

Memo
August 10, 2012
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Bosair, LLC, dated December 6, 2011, requesting additional investigation at the FFF to further evaluate subsurface conditions.

AMEC prepared a Work Plan addendum in January 2012 to address Ecology's comments (AMEC, 2012). This memorandum summarizes the results of the additional investigation conducted to implement the Work Plan addendum.

2.0 OBJECTIVES AND SCOPE

The objective of the additional investigation was to assess subsurface conditions at selected locations where elevated photoionization detector (PID) readings were noted at depth during the sampling conducted in May and June 2011.

During the additional investigation, subsurface samples were collected from push-probe borings at seven locations where samples collected during the May/June 2011 investigation exhibited elevated PID readings: PP401, PP405, PP420, PP211, PP213, PP216, and PP217 (Figure 2). The investigation in May/June 2011 included collecting soil samples from the vadose zone extending 3-10 feet below the ground surface (bgs) and from the saturated zone at approximately 12 ft bgs. Headspace measurements were taken in the field using a PID calibrated with 100 parts per million (ppm) by volume isobutylene. Elevated PID readings ranging from 446 to 3,189 ppm were identified in soil samples collected from the seven push-probe locations in 2011.

The additional investigation outlined in the Work Plan addendum and reported in this memorandum consisted of:

- Advancing push probe borings at the seven sampling locations that had elevated PID readings in May/June 2011 (PP401, PP405, PP420, PP211, PP213, PP216, and PP217).
- Performing headspace screening at depths from approximately 10 feet bgs to a maximum of 20 feet bgs at 2-foot intervals (10, 12, 14 feet bgs, etc.).
- Collecting a soil sample from the interval with the highest measured PID screening result at each boring.
- Collecting a second soil sample from the borings if the PID reading for the first sample was greater than 400 ppm. The second soil sample was to be collected from the next depth interval below the primary sample depth and where the PID reading was less than 400 ppm.
- Analyzing the collected soil samples for the analytes listed below in Section 3.0.

3.0 SAMPLING AND ANALYSIS

This section describes field activities associated with soil sampling. The soil sampling was conducted on May 22 and May 31, 2012.

Cascade advanced a total of seven direct-push probes during the investigation, each to a total depth of 20 feet bgs. All push probes were advanced at the same locations where borings PP401, PP405, PP420, PP211, PP213, PP216, and PP217 were placed in earlier investigations. Locations of the push-probe borings are shown on Figure 1. Copies of the lithologic boring logs are provided in Attachment 1.

AMEC staff logged each boring continuously for lithology and field-screened soil at 1- to 2-foot intervals using PID testing of headspace. The PID testing results are presented in Table 1 and on the boring logs provided in Attachment 1. One to two soil samples were then collected from each boring for laboratory analysis in general accordance with the Work Plan addendum dated January 23, 2012, with the following exceptions:

- PID readings were collected from 1-foot intervals, starting from 1 foot bgs, rather than every 2 feet starting at 10 feet bgs.
- The highest PID reading from the PP213 boring was 1,713 ppm at 15 feet bgs. According to the Work Plan, a sample should have been collected at 15 feet bgs and a second sample at 17 feet bgs. The samples collected from this boring are from 14 and 16 feet bgs.
- The highest PID reading from the PP401 boring (1,670 ppm) was at 14 feet bgs. The second sample collected from this boring was collected from 16 feet bgs, and had a PID reading above 400 ppm.
- The highest PID reading from the PP405 boring (117 ppm) was at a depth of 12 feet bgs. An extra soil sample was collected from this boring for chemical analysis at a depth of 14 feet bgs.
- The highest PID reading from the PP420 boring (754 ppm) was at a depth of 13 feet bgs. Soil samples were collected for chemical analysis at depths of 10 and 13 feet bgs; no sample was collected below 13 feet in depth.

Soil samples were collected as described above and in accordance with the Ecology-approved *Remedial Investigation Work Plan* (Weston, 1998 and as amended) for the Boeing Renton Facility, which specifies field methods for sample collection, sample designation, equipment decontamination, and documentation. Samples were collected directly from the liner of the direct-push probe using laboratory-provided disposable sampling equipment and stainless steel spoons.

The soil samples were analyzed for the same COCs analyzed for in the 2011 investigation:

- Total petroleum hydrocarbons (TPH) as jet fuel A (TPH-Jet A),
- TPH as diesel (TPH-D),
- Benzene, toluene, ethylbenzene, and xylenes (BTEX), and
- 2-methylnaphthalene.

Soil samples also were analyzed for TPH as volatile petroleum hydrocarbon (VPH) and extractable petroleum hydrocarbon (EPH) fractions using Ecology methodology. Lancaster Laboratories, Inc., of Lancaster, Pennsylvania performed the analyses. Analytical data and a summary data quality review memorandum are provided in Attachment 2.

4.0 RESULTS

Table 2 presents soil analytical data for the 2012 additional investigation and compares the data to the cleanup levels presented in the *Draft Final Cleanup Action Plan* (AMEC, 2010). These results are shown on Figure 2 together with soil analytical results from previous investigations. As discussed below, samples collected from two borehole locations in the 2012 investigation exceeded cleanup

levels; one sample from PP401 and one from PP217. All other soil samples collected during the 2012 investigation were below cleanup levels.

The concentration of m,p-xylene in the soil sample collected at 14 feet bgs in the PP401 boring was 9,700 micrograms per kilogram ($\mu\text{g}/\text{kg}$), which slightly exceeded the cleanup level of 9,000 $\mu\text{g}/\text{kg}$. The second sample from PP401, collected from a depth of 16 feet and with a PID reading of 783 ppm, was below the cleanup levels for all COCs.

The TPH-diesel and TPH-Jet A concentrations measured in the sample collected at 12 feet bgs in boring PP217 were 2,200 and 3,600 $\mu\text{g}/\text{kg}$, respectively, which exceeded the cleanup level of 2,000 mg/kg . The sample collected from this boring at a depth of 16 feet bgs was below the cleanup levels for all COCs.

The highest PID readings were observed in PP213 at depths ranging from 13 to 16 feet bgs. Two soil samples were collected from PP213, at depths of 14 and 16 feet bgs, with PID readings ranging from about 1,500 to about 1,700 ppm (Table 1). Given the typical variation observed for PID readings, these results indicate generally consistent soil conditions. As shown on Table 2, both soil samples collected at PP213 were below cleanup levels for all COCs. The results for VPH indicate that volatile aliphatic compounds were present in the 14-foot bgs sample depth, likely accounting for the PID readings observed in this borehole.

5.0 HISTORICAL SOIL SAMPLE ANALYTICAL RESULTS

Figure 2 shows analytical results for soil samples collected during the 2012 investigation, together with results from previous investigations conducted in 2003 and 2011. During May and June 2011, soil samples were collected at 17 push-probe locations, including PP401 and PP217. Boring locations and the soil sampling results are presented in Table 3 and on Figure 2. Soil samples were also collected from PP401, PP405, PP420, PP427, and PP430 in June 2003 as part of quarterly sampling, and these results are also presented in Table 3 and on Figure 2. Concentrations of TPH-D, TPH-Jet-A, and benzene have attenuated significantly (by up to two orders of magnitude) from 2003 to 2011 at all locations sampled in 2003, except PP401. However, all constituents at PP401 (with the exception of the slight exceedance of m,p-xylene) are below cleanup levels. The significant reduction of TPH and benzene constituents throughout the FFF area can be interpreted as evidence for robust attenuation of COCs in subsurface soils.

6.0 CONCLUSIONS

As described in Section 4.0, three COCs were detected above their respective cleanup levels in two soil samples from PP401 and PP217. TPH-D, TPH-Jet-A, and m,p-xylene were detected above cleanup levels in soil samples collected below the water table at two push-probe locations. These borholes are located within the known source area. No other analyte was detected above the cleanup levels. A comparison of soil analytical data collected above the water table in 2003 and 2011 suggests significant attenuation of COCs, with decreases of up to two orders of magnitude in measured soil concentrations within the source areas. Boeing will proceed with the preferred cleanup alternative detailed for the FFF in the Draft Final Cleanup Action Plan; these soil analytical results will be reviewed with the City of Renton in conjunction with the planned redevelopment activities.

7.0 REFERENCES

- AMEC Environment & Infrastructure, Inc. (AMEC), 2012, Former Fuel Farm Cleanup Action Work Plan Additional Investigation Addendum, Boeing Renton Facility, Renton, Washington, January 23.
- AMEC Geomatrix, Inc. (AMEC Geomatrix), 2010, Draft Final Cleanup Action Plan, Boeing Renton Facility, Renton, Washington: Submitted to the Boeing Company, October.
- AMEC Geomatrix, 2011a, Former Fuel Farm Cleanup Action Work Plan, Boeing Renton Facility, Renton, Washington: Submitted to the Boeing Company, May.
- AMEC Geomatrix, 2011b, Former Fuel Farm Cleanup Action Investigation Summary, Boeing Renton Facility, Renton, Washington: Submitted to the Boeing Company, July.
- Bosair, LLC, (Bosair), 2011, Letter from Kurt Boswell (Bosair) to Byung Maeng (Ecology), Hanger Construction at the Former Fuel Farm in the Renton Municipal Airport, November 16.
- Roy F. Weston, Inc. (Weston), 1998, Remedial Investigation Work Plan, Boeing Renton Plant, Renton, Washington.
- Washington State Department of Ecology (Ecology), 2011, Letter from Byung Maeng (Ecology) to Kurt Boswell (Bosair), Re: Hangar Construction at the Former Fuel Farm in the Renton Municipal Airport, December 6.

Attachments: Table 1	Summary of PID Readings
Table 2	May 2012 Soil Analytical Results
Table 3	Historical Soil Analytical Results
Figure 1	Former Fuel Farm Site Map
Figure 2	Summary of 2011 and 2012 Soil Analytical Results, Former Fuel Farm
Attachment 1	Boring Logs
Attachment 2	Data Validation Memo and Laboratory Report

TABLE 1**SUMMARY OF PID READINGS^{1, 2}**

Former Fuel Farm
Boeing Renton Facility
Renton, Washington

Boring	Depth (ft bgs)	PID Reading (ppm)	Analytical Sample Identification No.
PP211	1	0.4	NS
	2	0.4	NS
	4	0.2	NS
	5.5	0.3	NS
	7	0.3	NS
	8	0.4	NS
	10	5.8	RI-SB01-PP211-10
	16	0.7	NS
	18	0.9	NS
	20	--	NS
PP213	1	0.6	NS
	2	0.3	NS
	5	0.3	NS
	6	0.1	NS
	7	0.2	NS
	8	0.4	NS
	10	0.3	NS
	11	1.5	NS
	12	2.0	NS
	13	1674	NS
	14	1542	RI-SB01-PP213-14
	15	1713	NS
	16	1655	RI-SB01-PP213-16
	17	273	NS
	18	7.3	NS
	19	3.8	NS
20	--	NS	

TABLE 1**SUMMARY OF PID READINGS^{1, 2}**

Former Fuel Farm
Boeing Renton Facility
Renton, Washington

Boring	Depth (ft bgs)	PID Reading (ppm)	Analytical Sample Identification No.
PP216	1	3.4	NS
	4	2.3	NS
	5	0.9	NS
	6	0.9	NS
	8	0.5	NS
	10	0.2	NS
	12	0.7	NS
	13	0.0	NS
	14	9.7	RI-SB01-PP216-14
	16	0.6	NS
	18	0.3	NS
	20	--	NS
PP217	1	0.7	NS
	2	0.5	NS
	3	0.5	NS
	5	0.9	NS
	6	0.5	NS
	7	0.4	NS
	8	11.3	NS
	10	0.4	NS
	11	266	NS
	12	663	RI-SB01-PP217-12
	15	609	NS
	16	342	RI-SB01-PP217-16
	17	173	NS
	18	155	NS
20	--	NS	

TABLE 1**SUMMARY OF PID READINGS^{1, 2}**

Former Fuel Farm
Boeing Renton Facility
Renton, Washington

Boring	Depth (ft bgs)	PID Reading (ppm)	Analytical Sample Identification No.
PP401	1.5	0.3	NS
	4	0.4	NS
	6	0.3	NS
	8	0.7	NS
	9.5	19.4	NS
	10	6.8	NS
	12	212	NS
	13	344	NS
	14	1670	RI-SB23-PP401-14
	15.75	73.9	NS
	16	783	RI-SB23-PP401-16
	18	485	NS
	20	--	NS
PP405	2	0.0	NS
	3.5	0.0	NS
	5	0.1	NS
	6	0	NS
	7	0.2	NS
	9	0.2	NS
	10	0	NS
	10.5	54.8	NS
	12	117	RI-SB23-PP405-12
	13.5	0.3	NS
	14	60.1	RI-SB23-PP405-14
	16	2.4	NS
	18	2.0	NS
	19.5	0.8	NS

TABLE 1

SUMMARY OF PID READINGS^{1, 2}

Former Fuel Farm
Boeing Renton Facility
Renton, Washington

Boring	Depth (ft bgs)	PID Reading (ppm)	Analytical Sample Identification No.
PP420	2	0.1	NS
	4	0.3	NS
	6	0.4	NS
	8	0.4	NS
	9.5	365	RI-SB23-PP420-10
	12	325	NS
	13	754	RI-SB23-PP420-13
	14	737	NS
	15	4.8-14.2	NS
	16	163	NS
	18	8.0	NS
	20	1.6	NS

Notes

1. All PID readings collected using a Photovac 2020 Pro Plus calibrated daily to 100 ppmv isobutylene gas.
2. All PID readings collected from headspace in ziploc bags filled with soil from the corresponding depth interval after a 5-minute waiting period.

Abbreviations

ft bgs = feet below ground surface
NS = not sampled
ppm = parts per million
ppmv = parts per million by volume
PID = photoionization detector

