.42	—	1.73	1.48	49	lt yellow
09:54		0.72	250	<60.14	6.92	21.64	—	1.73	1.05	39	
09:57		1.5	250	<60.14	6.92	21.74	—	1.73	0.86	26	lt. yellow translucent.
10:03		3.0	250	<60.14	6.87	21.85	—	1.73	1.08*	2	
10:07		4.0	250	59.76	6.86	21.90	—	1.73	1.00	-4	lt. yellow translucent
10:10		4.7	250	59.77	6.88	22.04	—	1.74	0.9	-9	
10:17		6.5	250	59.77	6.86	21.9	—	1.75	0.8	-18	v. lt. yellow translucent

Purge Start Time	Purge End Time	Average Flow ~~(gpm)~~ ml/min	Total ~~Gallons~~ L Purged	Total Casing Volumes Purged	80% Recovery Water Level Depth (Dx0.20) + B	Water Level at Sampling Time (ft bmp)	Sample Collection Time	Sample Identification
9:51	10:17	250	6.5	N/A	N/A	59.77	10:17	AW0074UB_WG20080129_01

Notes: FERROUS IRON = 1.10 mg/L
PID = 9.2 ppm
CHEMETRICS D.O. 1.0 mg/L at 10:03 (TIME)

BOE-C6-0056490

AVOCET ENVIRONMENTAL, INC.

GROUNDWATER SAMPLING DATA SHEET

Project Name: BOEING FORMER C-6 - JANUARY 2008 WDR	Date: JANUARY 30, 2008
Project No.: 1155.003	Prepared by: DAB + CBJ
Well Identification AW0075UB	Weather: SUNNY/COOL
Measurement Point Description TOC-N	Pump Intake: 79' Screen: 69'-89'

A	B	C	D	E	G				
Depth to LNAPL (ft-bmp)	Depth to Static Water Level (ft-bmp)	Well Total Depth (ft-bmp)	Water Column Height (ft) (C-B=D)	LNAPL Thickness (ft) (B-A=E)	One Casing Volume (gallons) (DxF=G)	Three Casing Volumes (gallons) (Gx3)	One-Half Casing Volume (G/2)	Above Screen Volume (top screen - DTW) x F	Screen Volume (screen length x F)
—	60.30	88.72	28.42	—	N/A	N/A	N/A	N/A	N/A

	Gallons/Foot			
Well Diameter (inches)	0.75	(2)	4	6
(F) - Gallons per foot of casing	0.02	0.16	0.65	1.47

Field Equipment: QED MULTIPARAMETER METER
Purge Method: QED SAMPLE PRO PNEUMATIC BLADDER PUMP
Well Condition: GOOD - NOT BOLTED

Time	Casing/ Screen	Volume Purged ~~(gallons)~~ liters	Flow Rate ~~(gpm)~~ (ml/min)	Water Level (ft-bmp)	pH	Temperature (°C)	Turbidity (NTU)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	ORP (mV)	Observations
8:06		0	330	60.3	6.87	21.05	—	1.95	3.08	-178	turbid
8:11		1.69	330	<60.55	6.87	21.41	—	2.08	0.94	-213	turbid
8:16		3.3	330	<60.55	6.89	21.55	—	2.09	0.44	-227	turbid
8:26		~~4.95~~ 6.6	330	<60.55	6.77	21.68	—	2.32	0.16	-242	Clearing
8:31		8.25	330	<60.55	6.74	21.67	—	2.41	0.14	-241	Clearing
8:36		9.9	330	<60.55	6.75	21.69	—	2.44	0.14	-243	Clearing
8:39		10.9	330	<60.55	6.74	21.71	—	2.44	0.13	-244	Clearing

Purge Start Time	Purge End Time	Average Flow (gpm) ml/min	Total ~~Gallons~~ liters Purged	Total Casing Volumes Purged	80% Recovery Water Level Depth (Dx0.20) + B	Water Level at Sampling Time (ft bmp)	Sample Collection Time	Sample Identification
8:06	8:39	330	10.9	N/A	—	<60.55	8:44	AW0075UB_WG20080130_0001

Notes: FERROUS IRON = 3.30 mg/L
PID = 12.7 ppm
CHEMETRICS D.O. N/A mg/L at N/A (TIME)
DECON. BLANK AFTER THIN SAMPLE: EB_AV20080130_01

BOE-C6-0056491

AVOCET ENVIRONMENTAL, INC.