TABLE 2

MAY 2012 SOIL ANALYTICAL RESULTS ^{1,2}

Former Fuel Farm
Boeing Renton Facility
Renton, Washington

Location	PP401		PP405		PP420		PP211	PP213		PP216		PP217		MTCA Method A Industrial	MTCA Method A Unrestricted	Cleanup Level ⁴	
	Sample ID	RI-SB23-PP401-14	RI-SB23-PP401-16	RI-SB23-PP405-12	RI-SB23-PP405-14	RI-SB23-PP420-10	RI-SB23-PP420-13	RI-SB01-PP211-10	RI-SB01-PP213-14	RI-SB01-PP213-16	RI-SB01-PP216-14	RI-SB01-PP216-9-14	RI-SB01-PP217-12				RI-SB01-PP217-16
Sample Date	5/22/2012	5/22/2012	5/22/2012	5/22/2012	5/22/2012	5/22/2012	5/22/2012	5/31/2012	5/31/2012	5/22/2012	5/22/2012	5/31/2012	5/31/2012				
Depth (ft bgs)	14	16	12	14	10	13	10	14	16	14	14 (duplicate)	12	16				
Analyte	PID Reading ³	1670	783	117	60.1	365	754	5.8	1542	1655	9.7	9.7	663	342			
TPH (mg/kg)																	
Diesel Range Hydrocarbons		130	36	22	16	330	510 J	20 J	8.7 U	8.4 U	8 U	7.4 U	2,200 J	450	2,000	2,000	2,000
Jet-A		150	51	34	28	480	890 J	9.1 U	31	8.4 U	8 U	7.4 U	3,600 J	650	2,000	2,000	2,000
BTEX (µg/kg)																	
Benzene		420 U	86 U	85 U	8	90 U	98 U	0.8 U	230 U	0.6 U	0.5 U	0.8	35 U	39 U	30	30	12
Ethylbenzene		2,100 U	430 U	420 U	4 U	450 U	490 U	4 U	1,200 U	3 U	2 U	2 U	170 U	200 U	6,000	6,000	--
m,p-Xylene		9,700	430 U	420 U	4 U	450 U	490 U	4 U	1,200 U	3 U	2 U	2 U	170 U	200 U	--	--	9,000 ⁵
o-Xylene		2,100 U	430 U	420 U	4 U	450 U	490 U	4 U	1,200 U	3 U	2 U	2 U	170 U	200 U	--	--	--
Toluene		2,100 U	430 U	420 U	4 U	450 U	490 U	4 U	1,200 U	3 U	2 U	2 U	170 U	200 U	7,000	7,000	--
EPH (µg/kg)																	
C10-C12 Aliphatics		89,000	20,000	650,000	450,000	6,000 U	1,500,000	6,600 U	6,200 U	6,000 U	5,700 U	5,300 U	980,000	22,000	--	--	--
C12-C16 Aliphatics		270,000	58,000	620,000	470,000	16,000	1,500,000	6,600 U	6,200 U	6,000 U	5,700 U	5,300 U	1,900,000	110,000	--	--	--
C16-C21 Aliphatics		40,000	11,000	33,000 U	36,000	11,000	140,000 U	16,000	6,200 U	6,000 U	5,700 U	5,300 U	150,000 U	17,000	--	--	--
C21-C34 Aliphatics		13,000	12,000 U	65,000 U	23,000	100,000	290,000 U	62,000	12,000 U	12,000 U	11,000 U	11,000 U	310,000 U	12,000 U	--	--	--
C10-C12 Aromatics		6,500	6,000 U	70,000	34,000	6,000 U	85,000	6,600 U	6,200 U	6,000 U	5,700 U	5,300 U	32,000	6,000 U	--	--	--
C12-C16 Aromatics		50,000	14,000	210,000	110,000	6,000 U	330,000	6,600 U	6,200 U	6,000 U	5,700 U	5,300 U	170,000	7,000	--	--	--
C16-C21 Aromatics		17,000	6,000 U	31,000	19,000	6,000 U	58,000	11,000	6,200 U	6,000 U	5,700 U	5,300 U	55,000	7,200	--	--	--
C21-C34 Aromatics		8,200	6,000 U	11,000	9,800	48,000	27,000	49,000	6,200 U	6,000 U	5,700 U	5,300 U	22,000	6,000 U	--	--	--
VPH (µg/kg)																	
Benzene		1,080 UJ	1,120 U	549 U	1,520 U	825 U	776 UJ	1,240 U	4,400 U	413 U	802 U	826 U	448 U	428 U	--	--	--
C5-C6 Aliphatics		10,800 UJ	11,200 U	5,490 U	15,200 U	8,250 U	7,760 UJ	12,400 UJ	44,000 U	4,130 U	8,020 U	8,260 U	4,480 U	4,280 U	--	--	--
C6-C8 Aliphatics		847,000 J	176,000 J	5,490 U	15,200 U	24,700	299,000 J	12,400 UJ	2,200,000	4,130 U	22,600	20,500	4,480 U	8,080	--	--	--
C8-C10 Aliphatics		377,000 J	17,900 J	5,490 U	15,200 U	643,000	1,290,000 J	12,400 U	406,000	4,130 U	8,510	8,850	42,100	125,000	--	--	--
C8-C10 Aromatics		192,000 J	11,200 U	5,490 U	15,200 U	309,000	887,000 J	12,400 U	161,000	4,130 U	8,020 U	8,260 U	29,100	94,700	--	--	--
Ethylbenzene		1,080 UJ	1,120 U	549 U	1,520 U	4,480	8,630 J	1,240 U	4,400 U	413 U	802 U	826 U	559	1,760	--	--	--
m,p-Xylene		3,760 J	2,240 U	1,100 U	3,030 U	1,650 U	1,550 UJ	2,470 U	8,810 U	827 U	1,600 U	1,650 U	897 U	857 U	--	--	--
Methyl tert-Butyl Ether		1,080 UJ	1,120 U	549 U	1,520 U	825 U	776 UJ	1,240 U	4,400 U	413 U	802 U	826 U	448 U	428 U	--	--	--
o-Xylene		1,530 J	1,120 U	549 U	1,520 U	1,680	3,680 J	1,240 U	4,400 U	413 U	802 U	826 U	568	2,520	--	--	--
Toluene		1,080 UJ	1,120 U	549 U	1,520 U	825 U	5,260 J	1,240 U	4,400 U	413 U	802 U	826 U	448 U	537	--	--	--
SVOCs (µg/kg)																	
2-Methylnaphthalene		19,000	2,100	1,100	600	21 U	19 U	22 U	46	110	35 J	79 J	760	370	--	--	45,800

Notes

- Laboratory data flags are as follows:
J = Value shown is an estimated concentration.
U = Analyte not detected at reporting limit given.
UJ = Analyte not detected. Value shown is estimated laboratory reporting limit.
-- = not established.
- Results presented in **bold** indicate value exceeds cleanup level from the DCAP (AMEC Geomatrix, 2010).
- PID results are presented in parts per million (ppm).
- Cleanup level is the cleanup level agreed upon with Ecology and presented in the DCAP.
- Value presented is for total xylenes.

Abbreviations

µg/kg = micrograms per kilogram
BTEX = benzene, toluene, ethylbenzene, xylenes
DCAP = Draft Final Cleanup Action Plan
EPH = extractable petroleum hydrocarbons
ft bgs = feet below ground surface
mg/kg = milligrams per kilogram

MTCA = Model Toxics Control Act
PID = photoionization detector
ppm = parts per million
SVOCs = semivolatle organic compounds
TPH = total petroleum hydrocarbons
VPH = volatile petroleum hydrocarbons

TABLE 3
HISTORICAL SOIL ANALYTICAL RESULTS^{1,2}
Former Fuel Farm
Boeing Renton Facility
Renton, Washington

Location Sample ID Sample Date Constituent Depth (ft bgs)	PP401			PP405			PP420	PP420 (field dup)	PP420		MTCA Method A Industrial	MTCA Method A Residential	Cleanup Level ³
	I-SB21-PP401-0100	RI-SB22-PP401-0030	RI-SB22-PP401-0100	I-SB21-PP405-0100	RI-SB22-PP405-0030	RI-SB22-PP405-0090	I-SB21-PP420-0100	I-SB21-PP420-1100	RI-SB22-PP420-0030	RI-SB22-PP420-0090			
	6/17/2003	5/26/2011	5/26/2011	6/17/2003	5/27/2011	5/27/2011	6/17/2003	6/17/2003	5/27/2011	5/27/2011			
	10	3	10	10	3	9	10	10	3	9			
TPH (mg/kg)													
Diesel range	120	240	580	3,800	5.3 U	5.5 U	1,500	2,400	5.4 U	1100	2,000	2,000	2,000
Motor oil	56	NA	NA	140	NA	NA	76	140	NA	NA	2,000	2,000	2,000
Jet A	94	120 U	210	6,400	5.3 U	5.5 U	2,400	4,100	5.4 U	1300	2,000	2,000	2,000
BTEX (µg/kg)													
Benzene	29 U	5.4	1.9	35 U	1.1 U	0.9 U	29 U	29 U	1.2 U	58 U	30	30	12
Ethylbenzene	51	1.8	1 U	1,100	1.1 U	0.9 U	1,200	1,200	1.2 U	94	6,000	6,000	--
m,p-Xylene	57 U	9.5	2.2	110	1.1 U	0.9 U	100	100	1.2 U	190	--	--	9,000 ⁴
o-Xylene	100	1.8	1 U	1,100	1.1 U	0.9 U	1,300	1,200	1.2 U	58 U	--	--	--
Toluene	29 U	1.2 U	1 U	77	1.1 U	0.9 U	150	160	1.2 U	58 U	7,000	7,000	--
EPH (µg/kg)													
C8-C10 Aliphatics	7,200	2,300 U	2,500 U	560,000	2,200 U	2,200 U	230,000	450,000	2,200 U	44,000	--	--	--
C8-C10 Aromatics	4,300 U	2,300 U	2,500 U	23,000	2,200 U	2,200 U	12,000 U	11,000 U	2,200 U	2,300 U	--	--	--
C10-C12 Aliphatics	10,000	2,300 U	3,900	1,600,000	2,200 U	2,200 U	600,000	1,400,000	2,200 U	340,000	--	--	--
C10-C12 Aromatics	4,300 U	2,300 U	2,500 U	360,000	2,200 U	2,200 U	91,000	220,000	2,200 U	19,000	--	--	--
C12-C16 Aliphatics	23,000	8,000	61,000	1,500,000	2,200 U	2,200 U	620,000	1,100,000	2,200 U	440,000	--	--	--
C12-C16 Aromatics	4,300 U	2,300 U	3,900	740,000	2,200 U	2,200 U	240,000	460,000	2,200 U	81,000	--	--	--
C16-C21 Aliphatics	10,000	37,000	100,000	140,000	2,200 U	2,200 U	64,000	99,000	2,200 U	42,000	--	--	--
C16-C21 Aromatics	4,300 U	14,000	35,000	60,000	2,200 U	2,200 U	36,000	81,000	2,200 U	31,000	--	--	--
C21-C34 Aliphatics	13,000	160,000	160,000	110,000	2,200 U	2,200 U	57,000	87,000	2,200 U	21,000	--	--	--
C21-C34 Aromatics	4,300 U	86,000	100,000	21,000 U	2,200 U	2,200 U	12,000 U	55,000	2,200 U	3,700	--	--	--
VPH (µg/kg)													
C5-C6 Aliphatics	5,000 U	12,000 U	12,000 U	5,000 U	8,800 U	8,300 U	5,000 U	5,000 U	12,000 U	11,000 U	--	--	--
C6-C8 Aliphatics	15,000	12,000 U	12,000 U	5,000 U	8,800 U	8,300 U	220,000	110,000	12,000 U	11,000 U	--	--	--
C8-C10 Aliphatics	13,000	12,000 U	12,000 U	5,000 U	8,800 U	8,300 U	190,000	71,000	12,000 U	11,000 U	--	--	--
C8-C10 Aromatics	140,000	12,000 U	12,000 U	5,000 U	8,800 U	8,300 U	830,000	390,000	12,000 U	36,000	--	--	--
C10-C12 Aliphatics	330,000	12,000 U	12,000 U	7,600	8,800 U	8,300 U	1,500,000	760,000	12,000 U	11,000 U	--	--	--
C10-C12 Aromatics	330,000	12,000 U	26,000	7,200	8,800 U	8,300 U	1,500,000	770,000	12,000 U	240,000	--	--	--
C12-C13 Aromatics	280,000	12,000 U	36,000	14,000	8,800 U	8,300 U	960,000	480,000	12,000 U	150,000	--	--	--
Benzene	150	1,200 U	1,200 U	11 U	880 U	830 U	490	84	1,200 U	1,100 U	30	30	12
Ethylbenzene	500 U	1,200 U	1,200 U	5,000 U	880 U	830 U	1,200	520	1,200 U	1,100 U	6,000	6,000	--
m,p-Xylene	2,600	2,400 U	2,500 U	5,000 U	1,800 U	1,700 U	7,800	3,600	2,400 U	2,200 U	--	--	9,000 ⁴
Methyl tert-Butyl Ether	120 U	1,200 U	1,200 U	56 U	880 U	830 U	120 U	120 U	1,200 U	1,100 U	--	--	--
n-Decane	NA	1,200 U	1,200 U	NA	880 U	830 U	NA	NA	1,200 U	1,200	--	--	--
n-Dodecane	NA	1,200 U	2,300	NA	880 U	830 U	NA	NA	1,200 U	16,000	--	--	--
n-Hexane	NA	1,200 U	1,200 U	NA	880 U	830 U	NA	NA	1,200 U	1,100 U	--	--	--
n-Octane	NA	1,200 U	1,200 U	NA	880 U	830 U	NA	NA	1,200 U	1,100 U	--	--	--
n-Pentane	NA	1,200 U	1,200 U	NA	880 U	830 U	NA	NA	1,200 U	1,100 U	--	--	--
o-Xylene	700	1,200 U	1,200 U	5,000 U	880 U	830 U	7,100	3,400	1,200 U	1,100 U	--	--	--
Toluene	500 U	1,200 U	1,200 U	5,000 U	880 U	830 U	730	500 U	1,200 U	1,100 U	7,000	7,000	--
SVOCs (µg/kg)													
2-Methylnaphthalene	86	64 UJ	300 J	8,300	59 UJ	56 UJ	140	400	59 UJ	3,100 J	--	--	45,800

TABLE 3
HISTORICAL SOIL ANALYTICAL RESULTS^{1,2}
Former Fuel Farm
Boeing Renton Facility
Renton, Washington

Location Sample ID Sample Date Constituent Depth (ft bgs)	PP427			PP430			PP210		PP211		PP212		MTCA Method A Industrial	MTCA Method A Residential	Cleanup Level ³
	I-SB21-PP427-0100 6/17/2003 10	RI-SB22-PP427-0030 5/26/2011 3	RI-SB22-PP427-0100 5/26/2011 10	I-SB21-PP430-0100 6/17/2003 10	RI-SB22-PP430-0030 5/26/2011 3	RI-SB22-PP430-0100 5/26/2011 10	RI-SB-PP210-0030 5/27/2011 3	RI-SB-PP210-0100 5/27/2011 10	RI-SB-PP211-0030 5/26/2011 3	RI-SB-PP211-0100 5/26/2011 10	RI-SB-PP212-0030 5/26/2011 3	RI-SB-PP212-0100 5/26/2011 10			
TPH (mg/kg)															
Diesel range	1,900	12	240	2,900	29	60	21	23	32	530	14	35	2,000	2,000	2,000
Motor oil	85 J	NA	NA	30 J	NA	NA							2,000	2,000	2,000
Jet A	1,400	11 U	80	2,400	11 U	110 U	6.2	5.5 U	12 U	250 U	11 U	12 U	2,000	2,000	2,000
BTEX (µg/kg)															
Benzene	29 U	0.9 U	1.9	18 U	1.2 U	1 U	1.2 U	1.1 U	1.4 U	4.2	13	1.5	30	30	12
Ethylbenzene	29 U	0.9 U	1.4 U	79	1.2 U	1 U	1.2 U	1.1 U	1.4 U	1.1 U	1 U	1.3 U	6,000	6,000	--
m,p-Xylene	58 U	0.9 U	3.7	35 U	1.2 U	1 U	1.2 U	1.1 U	1.4 U	2.9	1 U	1.3 U	--	--	9,000 ⁴
o-Xylene	76	0.9 U	1.4 U	75	1.2 U	1 U	1.2 U	1.1 U	1.4 U	1.1 U	1 U	1.3 U	--	--	--
Toluene	29 U	0.9 U	3.2	18 U	1.2 U	1 U	1.2 U	1.1 U	1.4 U	1.2	3.3	1.3 U	7,000	7,000	--
EPH (µg/kg)															
C8-C10 Aliphatics	37,000	2,300 U	3,200 U	39,000	2,200 U	2,200 U	2,400 U	2,300 U	2,300 U	4,200	2,300 U	2,500 U	--	--	--
C8-C10 Aromatics	4,100 U	2,300 U	3,200 U	4,000 U	2,200 U	2,200 U	2,400 U	2,300 U	2,300 U	2,500 U	2,300 U	2,500 U	--	--	--
C10-C12 Aliphatics	150,000	2,300 U	5,000	150,000	2,200 U	2,200 U	2,400 U	2,300 U	2,300 U	6,200	2,300 U	2,500 U	--	--	--
C10-C12 Aromatics	4,100 U	2,300 U	3,200 U	4,400	2,200 U	2,200 U	2,400 U	2,300 U	2,300 U	2,500 U	2,300 U	2,500 U	--	--	--
C12-C16 Aliphatics	920,000	2,300 U	8,200	710,000	2,200 U	2,400	2,400 U	2,300 U	2,300 U	60,000	2,300 U	2,500 U	--	--	--
C12-C16 Aromatics	26,000	2,300 U	4,000	87,000	2,200 U	2,200 U	2,400 U	2,300 U	2,300 U	2,800	2,300 U	2,500 U	--	--	--
C16-C21 Aliphatics	960,000	2,300 U	13,000	400,000	2,200 U	5,400	2,400 U	2,300 U	2,900	140,000	2,300 U	6,200	--	--	--
C16-C21 Aromatics	170,000	2,300 U	17,000	390,000	2,200 U	6,100	2,400 U	2,300 U	2,300 U	17,000	2,300 U	2,500 U	--	--	--
C21-C34 Aliphatics	170,000	2,300 U	150,000	44,000	2,200 U	64,000	2,400 U	5,600	5,700	490,000	2,300 U	36,000	--	--	--
C21-C34 Aromatics	41,000	2,300 U	96,000	4,000 U	2,200 U	51,000	2,400 U	2,300 U	2,800	72,000	2,300 U	2,500 U	--	--	--
VPH (µg/kg)															
C5-C6 Aliphatics	5,000 U	9,700 U	19,000 U	5,000 U	14,000 U	10,000 U	11,000 U	9,100 U	11,000 U	13,000 U	10,000 U	12,000 U	--	--	--
C6-C8 Aliphatics	12,000	9,700 U	19,000 U	30,000	14,000 U	10,000 U	11,000 U	9,100 U	11,000 U	13,000 U	10,000 U	12,000 U	--	--	--
C8-C10 Aliphatics	5,000 U	9,700 U	19,000 U	16,000	14,000 U	10,000 U	11,000 U	9,100 U	11,000 U	13,000 U	10,000 U	12,000 U	--	--	--
C8-C10 Aromatics	40,000	9,700 U	19,000 U	94,000	14,000 U	10,000 U	11,000 U	9,100 U	11,000 U	13,000 U	10,000 U	12,000 U	--	--	--
C10-C12 Aliphatics	100,000	9,700 U	19,000 U	200,000	14,000 U	10,000 U	11,000 U	9,100 U	11,000 U	13,000 U	10,000 U	12,000 U	--	--	--
C10-C12 Aromatics	130,000	9,700 U	19,000 U	220,000	14,000 U	10,000 U	11,000 U	9,100 U	11,000 U	13,000 U	10,000 U	12,000 U	--	--	--
C12-C13 Aromatics	160,000	9,700 U	19,000 U	290,000	14,000 U	10,000 U	11,000 U	9,100 U	11,000 U	13,000 U	10,000 U	12,000 U	--	--	--
Benzene	23 U	970 U	1,900 U	130	1,400 U	1,000 U	1,100 U	910 U	1,100 U	1,300 U	1,000 U	1,200 U	30	30	12
Ethylbenzene	500 U	970 U	1,900 U	500 U	1,400 U	1,000 U	1,100 U	910 U	1,100 U	1,300 U	1,000 U	1,200 U	6,000	6,000	--
m,p-Xylene	500 U	1,900 U	3,800 U	890	2,700 U	2,000 U	2,300 U	1,800 U	2,200 U	2,700 U	2,100 U	2,400 U	--	--	9,000 ⁴
Methyl tert-Butyl Ether	110 U	970 U	1,900 U	130 U	1,400 U	1,000 U	1,100 U	910 U	1,100 U	1,300 U	1,000 U	1,200 U	--	--	--
n-Decane	NA	970 U	1,900 U	NA	1,400 U	1,000 U	1,100 U	910 U	1,100 U	1,300 U	1,000 U	1,200 U	--	--	--
n-Dodecane	NA	970 U	1,900 U	NA	1,400 U	1,000 U	1,100 U	910 U	1,100 U	1,300 U	1,000 U	1,200 U	--	--	--
n-Hexane	NA	970 U	1,900 U	NA	1,400 U	1,000 U	1,100 U	910 U	1,100 U	1,300 U	1,000 U	1,200 U	--	--	--
n-Octane	NA	970 U	1,900 U	NA	1,400 U	1,000 U	1,100 U	910 U	1,100 U	1,300 U	1,000 U	1,200 U	--	--	--
n-Pentane	NA	970 U	1,900 U	NA	1,400 U	1,000 U	1,100 U	910 U	1,100 U	1,300 U	1,000 U	1,200 U	--	--	--
o-Xylene	500 U	970 U	1,900 U	940	1,400 U	1,000 U	1,100 U	910 U	1,100 U	1,300 U	1,000 U	1,200 U	--	--	--
Toluene	500 U	970 U	1,900 U	500 U	1,400 U	1,000 U	1,100 U	910 U	1,100 U	1,300 U	1,000 U	1,200 U	7,000	7,000	--
SVOCs (µg/kg)															
2-Methylnaphthalene	69	63 UJ	62 UJ	30 U	61 UJ	61 UJ	64 UJ	61 UJ	64 UJ	210 J	63 UJ	61 UJ	--	--	45,800

TABLE 3
HISTORICAL SOIL ANALYTICAL RESULTS^{1,2}
Former Fuel Farm
Boeing Renton Facility
Renton, Washington

Location Sample ID Sample Date Constituent Depth (ft bgs)	PP213		PP214		PP215		PP216		PP217		PP218		MTCA Method A Industrial	MTCA Method A Residential	Cleanup Level ³
	RI-SB-PP213-0030	RI-SB-PP213-0100	RI-SB-PP214-0030	RI-SB-PP214-0100	RI-SB-PP215-0030	RI-SB-PP215-0100	RI-SB-PP216-0030	RI-SB-PP216-0100	RI-SB-PP217-0030	RI-SB-PP217-0100	RI-SB-PP218-0030	RI-SB-PP218-0080			
	5/26/2011	5/26/2011	5/26/2011	5/26/2011	5/26/2011	5/26/2011	5/27/2011	5/27/2011	5/26/2011	5/27/2011	5/26/2011	5/27/2011			
	3	10	3	10	3	10	3	10	3	10	3	8			
TPH (mg/kg)															
Diesel range	46	20	37	57	5.6 U	18	90	28	5.8 U	37	59	20	2,000	2,000	2,000
Motor oil													2,000	2,000	2,000
Jet A	16	12 U	12 U	16	11 U	11 U	16	22	12 U	14	14	6.2 U	2,000	2,000	2,000
BTEX (µg/kg)															
Benzene	1.1 U	1.2 U	2	1.1 U	1.2 U	1 U	2.1	1.2 U	1.2 U	19	9.9	1.7	30	30	12
Ethylbenzene	1.1 U	1.2 U	1.2 U	1.1 U	1.2 U	1 U	1.1 U	1.2 U	1.2 U	1.7	1.4 U	1.1 U	6,000	6,000	--
m,p-Xylene	1.9	1.2 U	1.2 U	1.1 U	1.2 U	1 U	1.1 U	1.2 U	1.2 U	3.5	1.4 U	1.1 U	--	--	9,000 ⁴
o-Xylene	1.1 U	1.2 U	1.2 U	1.1 U	1.2 U	1 U	1.1 U	1.2 U	1.2 U	1.7 U	1.4 U	1.1 U	--	--	--
Toluene	1.1 U	1.2 U	1.2 U	1.1 U	1.2 U	1 U	1.1 U	1.2 U	1.2 U	2.6	3.5	1.1 U	7,000	7,000	--
EPH (µg/kg)															
C8-C10 Aliphatics	5,100	2,400 U	2,500 U	3,000	2,200 U	2,300 U	2,300 U	2,300 U	2,400 U	2,600 U	2,500 U	2,500 U	--	--	--
C8-C10 Aromatics	2,300 U	2,400 U	2,500 U	2,300 U	2,200 U	2,300 U	2,300 U	2,300 U	2,400 U	2,600 U	2,500 U	2,500 U	--	--	--
C10-C12 Aliphatics	2,300 U	2,400 U	2,500 U	2,300 U	2,200 U	2,300 U	2,300 U	2,300 U	2,400 U	2,600 U	2,500 U	2,500 U	--	--	--
C10-C12 Aromatics	2,300 U	2,400 U	2,500 U	2,300 U	2,200 U	2,300 U	2,300 U	2,300 U	2,400 U	2,600 U	2,500 U	2,500 U	--	--	--
C12-C16 Aliphatics	2,300 U	2,400 U	2,500 U	2,500	2,200 U	2,300 U	4,000	2,900	2,400 U	2,600 U	2,500 U	2,500 U	--	--	--
C12-C16 Aromatics	2,300 U	2,400 U	2,500 U	2,300 U	2,200 U	2,300 U	2,300 U	2,300 U	2,400 U	2,600 U	2,500 U	2,500 U	--	--	--
C16-C21 Aliphatics	2,300 U	2,400 U	3,300	6,000	2,200 U	2,300 U	25,000	2,300 U	2,400 U	2,600 U	2,500 U	2,500 U	--	--	--
C16-C21 Aromatics	2,700	2,400 U	2,500 U	2,300 U	2,200 U	2,300 U	12,000	2,300 U	2,400 U	2,600 U	2,500 U	2,500 U	--	--	--
C21-C34 Aliphatics	3,400	2,400 U	8,900	2,300	2,200 U	2,300 U	110,000	2,300 U	2,400 U	7,300	4,700	2,500 U	--	--	--
C21-C34 Aromatics	2,500	2,400 U	2,500 U	2,300 U	2,200 U	2,300 U	70,000	2,300 U	2,400 U	2,700	2,500 U	2,500 U	--	--	--
VPH (µg/kg)															
C5-C6 Aliphatics	11,000 U	12,000 U	12,000 U	12,000 U	11,000 U	11,000 U	11,000 U	12,000 U	11,000 U	12,000 U	17,000 U	12,000 U	--	--	--
C6-C8 Aliphatics	19,000	12,000 U	12,000 U	12,000 U	11,000 U	11,000 U	11,000 U	12,000 U	11,000 U	12,000 U	17,000 U	12,000 U	--	--	--
C8-C10 Aliphatics	11,000 U	12,000 U	12,000 U	12,000 U	11,000 U	11,000 U	11,000 U	12,000 U	11,000 U	12,000 U	17,000 U	12,000 U	--	--	--
C8-C10 Aromatics	11,000 U	12,000 U	12,000 U	12,000 U	11,000 U	11,000 U	11,000 U	12,000 U	11,000 U	12,000 U	17,000 U	12,000 U	--	--	--
C10-C12 Aliphatics	11,000 U	12,000 U	12,000 U	12,000 U	11,000 U	11,000 U	11,000 U	12,000 U	11,000 U	12,000 U	17,000 U	12,000 U	--	--	--
C10-C12 Aromatics	11,000 U	12,000 U	12,000 U	12,000 U	11,000 U	11,000 U	11,000 U	12,000 U	11,000 U	12,000 U	17,000 U	12,000 U	--	--	--
C12-C13 Aromatics	11,000 U	12,000 U	12,000 U	12,000 U	11,000 U	11,000 U	11,000 U	12,000 U	11,000 U	12,000 U	17,000 U	12,000 U	--	--	--
Benzene	1,100 U	1,200 U	1,200 U	1,200 U	1,100 U	1,100 U	1,100 U	1,200 U	1,100 U	1,200 U	1,700 U	1,200 U	30	30	12
Ethylbenzene	1,100 U	1,200 U	1,200 U	1,200 U	1,100 U	1,100 U	1,100 U	1,200 U	1,100 U	1,200 U	1,700 U	1,200 U	6,000	6,000	--
m,p-Xylene	2,300 U	2,300 U	2,400 U	2,400 U	2,300 U	2,100 U	2,100 U	2,300 U	2,300 U	2,400 U	3,400 U	2,400 U	--	--	9,000 ⁴
Methyl tert-Butyl Ether	1,100 U	1,200 U	1,200 U	1,200 U	1,100 U	1,100 U	1,100 U	1,200 U	1,100 U	1,200 U	1,700 U	1,200 U	--	--	--
n-Decane	1,100 U	1,200 U	1,200 U	1,200 U	1,100 U	1,100 U	1,100 U	1,200 U	1,100 U	1,200 U	1,700 U	1,200 U	--	--	--
n-Dodecane	1,100 U	1,200 U	1,200 U	1,200 U	1,100 U	1,100 U	1,100 U	1,200 U	1,100 U	1,200 U	1,700 U	1,200 U	--	--	--
n-Hexane	1,100 U	1,200 U	1,200 U	1,200 U	1,100 U	1,100 U	1,100 U	1,200 U	1,100 U	1,200 U	1,700 U	1,200 U	--	--	--
n-Octane	1,100 U	1,200 U	1,200 U	1,200 U	1,100 U	1,100 U	1,100 U	1,200 U	1,100 U	1,200 U	1,700 U	1,200 U	--	--	--
n-Pentane	1,100 U	1,200 U	1,200 U	1,200 U	1,100 U	1,100 U	1,100 U	1,200 U	1,100 U	1,200 U	1,700 U	1,200 U	--	--	--
o-Xylene	1,100 U	1,200 U	1,200 U	1,200 U	1,100 U	1,100 U	1,100 U	1,200 U	1,100 U	1,200 U	1,700 U	1,200 U	--	--	--
Toluene	1,100 U	1,200 U	1,200 U	1,200 U	1,100 U	1,100 U	1,100 U	1,200 U	1,100 U	1,200 U	1,700 U	1,200 U	7,000	7,000	--
SVOCs (µg/kg)															
2-Methylnaphthalene	63 UJ	65 UJ	61 UJ	60 UJ	62 UJ	63 UJ	63 UJ	67 J	58 UJ	63 UJ	63 UJ	62 UJ	--	--	45,800

TABLE 3
HISTORICAL SOIL ANALYTICAL RESULTS^{1,2}
Former Fuel Farm
Boeing Renton Facility
Renton, Washington

Location Sample ID Sample Date Constituent Depth (ft bgs)	PP219		PP226		PP227		MTCA Method A Industrial	MTCA Method A Residential	Cleanup Level ³
	RI-SB-PP219-0030	RI-SB-PP219-0100	RI-SB-PP226-0030	RI-SB-PP226-0090	RI-SB-PP227-0030	RI-SB-PP227-0090			
	5/27/2011	5/27/2011	5/27/2011	5/27/2011	5/27/2011	5/27/2011			
	3	10	3	9	3	9			
TPH (mg/kg)									
Diesel range	14	24	5.6 U	110	5.2 U	5.4 U	2,000	2,000	2,000
Motor oil							2,000	2,000	2,000
Jet A	5.4 U	5.6	5.6 U	56	5.2 U	5.4 U	2,000	2,000	2,000
BTEX (µg/kg)									
Benzene	1.2 U	0.9	0.9 U	2.1 U	1.1 U	0.9 U	30	30	12
Ethylbenzene	1.2 U	0.9 U	0.9 U	2.1 U	1.1 U	0.9 U	6,000	6,000	--
m,p-Xylene	1.2 U	1.8	0.9 U	2.1 U	1.1 U	0.9 U	--	--	9,000 ⁴
o-Xylene	1.2 U	0.9 U	0.9 U	2.1 U	1.1 U	0.9 U	--	--	--
Toluene	1.2 U	0.9 U	0.9 U	2.1 U	1.1 U	0.9 U	7,000	7,000	--
EPH (µg/kg)									
C8-C10 Aliphatics	2,200 U	2,200 U	2,200 U	3,400 U	2,100 U	2,200 U	--	--	--
C8-C10 Aromatics	2,200 U	2,200 U	2,200 U	3,400 U	2,100 U	2,200 U	--	--	--
C10-C12 Aliphatics	2,200 U	2,200 U	2,200 U	3,400 U	2,100 U	2,200 U	--	--	--
C10-C12 Aromatics	2,200 U	2,200 U	2,200 U	3,400 U	2,100 U	2,200 U	--	--	--
C12-C16 Aliphatics	2,200 U	2,200 U	2,200 U	3,400 U	2,100 U	2,200 U	--	--	--
C12-C16 Aromatics	2,200 U	2,200 U	2,200 U	3,400 U	2,100 U	2,200 U	--	--	--
C16-C21 Aliphatics	2,200 U	2,400	2,200 U	3,400 U	2,100 U	2,200 U	--	--	--
C16-C21 Aromatics	2,200 U	2,200 U	2,200 U	3,400 U	2,100 U	2,200 U	--	--	--
C21-C34 Aliphatics	3,900	5,200	7,400	4,200	2,100 U	2,200 U	--	--	--
C21-C34 Aromatics	2,200 U	2,500	2,200 U	3,400 U	2,100 U	2,200 U	--	--	--
VPH (µg/kg)									
C5-C6 Aliphatics	11,000 U	9,000 U	9,400 U	20,000 U	9,000 U	11,000 U	--	--	--
C6-C8 Aliphatics	11,000 U	9,000 U	9,400 U	20,000 U	9,000 U	11,000 U	--	--	--
C8-C10 Aliphatics	11,000 U	9,000 U	9,400 U	20,000 U	9,000 U	11,000 U	--	--	--
C8-C10 Aromatics	11,000 U	9,000 U	9,400 U	20,000 U	9,000 U	11,000 U	--	--	--
C10-C12 Aliphatics	11,000 U	9,000 U	9,400 U	20,000 U	9,000 U	11,000 U	--	--	--
C10-C12 Aromatics	11,000 U	9,000 U	9,400 U	20,000 U	9,000 U	11,000 U	--	--	--
C12-C13 Aromatics	11,000 U	9,000 U	9,400 U	20,000 U	9,000 U	11,000 U	--	--	--
Benzene	1,100 U	900 U	940 U	2,000 U	900 U	1,100 U	30	30	12
Ethylbenzene	1,100 U	900 U	940 U	2,000 U	900 U	1,100 U	6,000	6,000	--
m,p-Xylene	2,200 U	1,800 U	1,900 U	4,100 U	1,800 U	2,200 U	--	--	9,000 ⁴
Methyl tert-Butyl Ether	1,100 U	900 U	940 U	2,000 U	900 U	1,100 U	--	--	--
n-Decane	1,100 U	900 U	940 U	2,000 U	900 U	1,100 U	--	--	--
n-Dodecane	1,100 U	900 U	940 U	2,000 U	900 U	1,100 U	--	--	--
n-Hexane	1,100 U	900 U	940 U	2,000 U	900 U	1,100 U	--	--	--
n-Octane	1,100 U	900 U	940 U	2,000 U	900 U	1,100 U	--	--	--
n-Pentane	1,100 U	900 U	940 U	2,000 U	900 U	1,100 U	--	--	--
o-Xylene	1,100 U	900 U	940 U	2,000 U	900 U	1,100 U	--	--	--
Toluene	1,100 U	900 U	940 U	2,000 U	900 U	1,100 U	7,000	7,000	--
SVOCs (µg/kg)									
2-Methylnaphthalene	60 UJ	61 UJ	61 UJ	99 J	63 UJ	60 UJ	--	--	45,800