GROUNDWATER SAMPLING DATA SHEET

Project Name: BOEING FORMER C-6 - JANUARY 2008 WDR	Date: JANUARY 30, 2008
Project No.: 1155.003	Prepared by: DAB + CBJ
Well Identification AW0076UB	Weather: SUNNY/COOL 65°F
Measurement Point Description TOC-N	Pump Intake: 79' / Screen: 69'-89'

A	B	C	D	E	G				
Depth to LNAPL (ft-bmp)	Depth to Static Water Level (ft-bmp)	Well Total Depth (ft-bmp)	Water Column Height (ft) (C-B=D)	LNAPL Thickness (ft) (B-A=E)	One Casing Volume (gallons) (DxF=G)	Three Casing Volumes (gallons) (Gx3)	One-Half Casing Volume (G/2)	Above Screen Volume (top screen - DTW) x F	Screen Volume (screen length x F)
—	60.71	88.57	27.86	—	N/A	N/A	N/A	N/A	N/A

	Gallons/Foot			
Well Diameter (inches)	0.75	(2)	4	6
(F) - Gallons per foot of casing	0.02	0.16	0.65	1.47

Field Equipment: QED MULTIPARAMETER METER

Purge Method: QED SAMPLE PRO PNEUMATIC BLADDER PUMP

Well Condition: GOOD - NOT BOLTED

Time	Casing/ Screen	Volume Purged ~~(gallons)~~ L	Flow Rate ~~(gpm)~~ (ml/min)	Water Level (ft-bmp)	pH	Temperature (°C)	Turbidity (NTU)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	ORP (mV)	Observations
11:44		0.0	240	60.71	6.56	21.67	—	3.61	1.89	-153	
11:49		1.2	240	<61.01	6.54	21.57	—	3.85	0.28	-194	
11:54		2.4	240	<61.01	6.52	21.59	—	3.90	0.17	-201	
12:04		4.8	240	<61.01	6.53	21.63	—	4.01	0.12	-203	
12:09		6.0	240	<61.01	6.53	21.63	—	3.91	0.11	-197	
12:11		6.48	240	<61.01	6.50	21.63	—	3.94	0.12	-195	
12:14		7.2	240	<61.01	6.52	21.70	—	3.96	0.12	-195	

Purge Start Time	Purge End Time	Average Flow ~~(gpm)~~ ml/min	Total ~~Gallons~~ L Purged	Total Casing Volumes Purged	80% Recovery Water Level Depth (Dx0.20) + B	Water Level at Sampling Time (ft bmp)	Sample Collection Time	Sample Identification
11:44	12:14	240	7.2	—	—	<61.01	12:17	AW0076UB_WG20080130_01

Notes: FERROUS IRON = 3.30 mg/L

PID = 25.5 ppm

CHEMETRICS D.O. NM mg/L at NM (TIME)

BOE-C6-0056492

AVOCET ENVIRONMENTAL, INC.

GROUNDWATER SAMPLING DATA SHEET

Project Name: BOEING FORMER C-6 - JANUARY 2008 WDR		Date: JANUARY 30, 2008	
Project No.: 1155.003		Prepared by: DAB + CBJ	
Well Identification AW0077UB		Weather: SUNNY/COOL	
Measurement Point Description TOC-N		Pump Intake: 78'	Screen: 70.5' - 85.5'

A	B	C	D	E	G				
Depth to LNAPL (ft-bmp)	Depth to Static Water Level (ft-bmp)	Well Total Depth (ft-bmp)	Water Column Height (ft) (C-B=D)	LNAPL Thickness (ft) (B-A=E)	One Casing Volume (gallons) (DxF=G)	Three Casing Volumes (gallons) (Gx3)	One-Half Casing Volume (G/2)	Above Screen Volume (top screen - DTW) x F	Screen Volume (screen length x F)
—	61.21	83.45	22.24	—	N/A	N/A	N/A	N/A	N/A

	Gallons/Foot			
Well Diameter (inches)	0.75	(2)	4	6
(F) - Gallons per foot of casing	0.02	0.16	0.65	1.47

Field Equipment: QED MULTIPARAMETER METER

Purge Method: QED SAMPLE PRO PNEUMATIC BLADDER PUMP

Well Condition: GOOD - LID NOT BOLTED.