Notes

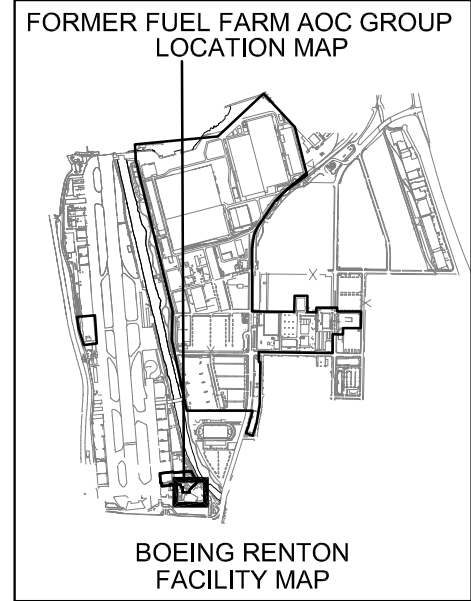
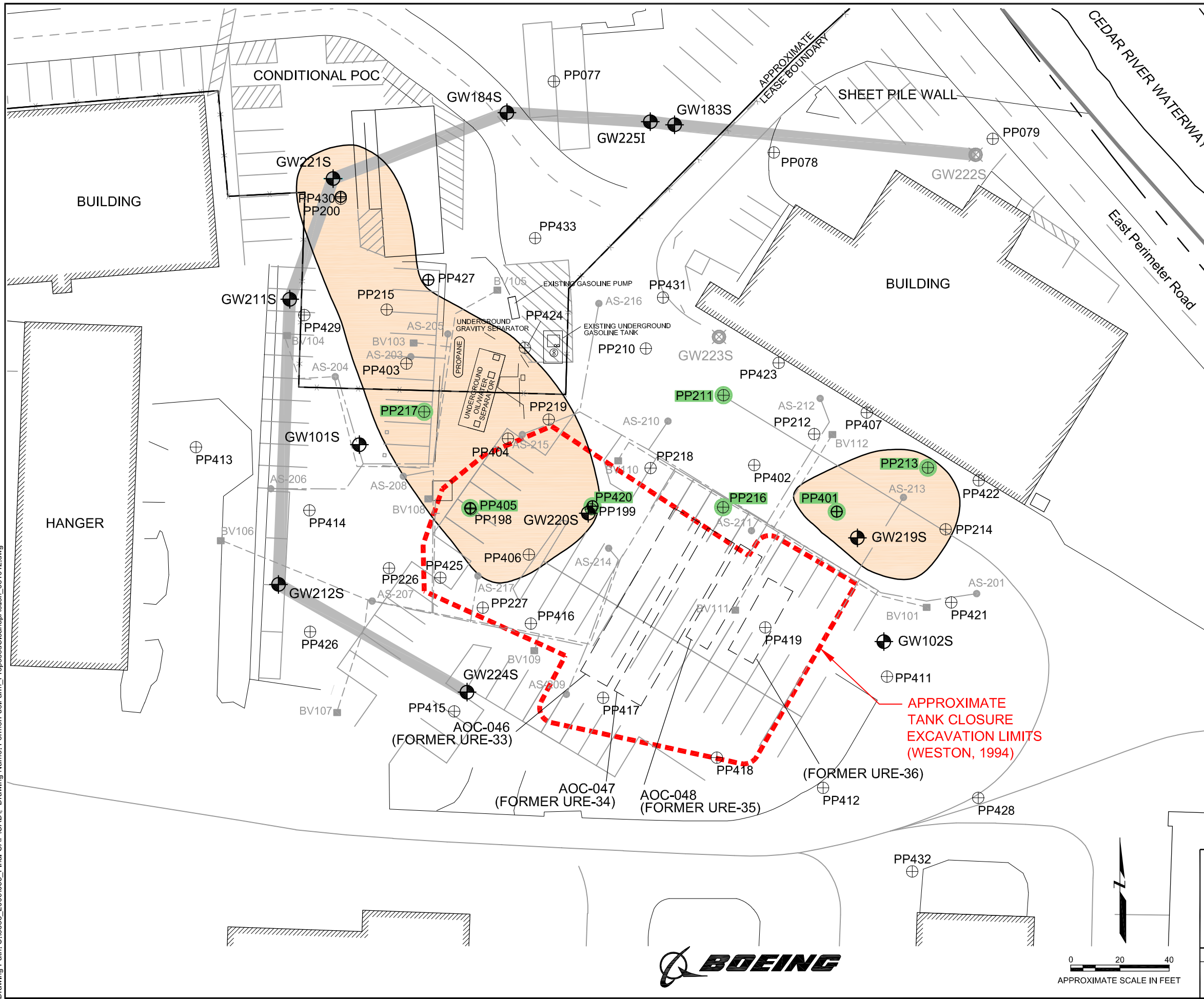
- Data qualifiers are as follows:
U = the analyte was not detected at value to the left, which is the reporting limit.
J = Analyte was detected; value is estimated.
UJ = Analyte not detected. Value shown is estimated laboratory reporting limit.
-- = not established.
- Results presented in **bold** exceed cleanup levels from the DCAP (AMEC Geomatrix, 2010).
- Cleanup level is the cleanup level agreed upon with Ecology and presented in the DCAP.
- Value presented is for total xylenes

Abbreviations

- µg/kg = micrograms per kilogram
- BTEX = benzene, toluene, ethylbenzene, xylenes
- DCAP = Draft Final Cleanup Action Plan
- EPH = extractable petroleum hydrocarbons
- ft bgs = feet below ground surface
- mg/kg = milligrams per kilogram
- MTCA = Model Toxics Control Act
- SVOCs = semivolatile organic compounds
- TPH = total petroleum hydrocarbons
- VPH = volatile petroleum hydrocarbons

FIGURES

Plot Date: 08/10/12 - 11:42am. Plotted by: mike.stenberg
 Drawing Path: S:\8888_2006\055_Final\CAD\CAD1_Drawing Name: FormerFuelFarm_ProposedCleanupAction_081012.dwg



LEGEND

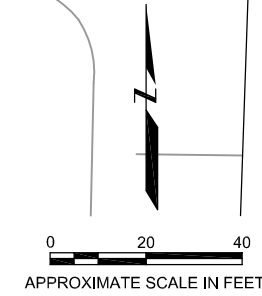
- PP212 ⊕ PUSH-PROBE LOCATION
- PP211 ⊕ PUSH PROBE LOCATION RE-SAMPLED IN MAY 2012
- GW101S ⊕ MONITORING WELL LOCATION
- GW222S ⊗ ABANDONED MONITORING WELL
- AS-204 ● FORMER UNDERGROUND AIR SPARGING WELL
- BV112 ■ FORMER UNDERGROUND BIOVENTING WELL
- - - UNDERGROUND BIOVENTING LINE
- - - UNDERGROUND AIR SPARGING LINE
- x - FENCE
- TPH-JET SOIL AND GROUNDWATER SOURCE AREAS AS IDENTIFIED IN THE 1999 REMEDIAL INVESTIGATION. CONCENTRATIONS AND BOUNDARIES MAY NO LONGER BE REPRESENTATIVE OF CURRENT CONDITIONS.
- CONDITIONAL POINT OF COMPLIANCE

NOTES

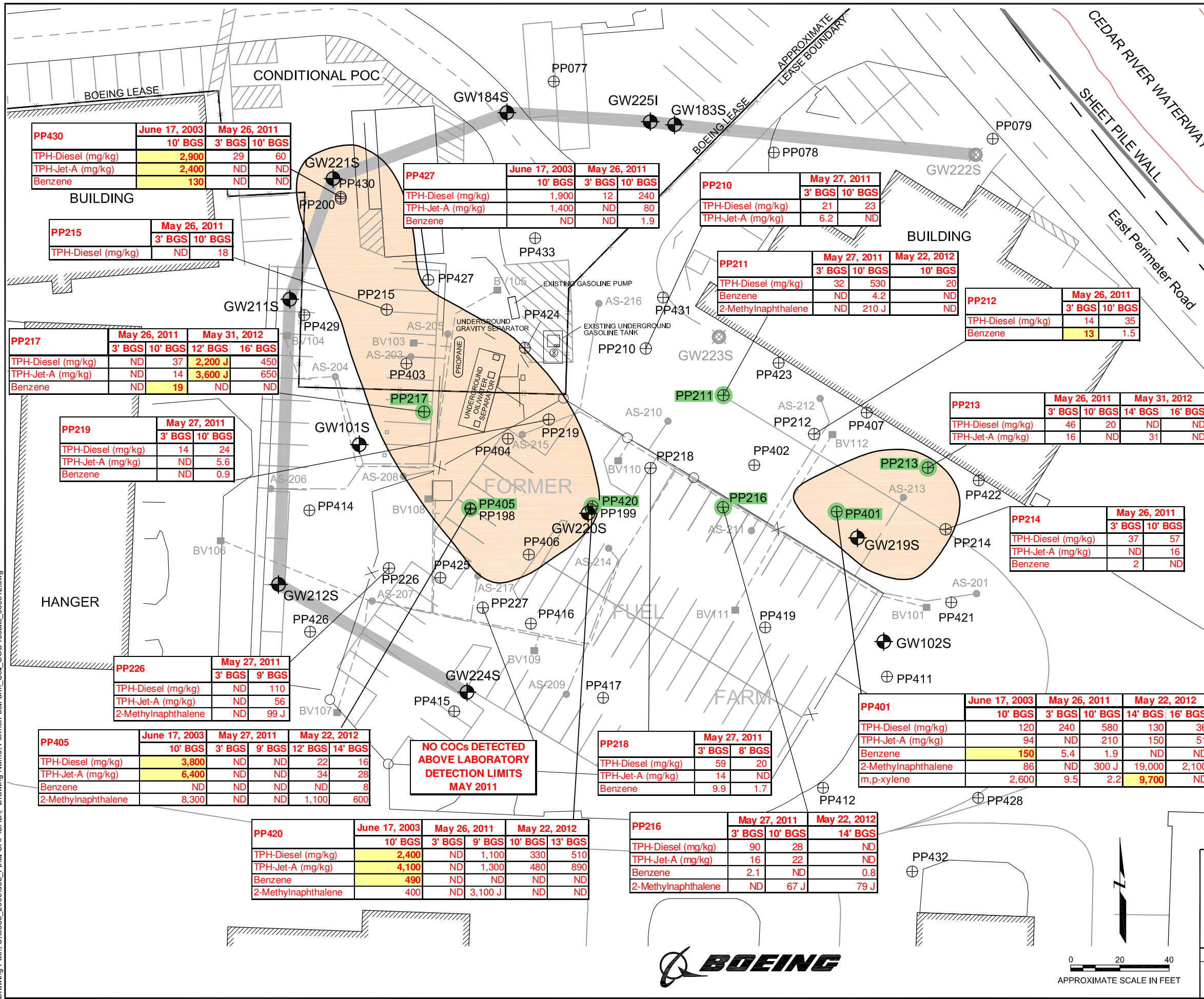
1. BASEMAP COMPILED BY DUANE HARTMAN & ASSOCIATES, INC., DECEMBER 1994.
2. PUSH-PROBE LOCATIONS FROM FINAL REMEDIAL INVESTIGATION REPORT (WESTON, 2001).
3. PIPING LOCATIONS APPROXIMATE.
4. 'S' DESIGNATION INDICATES WELL SCREENED LESS THAN 18 FEET IN DEPTH. 'I' DESIGNATION INDICATES WELL IS SCREENED GREATER THAN 18 FEET IN DEPTH.

FORMER FUEL FARM SITE MAP
 Boeing Renton Facility
 Renton, Washington

By: APS	Date: 08/10/12	Project No. 8888
		Figure 1



Plot Date: 08/10/12 - 11:27am. Plotted by: mike.stenberg
 Drawing Path: S:\8888_2006\055_Final\CAD\CAD.dwg Drawing Name: FormerFuelFarm_Soil_COC-results_080912.dwg



LEGEND

- PP212 ⊕ PUSH PROBE LOCATION
- PP211 ⊕ PUSH PROBE LOCATION RE-SAMPLED IN MAY 2012
- GW101S ⊕ MONITORING WELL LOCATION
- GW223S ⊗ ABANDONED MONITORING WELL LOCATION
- AS-204 ● FORMER UNDERGROUND AIR SPARGING WELL
- BV112 ■ FORMER UNDERGROUND BIOVENTING WELL
- UNDERGROUND BIOVENTING LINE
- UNDERGROUND AIR SPARGING LINE
- x - FENCE
- TPH-JET SOIL AND GROUNDWATER SOURCE AREAS AS IDENTIFIED IN THE 1999 REMEDIAL INVESTIGATION. CONCENTRATIONS AND BOUNDARIES MAY NO LONGER BE REPRESENTATIVE OF CURRENT CONDITIONS.
- CONDITIONAL POINT OF COMPLIANCE

CLEANUP LEVELS FROM DCAP

Analyte	Cleanup Level	Units
TPH-Diesel range	2,000	mg/kg
TPH-Jet A	2,000	mg/kg
Benzene	12	µg/kg
2-Methylnaphthalene	45,800	µg/kg
m,p-Xylene	9,000	µg/kg

13 = RESULT EXCEEDS CLEANUP LEVEL.

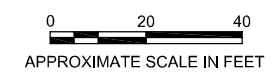
- DCAP** Draft Cleanup Action Plan, AMEC 2011
BGS Below Ground Surface
J Reported result is estimated
ND Not Detected at laboratory reporting limit
TPH Total Petroleum Hydrocarbons
COC Constituent of Concern

NOTES

- BASEMAP COMPILED BY DUANE HARTMAN & ASSOCIATES, INC., DECEMBER 1994
- PIPING LOCATIONS APPROXIMATE
- 'S' DESIGNATION INDICATES WELL SCREENED LESS THAN 18 FEET IN DEPTH. 'I' DESIGNATION INDICATES WELL SCREENED GREATER THAN 18 FEET IN DEPTH.
- ALL UNITS IN µg/kg UNLESS OTHERWISE SPECIFIED.
- FIELD DUPLICATE COLLECTED AT PP420 IN JUNE 2003 AND AT PP216 IN JUNE 2012. HIGHEST DETECTED CONCENTRATION BETWEEN PRIMARY AND FIELD DUPLICATE IS REPORTED ON THE FIGURE.

SUMMARY OF 2011 AND 2012 SOIL ANALYTICAL RESULTS FORMER FUEL FARM Boeing Renton Facility Renton, Washington

By: APS	Date: 08/10/12	Project No. 8888
		Figure 2



NO COCs DETECTED ABOVE LABORATORY DETECTION LIMITS MAY 2011

PP430	June 17, 2003	May 26, 2011	
	10' BGS	3' BGS	10' BGS
	TPH-Diesel (mg/kg)	2,900	29
TPH-Jet-A (mg/kg)	2,400	ND	ND
Benzene	130	ND	ND

PP427	June 17, 2003	May 26, 2011	
	10' BGS	3' BGS	10' BGS
	TPH-Diesel (mg/kg)	1,900	12
TPH-Jet-A (mg/kg)	1,400	ND	80
Benzene	ND	ND	1.9

PP210	May 27, 2011		
	3' BGS	10' BGS	10' BGS
	TPH-Diesel (mg/kg)	21	23
TPH-Jet-A (mg/kg)	6.2	ND	

PP211	May 27, 2011		May 22, 2012	
	3' BGS	10' BGS	10' BGS	
	TPH-Diesel (mg/kg)	32	530	20
Benzene	ND	4.2	ND	
2-Methylnaphthalene	ND	210 J	ND	

PP212	May 26, 2011	
	3' BGS	10' BGS
	TPH-Diesel (mg/kg)	14
Benzene	13	1.5

PP217	May 26, 2011		May 31, 2012	
	3' BGS	10' BGS	12' BGS	16' BGS
	TPH-Diesel (mg/kg)	ND	37	2,200 J
TPH-Jet-A (mg/kg)	ND	14	3,600 J	650
Benzene	ND	19	ND	ND

PP213	May 26, 2011		May 31, 2012	
	3' BGS	10' BGS	14' BGS	16' BGS
	TPH-Diesel (mg/kg)	46	20	ND
TPH-Jet-A (mg/kg)	16	ND	31	ND

PP219	May 27, 2011	
	3' BGS	10' BGS
	TPH-Diesel (mg/kg)	14
TPH-Jet-A (mg/kg)	ND	5.6
Benzene	ND	0.9

PP214	May 26, 2011	
	3' BGS	10' BGS
	TPH-Diesel (mg/kg)	37
TPH-Jet-A (mg/kg)	ND	16
Benzene	2	ND

PP226	May 27, 2011	
	3' BGS	9' BGS
	TPH-Diesel (mg/kg)	ND
TPH-Jet-A (mg/kg)	ND	56
2-Methylnaphthalene	ND	99 J

PP405	June 17, 2003	May 27, 2011		May 22, 2012	
	10' BGS	3' BGS	9' BGS	12' BGS	14' BGS
	TPH-Diesel (mg/kg)	3,800	ND	ND	22
TPH-Jet-A (mg/kg)	6,400	ND	ND	34	28
Benzene	ND	ND	ND	ND	8
2-Methylnaphthalene	8,300	ND	ND	1,100	600

PP420	June 17, 2003	May 26, 2011		May 22, 2012	
	10' BGS	3' BGS	9' BGS	10' BGS	13' BGS
	TPH-Diesel (mg/kg)	2,400	ND	1,100	330
TPH-Jet-A (mg/kg)	4,100	ND	1,300	480	890
Benzene	490	ND	ND	ND	ND
2-Methylnaphthalene	400	ND	3,100 J	ND	ND

PP218	May 27, 2011	
	3' BGS	8' BGS
	TPH-Diesel (mg/kg)	59
TPH-Jet-A (mg/kg)	14	ND
Benzene	9.9	1.7

PP401	June 17, 2003	May 26, 2011		May 22, 2012	
	10' BGS	3' BGS	10' BGS	14' BGS	16' BGS
	TPH-Diesel (mg/kg)	120	240	580	130
TPH-Jet-A (mg/kg)	94	ND	210	150	51
Benzene	150	5.4	1.9	ND	ND
2-Methylnaphthalene	86	ND	300 J	19,000	2,100
m,p-xylene	2,600	9.5	2.2	9,700	ND



ATTACHMENT 1

Boring Logs

PROJECT: Boeing Renton Former Fuel Farm Boeing Renton Facility		Log of Boring No. PP211	
BORING LOCATION: Boeing Renton Former Fuel Farm		ELEVATION AND DATUM:	
DRILLING CONTRACTOR: Cascade Drilling, Inc.		DATE STARTED: 5/22/12	DATE FINISHED: 5/22/12
DRILLING METHOD: Direct push		TOTAL DEPTH (ft.): 20.0	MEASURING POINT: Ground
DRILLING EQUIPMENT: Power Probe 9630		DEPTH TO WATER (ft.)	FIRST 9
SAMPLING METHOD: Geoprobe macro-core sampler [4' x 2.25"]		LOGGED BY: C. Jefferson	
HAMMER WEIGHT:	DROP:	RESPONSIBLE PROFESSIONAL: J.D. Long	REG. NO. LHg 1354

DEPTH (feet)	SAMPLES			OVM READING (ppm)	DESCRIPTION	REMARKS
	Sample No.	Sample	Blows/ Foot		NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	
					Surface Elevation:	
1				0.4	↓ dark gray (7.5YR 4/1),	OVM readings taken from headspace in Ziploc bags using a Photovac 2020 calibrated with 100 ppm isobutylene.
2				0.4	↓ 40% fine sand, 20% medium sand, 30% non-plastic fines, 10% fine gravel	
3						
4				0.2		
5						
6				0.3	— rock broken due to drilling	
7				0.3		
8				0.4		
9					↓ wet	
10				5.8	SILT with SAND (ML): dark gray (7.5YR 4/1), wet, 60% medium plastic fines, 40% fine sand	
11						Soil sample RI-SB01-PP211-10 (3x125 mL, 8x40 mL with NaHSO4 and 8x40 mL with MeOH) collected for TPH-Dx, TPH-Jet, BTEX, 2-methylnaphthalene, VPH and EPH. Extra volume collected for MS/MSD.
12						
13						
14						
15						

OAKBOREV (REV. 8/2011)

Log of Boring No. PP211 (cont'd)

DEPTH (feet)	SAMPLES			OVM READING (ppm)	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	REMARKS
	Sample No.	Sample	Blows/ Foot			
16				0.7	SILT with SAND (ML): Continued	
17					POORLY-GRADED SAND with SILT (SP-SM): dark gray (7.5YR 4/1), wet, 35% fine sand, 40% medium sand, 15% coarse sand, 10% non-plastic fines	
18				0.9	SILT with SAND (ML): dark grayish brown (10YR 4/2), wet, 80% medium plastic fines, 20% fine sand dark gray (7.5YR 4/1)	
19						
20					SILTY SAND (SM): dark gray (7.5YR 4/2), wet, 40% fine sand, 20% medium sand, 20% coarse sand, 20% non-plastic fines Bottom of boring at 20 feet BGS. Abandoned with hydrated bentonite chips.	
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						
32						
33						



PROJECT: Boeing Renton Former Fuel Farm Boeing Renton Facility		Log of Boring No. PP213	
BORING LOCATION: Boeing Renton Former Fuel Farm		ELEVATION AND DATUM:	
DRILLING CONTRACTOR: Cascade Drilling, Inc.		DATE STARTED: 5/31/12	DATE FINISHED: 5/31/12
DRILLING METHOD: Direct push		TOTAL DEPTH (ft.): 20.0	MEASURING POINT: Ground
DRILLING EQUIPMENT: Power Probe 9600		DEPTH TO WATER (ft.)	FIRST NA COMPL. NA
SAMPLING METHOD: Geoprobe macro-core sampler [5' x 2.25"]		LOGGED BY: C. Jefferson	
HAMMER WEIGHT:	DROP:	RESPONSIBLE PROFESSIONAL: J.D. Long	REG. NO. LHg 1354

DEPTH (feet)	SAMPLES			OVM READING (ppm)	DESCRIPTION	REMARKS
	Sample No.	Sample	Blows/ Foot		NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	
1				0.6	POORLY-GRADED SAND (SP-SM): dark grayish brown (10YR 4/2), moist, 80% fine sand, 10% medium sand, 10% non-plastic fines	OVM readings taken from headspace in Ziploc bags using a Photovac 2020 calibrated with 100 ppm isobutylene.
2				0.3	SILTY SAND (SM): dark gray (10YR 4/1), moist, 65% fine sand, 15% medium sand, 20% non-plastic fines Woody debris observed from 2 to 2.25 feet	
3						
4						
5				0.3	POORLY-GRADED SAND with SILT and GRAVEL (SP-SM): dark grayish brown (10YR 4/2), moist, 40% fine sand, 10% medium sand, 20% coarse sand, 20% fine gravel, 10% non-plastic fines	
6				0.1		
7				0.2	POORLY-GRADED SAND (SP): gray (10YR 5/1), moist, 100% fine sand	
8				0.4		
9						
10				0.3	SILTY SAND (SM): dark grayish brown (10YR 4/2), moist, 75% fine sand, 10% medium sand, 15% non-plastic fines	
11				1.5		
12				2.0	very dark gray (10YR 3/1) silt lens with organics dark grayish brown (10YR 4/2) silt lens with organics	
13				1674	POORLY-GRADED SAND (SP): very dark gray (10YR 3/1), moist, 85% fine sand, 10% medium sand, 5% non-plastic fines	Soil sample RI-SB01-PP213-14 (3x125 mL, 2x40 mL with NaHSO4 and 2x40 mL with MeOH) collected for TPH-Dx, TPH-Jet, BTEX, 2-methylnaphthalene, VPH and EPH.
14				1542	SILT (ML): very dark gray (10YR 3/1), moist, 100% medium plastic fines gravel lens	
15						

Log of Boring No. PP213 (cont'd)

DEPTH (feet)	SAMPLES			OVM READING (ppm)	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	REMARKS
	Sample No.	Sample	Blows/ Foot			
16	RI-SB01-PP213-16			1713	POORLY-GRADED SAND with SILT (SP-SM): 40% medium sand, 30% coarse sand, 20% fine sand, 10% non-plastic fines	Soil sample RI-SB01-PP213-16 (3x125 mL, 2x40 mL with NaHSO4 and 2x40 mL with MeOH) collected for TPH-Dx, TPH-Jet, BTEX, 2-methylnapthalene, VPH and EPH.
17				1655	SILT (ML): very dark gray (10YR 3/1), moist, 100% medium plastic fines	
18				273		
19				7.3		
20				3.8		
20					organics	
20					Bottom of boring at 20 feet BGS. Abandoned with hydrated bentonite chips.	
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						
32						
33						

Log of Boring No. PP216 (cont'd)

DEPTH (feet)	SAMPLES			OVM READING (ppm)	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	REMARKS
	Sample No.	Sample	Blows/ Foot			
16				0.6	POORLY-GRADED SAND with SILT and GRAVEL (SP-SM): Continued very coarse sand	
17				0.3	SILTY SAND (SM): brown (10YR 4/3), wet, 10% coarse sand, 60% medium sand, 20% fine sand, 10% non-plastic fines	
18				0.3		
19						
20					Boring completed at 20 feet BGS. Abandoned with hydrated bentonite chips.	
21						
22						
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31						
32						
33						




PROJECT: Boeing Renton Former Fuel Farm Boeing Renton Facility		Log of Boring No. PP217	
BORING LOCATION: Boeing Renton Former Fuel Farm		ELEVATION AND DATUM:	
DRILLING CONTRACTOR: Cascade Drilling, Inc.		DATE STARTED: 5/31/12	DATE FINISHED: 5/31/12
DRILLING METHOD: Direct push		TOTAL DEPTH (ft.): 20.0	MEASURING POINT: Ground
DRILLING EQUIPMENT: Power Probe 9600		DEPTH TO WATER (ft.)	FIRST NA COMPL. NA
SAMPLING METHOD: Geoprobe macro-core sampler [4' x 2.25"]		LOGGED BY: C. Jefferson	
HAMMER WEIGHT:	DROP:	RESPONSIBLE PROFESSIONAL: J.D. Long	REG. NO. LHg 1354

DEPTH (feet)	SAMPLES			OVM READING (ppm)	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	REMARKS
	Sample No.	Sample	Blows/ Foot			
0.2					Surface Elevation:	
1				0.7	SILTY SAND (SM): dark gray (10YR 4/1), moist, 60% fine sand, 10% medium sand, 10% coarse sand, 15% non-plastic fines, 5% fine gravel	OVM readings taken from headspace in Ziploc bags using a Photovac 2020 calibrated with 100 ppm isobutylene.
2				0.5	POORLY-GRADED SAND with SILT (SP-SM): dark gray (10YR 4/1), moist, 90% fine sand, 10% non-plastic fines	
3				0.5	SILTY SAND (SM): dark gray (10YR 4/1), moist, 70% fine sand, 30% non-plastic fines	
4						
5				0.9	70% fine sand, 10% medium sand, 20% non-plastic fines	
6				0.5	wood debris	
7				0.4	SILT (ML): dark grayish brown (10YR 4/2), moist, 80% medium plastic fines, 20% fine sand organics, 90% medium plastic fines, 10% fine sand	
8				11.3	red brick	
9						
10				0.4		
11				266	fines content decreases, woody debris observed SILTY SAND (SM): 80% fine sand, 5% medium sand, 15% non-plastic fines Wood debris observed at 11.5 feet bgs	Soil sample RI-SB01-PP217-12 (3x125 mL, 2x40 mL with NaHSO4 and 2x40 mL with MeOH) collected for TPH-Dx, TPH-Jet, BTEX, 2-methylnaphthalene, VPH and EPH.
12				663	SILTY SAND with GRAVEL (SM): very dark gray (10YR 3/1), moist, 35% fine sand, 10% medium sand, 20% coarse sand, 20% fine gravel, 15% non-plastic fines	
13						
14						
15						

Log of Boring No. PP217 (cont'd)

DEPTH (feet)	SAMPLES			OVM READING (ppm)	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	REMARKS
	Sample No.	Sample	Blows/ Foot			
16	RI-SB01-PP217-16			609	POORLY-GRADED SAND with SILT (SP-SM): very dark gray (10YR 3/1), moist, 80% fine sand, 10% medium sand, 10% non-plastic fines	Soil sample RI-SB01-PP217-16 (3x125 mL, 2x40 mL with NaHSO4 and 2x40 mL with MeOH) collected for TPH-Dx, TPH-Jet, BTEX, 2-methylnaphthalene, VPH and EPH.
17				342	POORLY-GRADED SAND with SILT and GRAVEL (SP-SM): very dark gray (10YR 3/1), moist, 30% fine sand, 20% medium sand, 20% coarse sand, 20% fine gravel, 10% non-plastic fines	
18				173	SILTY SAND (SM): very dark gray (10YR 3/1), moist, 60% fine sand, 10% medium sand, 30% non-plastic fines	
19				155	POORLY-GRADED SAND with SILT and GRAVEL (SP-SM): very dark gray (10YR 3/1), moist, 45% fine sand, 20% medium sand, 10% coarse sand, 15% fine gravel, 10% non-plastic fines	
20					Bottom of boring at 20 feet BGS. Abandoned with hydrated bentonite chips.	
21						
22						
23						
24						
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26						
27						
28						
29						
30						
31						
32						
33						

PROJECT: Boeing Renton Former Fuel Farm Boeing Renton Facility		Log of Boring No. PP401	
BORING LOCATION: Boeing Renton Former Fuel Farm		ELEVATION AND DATUM:	
DRILLING CONTRACTOR: Cascade Drilling, Inc.		DATE STARTED: 5/22/12	DATE FINISHED: 5/22/12
DRILLING METHOD: Direct push		TOTAL DEPTH (ft.): 20.0	MEASURING POINT: Ground
DRILLING EQUIPMENT: Power Probe 9630		DEPTH TO WATER (ft.)	FIRST 9.5
SAMPLING METHOD: Geoprobe macro-core sampler [4' x 2.25"]		LOGGED BY: C. Jefferson	
HAMMER WEIGHT:	DROP:	RESPONSIBLE PROFESSIONAL: J.D. Long	REG. NO. LHg 1354

DEPTH (feet)	SAMPLES			OVM READING (ppm)	DESCRIPTION	REMARKS
	Sample No.	Sample Blows/ Foot			NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	
1						
2				0.3		
3						
4				0.4	 brown (7.5YR 4/2)	
5						
6				0.3		
7						
8				0.7		
9						
10				6.8	 wet	
11						
12				212		
13				344		
14				1670	 ML lenses	
15						

OVM readings taken from headspace in Ziploc bags using a Photovac 2020 calibrated with 100 ppm isobutylene.

Soil sample RI-SB23-PP401-14 (3x125 mL, 2x40 mL with NaHSO4 and 2x40 mL with MeOH) collected for TPH-Dx, TPH-Jet, BTEX, 2-methylnaphthalene, VPH and EPH.

OAKBOREV (REV. 8/2011)

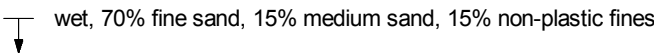
Log of Boring No. PP401 (cont'd)

DEPTH (feet)	SAMPLES			OVM READING (ppm)	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	REMARKS
	Sample No.	Sample	Blows/ Foot			
16	RI-SB23-PP401-16			73.9 783	SILT (ML): dark gray (7.5YR 4/1), wet, 100% medium plastic fines POORLY-GRADED SAND (SP):	Soil sample RI-SB23-PP401-16 (3x125 mL, 2x40 mL with NaHSO4 and 2x40 mL with MeOH) collected for TPH-Dx, TPH-Jet, BTEX, 2-methylnapthalene, VPH and EPH.
17						
18				485		
19						
20					Bottom of boring at 20 feet BGS. Abandoned with hydrated bentonite chips.	
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						
32						
33						

PROJECT: Boeing Renton Former Fuel Farm Boeing Renton Facility		Log of Boring No. PP405	
BORING LOCATION: Boeing Renton Former Fuel Farm		ELEVATION AND DATUM:	
DRILLING CONTRACTOR: Cascade Drilling, Inc.		DATE STARTED: 5/22/12	DATE FINISHED: 5/22/12
DRILLING METHOD: Direct push		TOTAL DEPTH (ft.): 20.0	MEASURING POINT: Ground
DRILLING EQUIPMENT: Power Probe 9630		DEPTH TO WATER (ft.)	FIRST 9.5
SAMPLING METHOD: Geoprobe macro-core sampler [4' x 2.25"]		LOGGED BY: C. Jefferson	
HAMMER WEIGHT:	DROP:	RESPONSIBLE PROFESSIONAL: J.D. Long	REG. NO. LHg 1354