Time	Casing/ Screen	Volume Purged ~~(gallons)~~ (Liters)	Flow Rate ~~(gpm)~~ (ml/min)	Water Level (ft-bmp)	pH	Temperature (°C)	Turbidity (NTU)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	ORP (mV)	Observations
9:54		0	250	<61.51	6.47	23.18	—	2.35	2.22	-170	
9:59		1.25	210	<61.51	6.35	21.35	—	3.27	0.74	-184	
10:04		2.30	210	<61.51	6.49	21.41	—	2.97	0.32	-207	
10:09		3.35	210	<61.51	6.51	21.38	—	2.94	0.20	-215	
10:12		4.0	210	<61.51	6.53	21.33	—	2.92	0.19	-217	

Purge Start Time	Purge End Time	Average Flow ~~(gpm)~~ (lpm)	Total ~~Gallons~~ (liters) Purged	Total Casing Volumes Purged	80% Recovery Water Level Depth (Dx0.20) + B	Water Level at Sampling Time (ft bmp)	Sample Collection Time	Sample Identification
9:54	10:12	220	4	N/A	—	<61.51	10:14	AW0077UB_WG20080130_01

Notes: FERROUS IRON = 1.66 mg/L

PID = 27.0 ppm

CHEMETRICS D.O. N/A mg/L at N/A (TIME)

BOE-C6-0056493

AVOCET ENVIRONMENTAL, INC.
16 Technology Drive, Suite 154
Irvine, California 92618-2327
TEL (949) 296-0977
FAX (949) 296-0978

Boeing CoC No. AVO20080130A

CHAIN OF CUSTODY RECORD

Project Information:

Site Name	Boeing Former C-6 Facility - Building 1/36
Site Address	Los Angeles, CA
Project No.	1155.002
Project Manager	Michael Rendina
Sampled By	Darren Brandner
Turn-Around-Time	Standart TAT, 48 hr holding time for NO_3

Analyses

Sample Identification	Sample Date	Sample Time	Matrix	No. of Cntnrs.	Lab I.D. Number	VOCs inc. fuel oxys (EPA 8260B)	TOC (EPA 9060)	VFA by IC Method 8M23G (Microseeps, Ing. Pittsburgh, PA)	Dissolved Gases (Ethane, Ethene, and Methane by RSK 175)	Dissolved Minerals (sulfate, Nitrate, nitrite, and chloride) by EPA Method 300	Total Alkalinity by EPA Method 310	Quantitative Polymerase Chain Reaction (qPCR) analysis for DHC 16S rRNA gene and functional genes tceA, bvcA, and vcrA (North Wind, Inc., Pocatello, ID)	Total Dissolved Solids (TDS) EPA160.1	Comments
TB_AV20080130_0001	-	-	Water	3		X								
EB_AV20080130_0001	01/30/08	930	Water	3		X								
AW0075UB_WG20080130_01	01/30/08	844	Water	12		X	X	X	X	X	X	X	X	
AW0076UB_WG20080130_01	01/30/08	1217	Water	12		X	X	X	X	X	X	X	X	
AW0077UB_WG20080130_01	01/30/08	1014	Water	12		X	X	X	X	X	X	X	X	

48HR HT for NO_3

Please forward VFA & qPCR analyses to identified laboratories ASAP.

Relinquished by		Company	Received by		Company
Printed Name: Darren Brandner	Date: 1/30/8	Avocet Environmental, Inc.	Printed Name: Hanafea El	Date: 1-30-08	5.5/4°C
Signature:	Time: 14:20		Signature:	Time: 1420	
Printed Name:	Date:		Printed Name:	Date:	
Signature:	Time:		Signature:	Time:	
Printed Name:	Date:		Printed Name:	Date:	
Signature:	Time:		Signature:	Time:	

Sample Receipt	Billing Information	Special Instructions
Total Containers		
Temperature °C °F	Bill To:	
COC Seal (Y/N/NA)		

S:\Projects\1155 Boeing Former C-6 Facility\Groundwater Monitoring\pre sampling info Jan 08 monitoring\COC_013008.xls

BOE-C6-0056494

AVOCET ENVIRONMENTAL, INC.
16 Technology Drive, Suite 154
Irvine, California 92618-2327
TEL (949) 296-0977
FAX (949) 296-0978

Sheet 1 of 1

Boeing CoC No. AVO20080129A

CHAIN OF CUSTODY RECORD

Project Information:

Site Name	Boeing Former C-6 Facility - Building 1/36
Site Address	Los Angeles, CA
Project No.	1155.002
Project Manager	Michael Rendina
Sampled By	Brian Barsumian
Turn-Around-Time	Standart TAT, 48 hr holding time for NO_3