DEPTH (feet)	SAMPLES			OVM READING (ppm)	DESCRIPTION	REMARKS
	Sample No.	Sample Blows/ Foot			NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	
1					SILTY SAND with GRAVEL (SM): dark brown (7.5YR 3/2), moist, 20% coarse sand, 30% medium sand, 15% fine sand, 20% non-plastic fines, 15% fine gravel	OVM readings taken from headspace in Ziploc bags using a Photovac 2020 calibrated with 100 ppm isobutylene.
2				0.0	10% coarse sand, 40% medium sand, 15% fine sand, 20% non-plastic fines, 15% fine gravel	
3						
4				0.0		
5				0.1	SILTY SAND (SM): dark grayish brown (10YR 10/2), moist, 15% coarse sand, 40% medium sand, 20% fine sand, 15% non-plastic fines, 10% fine gravel	
6				0.0		
7				0.2		
8						
9				0.2	wet	
10				0.0	POORLY-GRADED SAND with SILT (SP-SM): very dark gray (7.5YR 3/1), wet, 90% coarse sand, 10% non-plastic fines	
11	RI-SB23-PP405-12			54.8	SILTY SAND with GRAVEL (SM): dark gray (7.5YR 4/1), wet, 30% fine sand, 30% medium sand, 5% coarse sand, 20% non-plastic fines, 15% fine gravel	Soil sample RI-SB23-PP405-12 (3x125 mL, 2x40 mL with NaHSO4 and 2x40 mL with MeOH) collected for TPH-Dx, TPH-Jet, BTEX, 2-methylnaphthalene, VPH and EPH.
12				117	ML lens	
13	RI-SB23-PP405-14				SILTY SAND (SM): very dark gray (7.5YR 3/1), moist, 60% fine sand, 40% non-plastic fines	
14				0.3		Soil sample RI-SB23-PP405-14 (3x125 mL, 2x40 mL with NaHSO4 and 2x40 mL with MeOH) collected for TPH-Dx, TPH-Jet, BTEX, 2-methylnaphthalene, VPH and EPH.
15				60.1		

Log of Boring No. PP405 (cont'd)

DEPTH (feet)	SAMPLES			OVM READING (ppm)	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	REMARKS
	Sample No.	Sample	Blows/ Foot			
16				2.4	SILTY SAND (SM): Continued 	
17						
18				2.0		
19						
20				0.8		
21					Bottom of boring at 20 feet BGS. Abandoned with hydrated bentonite chips.	
22						
23						
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30						
31						
32						
33						

PROJECT: Boeing Renton Former Fuel Farm Boeing Renton Facility		Log of Boring No. PP420	
BORING LOCATION: Boeing Renton Former Fuel Farm		ELEVATION AND DATUM:	
DRILLING CONTRACTOR: Cascade Drilling, Inc.		DATE STARTED: 5/22/12	DATE FINISHED: 5/22/12
DRILLING METHOD: Direct push		TOTAL DEPTH (ft.): 20.0	MEASURING POINT: Ground
DRILLING EQUIPMENT: Power Probe 9630		DEPTH TO WATER (ft.)	FIRST 9 COMPL. NA
SAMPLING METHOD: Geoprobe macro-core sampler [4' x 2.25"]		LOGGED BY: C. Jefferson	
HAMMER WEIGHT:	DROP:	RESPONSIBLE PROFESSIONAL: J.D. Long	REG. NO. LHg 1354

DEPTH (feet)	SAMPLES			OVM READING (ppm)	DESCRIPTION	REMARKS
	Sample No.	Sample	Blows/ Foot		NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	
1					SILTY SAND with GRAVEL (SM): black (7.5YR 2.5/1), moist, 10% fine sand, 30% medium sand, 15% fine sand, 30% fines non-plastic fines, 15% fine gravel	OVM readings taken from headspace in Ziploc bags using a Photovac 2020 calibrated with 100 ppm isobutylene.
2				0.1	SILTY SAND (SM): brown (7.5YR 4/2), moist, 40% fine sand, 15% medium sand, 15% coarse sand, 20% non-plastic fines, 10% fine gravel	
3						
4				0.3		
5						
6				0.4		
7						
8				0.4		
9	RI-SB23-PP420-10			365	SILTY SAND (SM): dark gray (7.5YR 4/1), moist, 40% fine sand, 10% medium sand, 10% coarse sand, 30% non-plastic fines, 10% fine gravel wet	Soil sample RI-SB23-PP420-10 (3x125 mL, 2x40 mL with NaHSO4 and 2x40 mL with MeOH) collected for TPH-Dx, TPH-Jet, BTEX, 2-methylnaphthalene, VPH and EPH.
10						
11						
12	RI-SB23-PP420-13			325		Soil sample RI-SB23-PP420-13 (3x125 mL, 2x40 mL with NaHSO4 and 2x40 mL with MeOH) collected for TPH-Dx, TPH-Jet, BTEX, 2-methylnaphthalene, VPH and EPH.
13				754		
14				737	woody debris, visible sheen	
15						

Log of Boring No. PP420 (cont'd)

DEPTH (feet)	SAMPLES			OVM READING (ppm)	DESCRIPTION NAME (USCS): color, moist, % by wt., plast. density, structure, cementation, react. w/HCl, geo. inter.	REMARKS
	Sample No.	Sample	Blows/ Foot			
16				4.8	SILTY SAND (SM): Continued	
17				14.2 163	SANDY SILT (ML): dark gray (7.5YR 4/1), wet, 75% medium plastic fines, 25% fine sand, visible sheen	
18				8.0	<input type="checkbox"/> woody debris and organics	
20				1.6	Bottom of boring at 20 feet BGS. Abandoned with hydrated bentonite chips.	
21						
22						
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33						



ATTACHMENT 2

Laboratory Report and Data Validation Memo

Memo
 July 11, 2012
 Page 2 of 7

<u>Sample ID</u>	<u>Date Collected</u>	<u>SDG</u>	<u>Laboratory</u> <u>Sample ID</u>	<u>Analyses</u>
RI-SB23-PP401-16	5/22/2012	BNX71	6665559	all
Trip Blank	5/22/2012	BNX71	6665561	BTEX
Trip Blank	5/22/2012	BNX71	6665562	VPH
RI-SB01-PP213-14	5/31/2012	BNX77	6674330	all
RI-SB01-PP213-16	5/31/2012	BNX77	6674331	all
RI-SB01-PP217-12	5/31/2012	BNX77	6674332	all
RI-SB01-PP217-16	5/31/2012	BNX77	6674333	all
Field Blank	5/31/2012	BNX77	6674334	all
Trip Blank	5/31/2012	BNX77	6674335	BTEX
Trip Blank	5/31/2012	BNX77	6674336	VPH

Data were reviewed in accordance with the appropriate method procedures and criteria documented in the Draft Quality Assurance Project Plan (QAPP) (AMEC, 2012). The control limits provided in the QAPP are advisory limits; therefore, the most current control limits provided by the laboratory were used to evaluate the quality control data. In cases where the laboratory did not track limits for an analyte, the limits in the QAPP were used.

Holding times, method/trip blanks, surrogate recoveries, laboratory control samples (LCS), laboratory duplicates (LCSD), blank spike samples, matrix spike/matrix spike duplicates (MS/MSD), field duplicates, and reporting limits were reviewed where available to assess compliance with applicable methods. If qualification was required, data were qualified based on the definitions and use of qualifying flags outlined in EPA guidance documents (EPA, 2008).

Samples were submitted to the laboratory each day upon completion of sampling. Upon receipt by LLI, the sample jar information was compared to the chain-of-custody (COC) form. The temperatures of the coolers were recorded as part of the check-in procedure, and all were below the maximum acceptable temperature of 6 degrees Celsius (°C).

The following observations were noted by laboratory personnel upon sample receipt.

- SDG BNX71: A field blank was indicated on the chain-of-custody though bottles were not submitted in the associated cooler. In addition, a trip blank was submitted but not indicated on the chain-of-custody. The chain-of-custody was revised to reflect samples submitted and the laboratory proceeded with analysis.
- SDG BNX77: Though all of the analyses were requested for the trip blanks included with this SDG, trip blanks are only analyzed for BTEX and VPH. The trip blanks were logged in for analysis of BTEX and VPH, and the laboratory proceeded with analysis.

ORGANIC ANALYSES

Samples were analyzed for the analytes listed in the introduction of this report. Laboratory data were evaluated for the parameters shown below:

1. Preservation and Holding Times – Acceptable
2. Blanks – Acceptable except as noted:

One field blank was collected and submitted with SDG BNX77. The field blank was submitted for all analyses and was free of contamination except for C21 through C34 aliphatics in the VPH analysis. C21 through C34 aliphatics were not detected in any of the associated samples; therefore, sample results were not affected and were not qualified.

3. Surrogates – Acceptable except as noted:

VPH by Ecology NWTPH-VPH

SDG BNX71: The surrogate trifluorotoluene-P was recovered at 143 percent, greater than the control limits of 60 to 140 percent in the LCS associated with batch 12153A08A. The associated LCS recoveries were within the control limits; therefore, sample results are not affected and are not qualified.

Both surrogates (trifluorotoluene-P and trifluorotoluene-F) were outside of the control limits in the initial and diluted analyses of samples RI-SB23-PP420-13 and RI-SB23-PP401-14. For sample RI-SB23-PP420-13, trifluorotoluene-P was below the lower control limit and trifluorotoluene-F was above the upper control limit. For sample RI-SB23-PP401-14, both were above the upper control limit. The results are qualified as estimated, with detected compounds flagged with a “J” and non-detected compounds flagged with a “UJ.”

The surrogate trifluorotoluene-P was recovered at 146 percent in sample RI-SB23-PP401-16. The high recovery equates to a possible high bias in the samples; therefore, detected compounds are qualified as estimated and flagged with a “J,” and non-detected compounds are not qualified.

SDG BNX77: Both surrogates (trifluorotoluene-P and trifluorotoluene-F) were above the upper control limit in the initial analysis of sample RI-SB01-PP213-14, and trifluorotoluene-P was below the lower control limit in the diluted analysis of the same sample. The sample required high dilutions to quantitate high concentrations of target analytes; therefore, sample results are not qualified.

The surrogate trifluorotoluene-P also was above the upper control limit in the blank and LCS samples associated with batch number 121560016A. The blank was free of contamination and the LCS recoveries were within the control limits; therefore, the results are unaffected by the possible high bias and are not qualified.

TPH by NWTPH-Dx

SDGs BN71 and BN77: The surrogate chlorobenzene was not recovered in the analysis of samples RI-SB23-PP420-13 and RI-SB01-PP217-12. The low recoveries equate to a possible low bias in the sample; therefore, results are qualified as estimated with detections flagged with a "J" and non-detections flagged with a "UJ."

BTEX by EPA 8260C

SDG BN77: The recovery of surrogate toluene-d8 was 35 percent in the initial analysis of sample RI-SB01-PP213-16, less than the control limits of 52 to 141 percent. The sample was reanalyzed with similar surrogate recoveries. The results are reported from the initial analysis and qualified as estimated with detections flagged with a "J" and non-detections flagged with a "UJ."

4. LCS/LCSD – Acceptable
5. MS/MSD – Acceptable except as noted:

BTEX by EPA 8260C

SDG BN71: The MS/MSD relative percent differences (RPDs) for ethylbenzene, m,p-xylene, and o-xylene ranged from 35 to 38 percent, greater than the control limit of 30 percent, in the MS/MSD performed using sample RI-SB01-PP211-10. The individual recoveries were acceptable; therefore, sample results were not affected and were not qualified.

EPH by Ecology NWTPH-EPH

SDG BN71: The MS/MSD RPDs for C21 through C34 aliphatics and C21 through C34 aromatics were 50 and 48 percent, respectively, greater than the control limit of 25 percent, in the MS/MSD performed using sample RI-SB01-PP211-10. The individual recoveries were acceptable; therefore, sample results were not affected and were not qualified.

VPH by Ecology NWTPH-VPH

SDG BN71: The MS/MSD recoveries in the analysis performed with sample RI-SB01-PP211-10 were outside of the control limits of 70 to 130 percent as follows: C5 through C6 aliphatics at 68 percent in the MS; C6 through C8 aliphatics at 60 percent in the MS; C8 through C10 aliphatics at 141 and 150 percent in the MS and MSD, respectively; and C8 through C10 aromatics at 490 and 523 percent in the MS and MSD, respectively. The affected compounds were not detected in sample RI-SB01-PP211-10 and therefore are affected only by low recoveries. The results for C5 through C6 aliphatics and C6 through C8 aliphatics in sample RI-SB01-PP211-10 are qualified as estimated and flagged with a "UJ."

6. Laboratory Duplicates – Acceptable except as noted:

TPH by NWTPH-Dx

SDG BNX71: The laboratory duplicate RPDs were not calculated for the duplicate performed with sample RI-SB01-PP211-10, since the concentrations of the analytes were less than five times the reporting limit. An alternate criterion is to compare the difference between the primary and duplicate concentrations to the value of the reporting limit. The laboratory duplicate results for diesel and motor oil failed the alternate criteria. Therefore, the results for diesel and motor oil in sample RI-SB01-PP211-10 are qualified as estimated and flagged with a “J.”

7. Field Duplicates – Acceptable

One field duplicate was submitted during this sampling event, meeting the project frequency requirement of 5 percent or 1 for every 20 samples. Sample RI-SB01-PP216-9-14 was collected as a field duplicate of sample RI-SB01-PP216-14. The field duplicate RPDs could not be calculated because all results for the primary samples and duplicates were either below laboratory detection limits or the concentrations were less than five times the value of the reporting limit. An alternate criterion for results that are less than five times the value of the reporting limit is to compare the difference between the primary and duplicate concentrations to the value of the reporting limit. The field duplicate results for 2-methylnaphthalene failed the alternate criteria. Therefore, the 2-methylnaphthalene results in samples RI-SB01-PP216-9-14 and RI-SB01-PP216-14 are qualified as estimated and flagged with a “J.”

8. Reporting Limits – Acceptable except as noted:

VPH by Ecology NWTPH-VPH

SDG BNX71: The laboratory applied an “E” flag to the following results to indicate that the results were greater than the calibration range of the instrument: C6-C8 aliphatics, C8-C10 aliphatics, and C8-C10 aromatics in sample RI-SB23-PP420-13; C8-C10 aliphatics in sample RI-SB23-PP420-10; C6-C8 aliphatics in sample RI-SB23-PP401-14; and C6-C8 aliphatics in sample RI-SB01-PP213-14. The samples were diluted and reanalyzed. The affected analytes are reported from the reanalysis, and all other compounds are reported from the initial analysis.

OVERALL ASSESSMENT OF DATA

The completeness of SDGs BNX71 and BNX77 is 100 percent. Evaluation of the usefulness of this data is based on EPA guidance documents listed in the introduction to this report. Few problems were identified and analytical performance was generally within specified limits. The data, as qualified, meet the project’s data quality objectives.

Sample ID	Analysis Method	Qualified Analyte	Qualified Result	Qualifier Reason
RI-SB23-PP405-12		none		
RI-SB23-PP405-14		none		
RI-SB23-PP420-13	VPH TPH-Dx	benzene C5-C6 aliphatics C6-C8 aliphatics C8-C10 aliphatics C8-C10 aromatics ethylbenzene methyl t-butyl ether toluene o-xylene m,p-xylenes DRO C12-C24 HRO C24-C40 TPH-Jet A C8-C18	0.776 UJ 7.76 UJ 299 J 1,290 J 887 J 8.63 J 0.776 UJ 5.26 J 3.68 J 1.55 UJ 510 J 170 UJ 890 J	Surrogate recoveries
RI-SB23-PP420-10		none		
RI-SB01-PP216-14	SVOCs	2-methylnaphthalene	35 J	field duplicate RPD
RI-SB01-PP216-9-14	SVOCs	2-methylnaphthalene	79 J	field duplicate RPD
RI-SB01-PP211-10	VPH TPH-Dx	C5-C6 aliphatics C6-C8 aliphatics DRO C12-C24 HRO C24-C40	12.4 UJ 12.4 UJ 20 J 82 J	MS/MSD recoveries Laboratory duplicate RPD
RI-SB23-PP401-14	VPH	benzene C5-C6 aliphatics C6-C8 aliphatics C8-C10 aliphatics C8-C10 aromatics ethylbenzene methyl t-butyl ether toluene o-xylene m,p-xylenes	1.08 UJ 10.8 UJ 847 J 377 J 192 J 1.08 UJ 1.08 UJ 1.08 UJ 1.53 J 3.76 J	Surrogate recoveries
RI-SB23-PP401-16	VPH	C6-C8 aliphatics C8-C10 aliphatics	176 J 17.9 J	surrogate recoveries
Trip Blank		none		
Trip Blank		none		
RI-SB01-PP213-14		none		
RI-SB01-PP213-16	BTEX	benzene ethylbenzene toluene m,p-xylene o-xylene	0.6 UJ 3 UJ 3 UJ 3 UJ 3 UJ	surrogate recoveries

Sample ID	Analysis Method	Qualified Analyte	Qualified Result	Qualifier Reason
RI-SB01-PP217-12	TPH-Dx	DRO C12-C24 HRO C24-C40 TPH-Jet A C8-C18	2,200 J 370 UJ 3,600 J	surrogate recoveries
RI-SB01-PP217-16		none		
Field Blank		none		
Trip Blank		none		
Trip Blank		none		

Notes

DRO = diesel-range organics

HRO = heavy range organics

J = Compound is positively identified, result is an estimate.

MS/MSD = matrix spike/matrix spike duplicates

RPD = relative percent difference

SVOCs = semivolatile organic compounds

TPH-Dx = total petroleum hydrocarbons as diesel

UJ = Compound was not detected, associated reporting limit is an estimate.

VPH = volatile petroleum hydrocarbons

REFERENCES

AMEC Environment & Infrastructure, Inc. (AMEC), 2012, Draft Quality Assurance Project Plan, Boeing Renton Facility, Renton, Washington: Prepared for the Boeing Company, February.

US Environmental Protection Agency (EPA), 2008, US EPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review: EPA 540-R-08-01, June.



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Laboratories

Analysis Report

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ANALYTICAL RESULTS

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

Prepared for:

The Boeing Company
PO Box 3707 MC 1W-12
Seattle WA 98124

June 06, 2012

Project: Boeing_RTN: FFF

Submittal Date: 05/24/2012

Group Number: 1311382

SDG: BNX71

State of Sample Origin: WA

Client Sample Description

RI-SB23-PP405-12

RI-SB23-PP405-14

RI-SB23-PP420-13

RI-SB23-PP420-10

RI-SB01-PP216-14

RI-SB01-PP216-9-14

RI-SB01-PP211-10

RI-SB23-PP401-14

RI-SB23-PP401-16

Trip Blank

Trip Blank

Lancaster Labs (LLI)

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The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

ELECTRONIC The Boeing Company

COPY TO

Attn: Carl Bach

ELECTRONIC AMEC

COPY TO

Attn: Crystal Neirby

1 COPY TO Data Package Group



Lancaster
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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Respectfully Submitted,

Rachel L. Kreamer

Rachel L. Kreamer
Group Leader

(717) 556-7221

Sample Description: RI-SB23-PP405-12
Boeing_RTN: FFF

LLI Sample # SW 6665551
LLI Group # 1311382
Account # 13419

Project Name: Boeing_RTN: FFF

Collected: 05/22/2012 10:00 by CJ

The Boeing Company
PO Box 3707 MC 1W-12
Seattle WA 98124

Submitted: 05/24/2012 09:45

Reported: 06/06/2012 18:22

40512 SDG#: BNX71-01

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Limit of Quantitation	Dilution Factor
GC/MS Volatiles SW-846 8260C						
11995	Benzene	71-43-2	85	U	85	64.88
11995	Ethylbenzene	100-41-4	420	U	420	64.88
11995	Toluene	108-88-3	420	U	420	64.88
11995	m+p-Xylene	179601-23-1	420	U	420	64.88
11995	o-Xylene	95-47-6	420	U	420	64.88
Reporting limits were raised due to interference from the sample matrix.						
GC/MS Semivolatiles SW-846 8270D						
10726	2-Methylnaphthalene	91-57-6	1,100		22	1
GC Petroleum ECY 97-602 WA EPH						
Hydrocarbons						
05970	>C10-C12 Aliphatic	n.a.	650		33	5
05970	>C10-C12 Aromatic	n.a.	70		6.5	1
05970	>C12-C16 Aliphatic	n.a.	620		33	5
05970	>C12-C16 Aromatic	n.a.	210		6.5	1
05970	>C16-C21 Aliphatic	n.a.	33	U	33	5
05970	>C16-C21 Aromatic	n.a.	31		6.5	1
05970	>C21-C34 Aliphatic	n.a.	65	U	65	5
05970	>C21-C34 Aromatic	n.a.	11		6.5	1
GC Petroleum ECY 97-602 WA VPH						
Hydrocarbons						
05666	Benzene	71-43-2	0.549	U	0.549	42
05666	C5-C6 Aliphatic Hydrocarbons	n.a.	5.49	U	5.49	42
05666	C6-C8 Aliphatic Hydrocarbons	n.a.	5.49	U	5.49	42
05666	C8-C10 Aliphatic Hydrocarbons	n.a.	5.49	U	5.49	42
05666	C8-C10 Aromatic Hydrocarbons	n.a.	5.49	U	5.49	42
05666	Ethylbenzene	100-41-4	0.549	U	0.549	42
05666	Methyl t-butyl ether	1634-04-4	0.549	U	0.549	42
05666	Toluene	108-88-3	0.549	U	0.549	42
05666	o-Xylene	95-47-6	0.549	U	0.549	42
05666	m,p-Xylenes	179601-23-1	1.10	U	1.10	42
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
12093	DRO C12-C24 w/Si Gel	n.a.	22		9.0	1
12093	HRO C24-C40 w/Si Gel	n.a.	39	U	39	1
12093	TPH JetA C8-C18 w/Si Gel	n.a.	34		9.0	1
TPH quantitation is based on peak area comparison of the sample pattern to that of a hydrocarbon component mix calibration in a range that includes C8 (n-octane) through C40 (n-tetracontane) normal hydrocarbons.						
Wet Chemistry EPA 160.3 modified						
00111	Moisture	n.a.	23.5		0.50	1

Sample Description: RI-SB23-PP405-12
Boeing_RTN: FFF

LLI Sample # SW 6665551
LLI Group # 1311382
Account # 13419

Project Name: Boeing_RTN: FFF

Collected: 05/22/2012 10:00 by CJ

The Boeing Company
PO Box 3707 MC 1W-12
Seattle WA 98124

Submitted: 05/24/2012 09:45

Reported: 06/06/2012 18:22

40512 SDG#: BNX71-01

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Limit of Quantitation	Dilution Factor
	Wet Chemistry	EPA 160.3 modified	%	%	
<p>"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported above is on an as-received basis.</p>					

General Sample Comments

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11995	8260C Soil Master	SW-846 8260C	1	R121562AA	06/04/2012 22:56	Andrea E Lando	64.88
02392	GC/MS - Field Preserved NaHSO4	SW-846 5035A	1	201214627757	05/22/2012 10:00	Client Supplied	1
02392	GC/MS - Field Preserved NaHSO4	SW-846 5035A	2	201214627757	05/22/2012 10:00	Client Supplied	1
07579	GC/MS-5g Field Preserv.MeOH-NC	SW-846 5035A	1	201214627757	05/22/2012 10:00	Client Supplied	1
10726	SVOA 8270D (microwave)	SW-846 8270D	1	12146SLB026	05/27/2012 12:16	Jennifer R Riggs	1
10813	BNA Soil Microwave APP IX	SW-846 3546	1	12146SLB026	05/26/2012 11:30	Sally L Appleyard	1
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201214627757	05/22/2012 10:00	Client Supplied	n.a.
05970	WA EPH in Soil	ECY 97-602 WA EPH	1	121520027A	06/02/2012 16:37	Heather E Williams	1
05970	WA EPH in Soil	ECY 97-602 WA EPH	1	121520027A	06/03/2012 18:54	Heather E Williams	5
05666	WA- VPH soils	ECY 97-602 WA VPH	1	12153A08A	06/01/2012 12:49	Nicholas R Rossi	42
12093	TPH-Dx SW Fuel ID w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	121500031A	05/30/2012 23:57	Heather E Williams	1
12118	TPH-Dx w/Fuel Soil Ext. (SG)	ECY 97-602 NWTPH-Dx 06/97	1	121500031A	05/30/2012 09:00	Kerrie A Freeburn	1
11213	WA EPH Soils Extraction	ECY 97-602 WA EPH	1	121520027A	05/31/2012 18:10	Sally L Appleyard	1
00497	Silica Gel Fractionation	SW-846 3630C modified	1	121520027A	06/01/2012 14:45	Edwin Ortiz	1
00111	Moisture	EPA 160.3 modified	1	12150820004A	05/29/2012 11:48	William C Schwebel	1

Sample Description: RI-SB23-PP405-14
Boeing_RTN: FFF

LLI Sample # SW 6665552
LLI Group # 1311382
Account # 13419

Project Name: Boeing_RTN: FFF

Collected: 05/22/2012 10:18 by CJ

The Boeing Company
PO Box 3707 MC 1W-12
Seattle WA 98124

Submitted: 05/24/2012 09:45

Reported: 06/06/2012 18:22

40514 SDG#: BNX71-02

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Limit of Quantitation	Dilution Factor
GC/MS Volatiles SW-846 8260C						
11995	Benzene	71-43-2	8		0.7	0.48
11995	Ethylbenzene	100-41-4	4	U	4	0.48
11995	Toluene	108-88-3	4	U	4	0.48
11995	m+p-Xylene	179601-23-1	4	U	4	0.48
11995	o-Xylene	95-47-6	4	U	4	0.48
GC/MS Semivolatiles SW-846 8270D						
10726	2-Methylnaphthalene	91-57-6	600		26	1
GC Petroleum ECY 97-602 WA EPH						
Hydrocarbons						
05970	>C10-C12 Aliphatic	n.a.	450		7.7	1
05970	>C10-C12 Aromatic	n.a.	34		7.7	1
05970	>C12-C16 Aliphatic	n.a.	470		7.7	1
05970	>C12-C16 Aromatic	n.a.	110		7.7	1
05970	>C16-C21 Aliphatic	n.a.	36		7.7	1
05970	>C16-C21 Aromatic	n.a.	19		7.7	1
05970	>C21-C34 Aliphatic	n.a.	23		15	1
05970	>C21-C34 Aromatic	n.a.	9.8		7.7	1
GC Petroleum ECY 97-602 WA VPH						
Hydrocarbons						
05666	Benzene	71-43-2	1.52	U	1.52	98.98
05666	C5-C6 Aliphatic Hydrocarbons	n.a.	15.2	U	15.2	98.98
05666	C6-C8 Aliphatic Hydrocarbons	n.a.	15.2	U	15.2	98.98
05666	C8-C10 Aliphatic Hydrocarbons	n.a.	15.2	U	15.2	98.98
05666	C8-C10 Aromatic Hydrocarbons	n.a.	15.2	U	15.2	98.98
05666	Ethylbenzene	100-41-4	1.52	U	1.52	98.98
05666	Methyl t-butyl ether	1634-04-4	1.52	U	1.52	98.98
05666	Toluene	108-88-3	1.52	U	1.52	98.98
05666	o-Xylene	95-47-6	1.52	U	1.52	98.98
05666	m,p-Xylenes	179601-23-1	3.03	U	3.03	98.98
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
12093	DRO C12-C24 w/Si Gel	n.a.	16		11	1
12093	HRO C24-C40 w/Si Gel	n.a.	46	U	46	1
12093	TPH JetA C8-C18 w/Si Gel	n.a.	28		11	1
TPH quantitation is based on peak area comparison of the sample pattern to that of a hydrocarbon component mix calibration in a range that includes C8 (n-octane) through C40 (n-tetracontane) normal hydrocarbons.						
Wet Chemistry EPA 160.3 modified						
00111	Moisture	n.a.	34.7		0.50	1

Sample Description: RI-SB23-PP405-14
Boeing_RTN: FFF

LLI Sample # SW 6665552
LLI Group # 1311382
Account # 13419

Project Name: Boeing_RTN: FFF

Collected: 05/22/2012 10:18 by CJ

The Boeing Company
PO Box 3707 MC 1W-12
Seattle WA 98124

Submitted: 05/24/2012 09:45

Reported: 06/06/2012 18:22

40514 SDG#: BNX71-02

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Limit of Quantitation	Dilution Factor
	Wet Chemistry	EPA 160.3 modified	%	%	
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported above is on an as-received basis.					

General Sample Comments

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11995	8260C Soil Master	SW-846 8260C	1	X121531AA	06/01/2012 18:34	Chelsea B Eastep	0.48
02392	GC/MS - Field Preserved NaHSO4	SW-846 5035A	1	201214627757	05/22/2012 10:18	Client Supplied	1
02392	GC/MS - Field Preserved NaHSO4	SW-846 5035A	2	201214627757	05/22/2012 10:18	Client Supplied	1
06645	GC/MS-15g Field Preserv. MeOH	SW-846 5035A	1	201214627757	05/22/2012 10:18	Client Supplied	n.a.
10726	SVOA 8270D (microwave)	SW-846 8270D	1	12146SLB026	05/27/2012 13:30	Jennifer R Riggs	1
10813	BNA Soil Microwave APP IX	SW-846 3546	1	12146SLB026	05/26/2012 11:30	Sally L Appleyard	1
00388	GC - Field Preserved (MA-VPH)	MA DEP VPH modified	1	201215027774	05/22/2012 10:18	Client Supplied	1
05970	WA EPH in Soil	ECY 97-602 WA EPH	1	121520027A	06/02/2012 19:36	Heather E Williams	1
05970	WA EPH in Soil	ECY 97-602 WA EPH	1	121520027A	06/02/2012 20:20	Heather E Williams	1
05666	WA- VPH soils	ECY 97-602 WA VPH	1	12153A08A	06/01/2012 13:30	Nicholas R Rossi	98.98
12093	TPH-Dx SW Fuel ID w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	121500031A	05/31/2012 00:42	Heather E Williams	1
12118	TPH-Dx w/Fuel Soil Ext. (SG)	ECY 97-602 NWTPH-Dx 06/97	1	121500031A	05/30/2012 09:00	Kerrie A Freeburn	1
11213	WA EPH Soils Extraction	ECY 97-602 WA EPH	1	121520027A	05/31/2012 18:10	Sally L Appleyard	1
00497	Silica Gel Fractionation	SW-846 3630C modified	1	121520027A	06/01/2012 14:45	Edwin Ortiz	1
00111	Moisture	EPA 160.3 modified	1	12150820004A	05/29/2012 11:48	William C Schwebel	1

Sample Description: RI-SB23-PP420-13
Boeing_RTN: FFF

LLI Sample # SW 6665553
LLI Group # 1311382
Account # 13419

Project Name: Boeing_RTN: FFF

Collected: 05/22/2012 11:40 by CJ

The Boeing Company

PO Box 3707 MC 1W-12

Seattle WA 98124

Submitted: 05/24/2012 09:45

Reported: 06/06/2012 18:22

42013 SDG#: BNX71-03

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Limit of Quantitation	Dilution Factor
GC/MS Volatiles		SW-846 8260C	ug/kg		ug/kg	
11995	Benzene	71-43-2	98	U	98	86.21
11995	Ethylbenzene	100-41-4	490	U	490	86.21
11995	Toluene	108-88-3	490	U	490	86.21
11995	m+p-Xylene	179601-23-1	490	U	490	86.21
11995	o-Xylene	95-47-6	490	U	490	86.21
Reporting limits were raised due to interference from the sample matrix.						
GC/MS Semivolatiles		SW-846 8270D	ug/kg		ug/kg	
10726	2-Methylnaphthalene	91-57-6	19	U	19	1
GC Petroleum		ECY 97-602 WA EPH	mg/kg		mg/kg	
Hydrocarbons						
05970	>C10-C12 Aliphatic	n.a.	1,500		140	25
05970	>C10-C12 Aromatic	n.a.	85		5.7	1
05970	>C12-C16 Aliphatic	n.a.	1,500		140	25
05970	>C12-C16 Aromatic	n.a.	330		5.7	1
05970	>C16-C21 Aliphatic	n.a.	140	U	140	25
05970	>C16-C21 Aromatic	n.a.	58		5.7	1
05970	>C21-C34 Aliphatic	n.a.	290	U	290	25
05970	>C21-C34 Aromatic	n.a.	27		5.7	1
GC Petroleum		ECY 97-602 WA VPH	mg/kg		mg/kg	
Hydrocarbons						
05666	Benzene	71-43-2	0.776	U	0.776	68.03
05666	C5-C6 Aliphatic Hydrocarbons	n.a.	7.76	U	7.76	68.03
05666	C6-C8 Aliphatic Hydrocarbons	n.a.	250	E DNR	7.76	68.03
05666	C8-C10 Aliphatic Hydrocarbons	n.a.	764	E DNR	7.76	68.03
05666	C8-C10 Aromatic Hydrocarbons	n.a.	482	E DNR	7.76	68.03
05666	Ethylbenzene	100-41-4	8.63	J	0.776	68.03
05666	Methyl t-butyl ether	1634-04-4	0.776	J	0.776	68.03
05666	Toluene	108-88-3	5.26	J	0.776	68.03
05666	o-Xylene	95-47-6	3.68	J	0.776	68.03
05666	m,p-Xylenes	179601-23-1	1.55	J	1.55	68.03
Trial ID: REDL						
05666	Benzene	71-43-2	3.88	U DNR	3.88	340.17
05666	C5-C6 Aliphatic Hydrocarbons	n.a.	38.8	U DNR	38.8	340.17
05666	C6-C8 Aliphatic Hydrocarbons	n.a.	299	J	38.8	340.17
05666	C8-C10 Aliphatic Hydrocarbons	n.a.	1,290	J	38.8	340.17
05666	C8-C10 Aromatic Hydrocarbons	n.a.	887	J	38.8	340.17

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7/17/12

Sample Description: RI-SB23-PP420-13
Boeing_RTN: FFF

LLI Sample # SW 6665553
LLI Group # 1311382
Account # 13419

Project Name: Boeing_RTN: FFF

Collected: 05/22/2012 11:40 by CJ

The Boeing Company
PO Box 3707 MC 1W-12
Seattle WA 98124

Submitted: 05/24/2012 09:45

Reported: 06/06/2012 18:22

42013 SDG#: BNX71-03

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Limit of Quantitation	Dilution Factor
GC Petroleum ECY 97-602 WA VPH			mg/kg	mg/kg	
Hydrocarbons					
05666	Ethylbenzene	100-41-4	11.7	3.88	340.17
05666	Methyl t-butyl ether	1634-04-4	3.88	3.88	340.17
05666	Toluene	108-88-3	6.60	3.88	340.17
05666	o-Xylene	95-47-6	7.77	3.88	340.17
05666	m,p-Xylenes	179601-23-1	7.76	7.76	340.17

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Limit of Quantitation	Dilution Factor
GC Petroleum ECY 97-602 NWTPH-Dx			mg/kg	mg/kg	
Hydrocarbons w/Si modified					
12093	DRO C12-C24 w/Si Gel	n.a.	510	40	5
12093	HRO C24-C40 w/Si Gel	n.a.	170	170	5
12093	TPH JetA C8-C18 w/Si Gel	n.a.	890	40	5

TPH quantitation is based on peak area comparison of the sample pattern to that of a hydrocarbon component mix calibration in a range that includes C8 (n-octane) through C40 (n-tetracontane) normal hydrocarbons. The surrogate data is outside the QC limits due to unresolvable matrix problems evident in the sample chromatogram.