Analyses

Sample Identification	Sample Date	Sample Time	Matrix	No. of Cntnrs.	Lab I.D. Number	VOCs inc. fuel oxys (EPA 8260B)	TOC (EPA 9060)	VFA by IC Method 8M23G (Microseeps, Ing. Pittsburgh, PA)	Dissolved Gases (Ethane, Ethene, and Methane by RSK 175)	Dissolved Minerals (sulfate, Nitrate, nitrite, and chloride) by EPA Method 300	Total Alkalinity by EPA Method 310	Quantitative Polymerase Chain Reaction (qPCR) analysis for DHC 16S rRNA gene and functional genes tceA, bvcA, and vcrA (North Wind, Inc., Pocatello, ID)	Total Dissolved Solids (TDS) EPA160.1								Comments
TB_AV20080129_0001	-	-	Water	3		X															
EB_AV20080129_0001	01/29/08	1441	Water	3		X															
AW0074UB_WG20080129_01	01/29/08	1017	Water	12		X	X	X	X	X	X	X	X								
~~AW0075UB_WG20080129_01~~	~~01/29/08~~		~~Water~~	~~12~~		~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	BB							
~~AW0076UB_WG20080129_01~~	~~01/29/08~~		~~Water~~	~~12~~		~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	BB							
~~AW0077UB_WG20080129_01~~	~~01/29/08~~		~~Water~~	~~12~~		~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	BB							
WCC_06S_WG20080129_01	01/29/08	0851	Water	12		X	X	X	X	X	X	X	X								
EWB002_WG20080129_01	01/29/08	1307	Water	12		X	X	X	X	X	X	X	X								
EWB002_WG20080129_02	01/29/08	1307	Water	3		X															
AW0073C_WG20080129_01	01/29/08	1153	Water	12		X	X	X	X	X	X	X	X								

48HR HT for NO_3

Please forward VFA & qPCR analyses to identified laboratories ASAP.

Relinquished by		Company	Received by		Company
Printed Name: Brian Barsumian	Date: 1/29/08	Avocet Environmental, Inc.	Printed Name: Darren Brandner	Date: 1/29/8	
Signature: Brian Barsumian	Time: 1457		Signature:	Time: 14:57	
Printed Name: Darren Brandner	Date: 1/29/8		Printed Name: Guillermo Rodriguez	Date: 1/29/08	
Signature:	Time: 15:12		Signature:	Time: 15:12	
Printed Name:	Date:		Printed Name:	Date:	
Signature:	Time:		Signature:	Time:	

Sample Receipt	Billing Information	Special Instructions
Total Containers		
Temperature °C °F	Bill To:	
COC Seal (Y/N/NA)		

S:\Projects\1155 Boeing Former C-6 Facility\Groundwater Monitoring\pre sampling info Jan 08 monitoring\COC_012908.xls

BOE-C6-0056495

AVOCET ENVIRONMENTAL, INC.

INSTRUMENT CALIBRATION SHEET

Project Name: Boeing Former C-6 January 2008 WDR	Project #: 1155.003

Date	Time	Instrument Type	Instrument Serial No.	Calibration Method	Calibrated by	Remarks
1/29/08	7:00	SOLINST	SOLINST #1	STEEL TAPE	BB	25.0 = 25.01
1/29/08	7:00	QED MP20D	MP20D-1	FACTORY	FACTORY	N/A
1/30/08	6:30	SOLINST	SOLINST #1	STEEL TAPE	DAB	25.0 = 25.02
1/30/08	6:40	QED MP20D	MP20D-1	FACTORY	FACTORY	N/A
1/30/08	7:00	MiniRAE PID	PID #1	100 ppm Isobutylene	DAB	100 PPM

S:\Projects\1146 Boeing C-1\005_Ground Water Monitoring\Field Forms\[Instrument Calibration Sheet.xls]Sheet1

AVOCET ENVIRONMENTAL, INC.

QA/QC SAMPLE IDENTIFICATION FORM

Project Name: BOEING FORMER C-6 - JANUARY 2008 WDR

Project No.: 1155.003

Date	Time	QA/QC Sample Type (Duplicate, Field Blank, Equipment Blank, Split)	Sample ID	Sample Location	Primary Sample Reference	Analytical Methods	Organic-Free Water Source	Field Personnel	Comments
1/29/08	—	TRIP BLANK	TB_AV20080129_0001	C-6	N/A	8260	TEST AMERICA	BB	—
1/29/08	14:41	EQUIP. BLANK	EB_AV20080129_0001	C-6	N/A	8260	TEST AMERICA	BB	Collected after EWB002 AFTER DECON.
1/29/08	13:07	DUPLICATE	EWB002_WG20080129_02	C-6	EWB002_WG20080129_01	8260	N/A	BB	—
1/30/08	—	TRIP BLANK	TB_AV20080130_0001	C-6	N/A	8260	TEST AMERICA	DAB	—
1/30/08	9:30	EQUIP. BLANK	EB_AV20080130_0001	C-6	N/A	8260	TEST AMERICA	DAB	Collected after AW0075UB BEFORE AW0077UB

BOE-C6-0056497