CAT No.	Analysis Name	EPA 160.3 modified	%	%	Dilution Factor
00111	Moisture	n.a.	12.3	0.50	1

"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported above is on an as-received basis.

General Sample Comments

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11995	8260C Soil Master	SW-846 8260C	1	R121562AA	06/04/2012 23:41	Andrea E Lando	86.21
02392	GC/MS - Field Preserved NaHSO4	SW-846 5035A	1	201214627757	05/22/2012 11:40	Client Supplied	1
02392	GC/MS - Field Preserved NaHSO4	SW-846 5035A	2	201214627757	05/22/2012 11:40	Client Supplied	1
06645	GC/MS-15g Field Preserv. MeOH	SW-846 5035A	1	201214627757	05/22/2012 11:40	Client Supplied	n.a.
10726	SVOA 8270D (microwave)	SW-846 8270D	1	12146SLB026	05/27/2012 13:55	Jennifer R Riggs	1
10813	BNA Soil Microwave APP IX	SW-846 3546	1	12146SLB026	05/26/2012 11:30	Sally L Appleyard	1
00388	GC - Field Preserved (MA-VPH)	MA DEP VPH modified	1	201215027774	05/22/2012 11:40	Client Supplied	1

on 7/17/12

Sample Description: RI-SB23-PP420-13
Boeing_RTN: FFF

LLI Sample # SW 6665553
LLI Group # 1311382
Account # 13419

Project Name: Boeing_RTN: FFF

Collected: 05/22/2012 11:40 by CJ

The Boeing Company
PO Box 3707 MC 1W-12
Seattle WA 98124

Submitted: 05/24/2012 09:45

Reported: 06/06/2012 18:22

42013 SDG#: BNX71-03

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
05970	WA EPH in Soil	ECY 97-602 WA EPH	1	121520027A	06/02/2012 22:34	Heather E Williams	1
05970	WA EPH in Soil	ECY 97-602 WA EPH	1	121520027A	06/03/2012 19:39	Heather E Williams	25
05666	WA- VPH soils	ECY 97-602 WA VPH	1	12153A08B	06/04/2012 13:15	Nicholas R Rossi	68.03
05666	WA- VPH soils	ECY 97-602 WA VPH	2- REDL	12153A08B	06/04/2012 18:45	Nicholas R Rossi	340.17
12093	TPH-Dx SW Fuel ID w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	121500031A	06/01/2012 15:32	Heather E Williams	5
12118	TPH-Dx w/Fuel Soil Ext. (SG)	ECY 97-602 NWTPH-Dx 06/97	1	121500031A	05/30/2012 09:00	Kerrie A Freeburn	1
11213	WA EPH Soils Extraction	ECY 97-602 WA EPH	1	121520027A	05/31/2012 18:10	Sally L Appleyard	1
00497	Silica Gel Fractionation	SW-846 3630C modified	1	121520027A	06/01/2012 14:45	Edwin Ortiz	1
00111	Moisture	EPA 160.3 modified	1	12150820004A	05/29/2012 11:48	William C Schwebel	1

Sample Description: RI-SB23-PP420-10
Boeing_RTN: FFF

LLI Sample # SW 6665554
LLI Group # 1311382
Account # 13419

Project Name: Boeing_RTN: FFF

Collected: 05/22/2012 12:00 by CJ

The Boeing Company
PO Box 3707 MC 1W-12
Seattle WA 98124

Submitted: 05/24/2012 09:45

Reported: 06/06/2012 18:22

42010 SDG#: BNX71-04

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Limit of Quantitation	Dilution Factor
GC/MS Volatiles		SW-846 8260C			ug/kg	
11995	Benzene	71-43-2	90	U	90	74.85
11995	Ethylbenzene	100-41-4	450	U	450	74.85
11995	Toluene	108-88-3	450	U	450	74.85
11995	m+p-Xylene	179601-23-1	450	U	450	74.85
11995	o-Xylene	95-47-6	450	U	450	74.85

Reporting limits were raised due to interference from the sample matrix.

GC/MS Semivolatiles		SW-846 8270D			ug/kg	
10726	2-Methylnaphthalene	91-57-6	21	U	21	1

GC Petroleum		ECY 97-602 WA EPH			mg/kg	
Hydrocarbons						
05970	>C10-C12 Aliphatic	n.a.	6.0	U	6.0	1
05970	>C10-C12 Aromatic	n.a.	6.0	U	6.0	1
05970	>C12-C16 Aliphatic	n.a.	16		6.0	1
05970	>C12-C16 Aromatic	n.a.	6.0	U	6.0	1
05970	>C16-C21 Aliphatic	n.a.	11		6.0	1
05970	>C16-C21 Aromatic	n.a.	6.0	U	6.0	1
05970	>C21-C34 Aliphatic	n.a.	100		12	1
05970	>C21-C34 Aromatic	n.a.	48		6.0	1

GC Petroleum		ECY 97-602 WA VPH			mg/kg	
Hydrocarbons						
05666	Benzene	71-43-2	0.825	U	0.825	68.4
05666	C5-C6 Aliphatic Hydrocarbons	n.a.	8.25	U	8.25	68.4
05666	C6-C8 Aliphatic Hydrocarbons	n.a.	24.7		8.25	68.4
05666	C8-C10 Aliphatic Hydrocarbons	n.a.	393	<i>ENDR</i>	8.25	68.4
05666	C8-C10 Aromatic Hydrocarbons	n.a.	309		8.25	68.4
05666	Ethylbenzene	100-41-4	4.48		0.825	68.4
05666	Methyl t-butyl ether	1634-04-4	0.825	U	0.825	68.4
05666	Toluene	108-88-3	0.825	U	0.825	68.4
05666	o-Xylene	95-47-6	1.68		0.825	68.4
05666	m,p-Xylenes	179601-23-1	1.65	U	1.65	68.4

Trial ID: REDL

05666	Benzene	71-43-2	4.13	<i>UPNR</i>	4.13	342.01
05666	C5-C6 Aliphatic Hydrocarbons	n.a.	41.3	<i>U</i>	41.3	342.01
05666	C6-C8 Aliphatic Hydrocarbons	n.a.	41.3	<i>U</i>	41.3	342.01
05666	C8-C10 Aliphatic Hydrocarbons	n.a.	643		41.3	342.01
05666	C8-C10 Aromatic Hydrocarbons	n.a.	463	<i>DNR</i>	41.3	342.01
05666	Ethylbenzene	100-41-4	5.30	<i>DNR</i>	4.13	342.01

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7/11/12

Sample Description: RI-SB23-PP420-10
Boeing_RTN: FFF

LLI Sample # SW 6665554
LLI Group # 1311382
Account # 13419

Project Name: Boeing_RTN: FFF

Collected: 05/22/2012 12:00 by CJ

The Boeing Company
PO Box 3707 MC 1W-12
Seattle WA 98124

Submitted: 05/24/2012 09:45

Reported: 06/06/2012 18:22

42010 SDG#: BNX71-04

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Limit of Quantitation	Dilution Factor
GC Petroleum		ECY 97-602 WA VPH	mg/kg		mg/kg	
Hydrocarbons						
05666	Methyl t-butyl ether	1634-04-4	4.13	U <i>PHR</i>	4.13	342.01
05666	Toluene	108-88-3	4.13	U	4.13	342.01
05666	o-Xylene	95-47-6	7.85		4.13	342.01
05666	m,p-Xylenes	179601-23-1	8.25	U	8.25	342.01
GC Petroleum		ECY 97-602 NWTPH-Dx modified	mg/kg		mg/kg	
Hydrocarbons w/Si						
12093	DRO C12-C24 w/Si Gel	n.a.	330		8.4	1
12093	HRO C24-C40 w/Si Gel	n.a.	240		36	1
12093	TPH JetA C8-C18 w/Si Gel	n.a.	480		8.4	1
TPH quantitation is based on peak area comparison of the sample pattern to that of a hydrocarbon component mix calibration in a range that includes C8 (n-octane) through C40 (n-tetracontane) normal hydrocarbons.						
Wet Chemistry		EPA 160.3 modified	%		%	
00111	Moisture	n.a.	17.1		0.50	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported above is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11995	8260C Soil Master	SW-846 8260C	1	R121562AA	06/05/2012 00:49	Andrea E Lando	74.85
02392	GC/MS - Field Preserved NaHSO4	SW-846 5035A	1	201214627757	05/22/2012 12:00	Client Supplied	1
02392	GC/MS - Field Preserved NaHSO4	SW-846 5035A	2	201214627757	05/22/2012 12:00	Client Supplied	1
07579	GC/MS-5g Field Preserv.MeOH-NC	SW-846 5035A	1	201214627757	05/22/2012 12:00	Client Supplied	1
10726	SVOA 8270D (microwave)	SW-846 8270D	1	12146SLB026	05/27/2012 14:20	Jennifer R Riggs	1
10813	BNA Soil Microwave APP IX	SW-846 3546	1	12146SLB026	05/26/2012 11:30	Sally L Appleyard	1
00388	GC - Field Preserved (MA-VPH)	MA DEP VPH modified	1	201214627757	05/22/2012 12:00	Client Supplied	1
05970	WA EPH in Soil	ECY 97-602 WA EPH	1	121520027A	06/03/2012 07:29	Heather E Williams	1
05970	WA EPH in Soil	ECY 97-602 WA EPH	1	121520027A	06/03/2012 08:57	Heather E Williams	1

On 7/11/12



Sample Description: RI-SB23-PP420-10
Boeing_RTN: FFF

LLI Sample # SW 6665554
LLI Group # 1311382
Account # 13419

Project Name: Boeing_RTN: FFF

Collected: 05/22/2012 12:00 by CJ

The Boeing Company
PO Box 3707 MC 1W-12
Seattle WA 98124

Submitted: 05/24/2012 09:45

Reported: 06/06/2012 18:22

42010 SDG#: BNX71-04

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis		Analyst	Dilution Factor
					Date	Time		
05666	WA- VPH soils	ECY 97-602 WA VPH	1	12153A08B	06/04/2012	13:56	Nicholas R Rossi	68.4
05666	WA- VPH soils	ECY 97-602 WA VPH	2- REDL	12153A08B	06/04/2012	19:27	Nicholas R Rossi	342.01
12093	TPH-Dx SW Fuel ID w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	121500031A	05/31/2012	06:40	Heather E Williams	1
12118	TPH-Dx w/Fuel Soil Ext. (SG)	ECY 97-602 NWTPH-Dx 06/97	1	121500031A	05/30/2012	09:00	Kerrie A Freeburn	1
11213	WA EPH Soils Extraction	ECY 97-602 WA EPH	1	121520027A	05/31/2012	18:10	Sally L Appleyard	1
00497	Silica Gel Fractionation	SW-846 3630C modified	1	121520027A	06/01/2012	14:45	Edwin Ortiz	1
00111	Moisture	EPA 160.3 modified	1	12150820004A	05/29/2012	11:48	William C Schwebel	1

Sample Description: RI-SB01-PP216-14
Boeing_RTN: FFF

LLI Sample # SW 6665555
LLI Group # 1311382
Account # 13419

Project Name: Boeing_RTN: FFF

Collected: 05/22/2012 13:10 by CJ

The Boeing Company
PO Box 3707 MC 1W-12
Seattle WA 98124

Submitted: 05/24/2012 09:45

Reported: 06/06/2012 18:22

21614 SDG#: BNX71-05

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Limit of Quantitation	Dilution Factor
GC/MS Volatiles SW-846 8260C					
11995	Benzene	71-43-2	0.5 U	0.5	0.41
11995	Ethylbenzene	100-41-4	2 U	2	0.41
11995	Toluene	108-88-3	2 U	2	0.41
11995	m+p-Xylene	179601-23-1	2 U	2	0.41
11995	o-Xylene	95-47-6	2 U	2	0.41
GC/MS Semivolatiles SW-846 8270D					
10726	2-Methylnaphthalene	91-57-6	35 U	19	1
GC Petroleum ECY 97-602 WA EPH					
Hydrocarbons					
05970	>C10-C12 Aliphatic	n.a.	5.7 U	5.7	1
05970	>C10-C12 Aromatic	n.a.	5.7 U	5.7	1
05970	>C12-C16 Aliphatic	n.a.	5.7 U	5.7	1
05970	>C12-C16 Aromatic	n.a.	5.7 U	5.7	1
05970	>C16-C21 Aliphatic	n.a.	5.7 U	5.7	1
05970	>C16-C21 Aromatic	n.a.	5.7 U	5.7	1
05970	>C21-C34 Aliphatic	n.a.	11 U	11	1
05970	>C21-C34 Aromatic	n.a.	5.7 U	5.7	1
GC Petroleum ECY 97-602 WA VPH					
Hydrocarbons					
05666	Benzene	71-43-2	0.802 U	0.802	70.15
05666	C5-C6 Aliphatic Hydrocarbons	n.a.	8.02 U	8.02	70.15
05666	C6-C8 Aliphatic Hydrocarbons	n.a.	22.6	8.02	70.15
05666	C8-C10 Aliphatic Hydrocarbons	n.a.	8.51	8.02	70.15
05666	C8-C10 Aromatic Hydrocarbons	n.a.	8.02 U	8.02	70.15
05666	Ethylbenzene	100-41-4	0.802 U	0.802	70.15
05666	Methyl t-butyl ether	1634-04-4	0.802 U	0.802	70.15
05666	Toluene	108-88-3	0.802 U	0.802	70.15
05666	o-Xylene	95-47-6	0.802 U	0.802	70.15
05666	m,p-Xylenes	179601-23-1	1.60 U	1.60	70.15
GC Petroleum ECY 97-602 NWTPH-Dx					
Hydrocarbons w/Si modified					
12093	DRO C12-C24 w/Si Gel	n.a.	8.0 U	8.0	1
12093	HRO C24-C40 w/Si Gel	n.a.	34 U	34	1
12093	TPH JetA C8-C18 w/Si Gel	n.a.	8.0 U	8.0	1
TPH quantitation is based on peak area comparison of the sample pattern to that of a hydrocarbon component mix calibration in a range that includes C8 (n-octane) through C40 (n-tetracontane) normal hydrocarbons.					
Wet Chemistry EPA 160.3 modified					
00111	Moisture	n.a.	12.5	0.50	1

CN
7/17/12

Sample Description: RI-SB01-PP216-14
Boeing_RTN: FFF

LLI Sample # SW 6665555
LLI Group # 1311382
Account # 13419

Project Name: Boeing_RTN: FFF

Collected: 05/22/2012 13:10 by CJ

The Boeing Company
PO Box 3707 MC 1W-12
Seattle WA 98124

Submitted: 05/24/2012 09:45
Reported: 06/06/2012 18:22

21614 SDG#: BNX71-05

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Limit of Quantitation	Dilution Factor
Wet Chemistry	EPA 160.3 modified		%	%	
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported above is on an as-received basis.					

General Sample Comments

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11995	8260C Soil Master	SW-846 8260C	1	X121531AA	06/01/2012 19:19	Chelsea B Eastep	0.41
02392	GC/MS - Field Preserved NaHSO4	SW-846 5035A	1	201214627757	05/22/2012 13:10	Client Supplied	1
02392	GC/MS - Field Preserved NaHSO4	SW-846 5035A	2	201214627757	05/22/2012 13:10	Client Supplied	1
07579	GC/MS-5g Field Preserv.MeOH-NC	SW-846 5035A	1	201214627757	05/22/2012 13:10	Client Supplied	1
10726	SVOA 8270D (microwave)	SW-846 8270D	1	12146SLB026	05/27/2012 14:45	Jennifer R Riggs	1
10813	BNA Soil Microwave APP IX	SW-846 3546	1	12146SLB026	05/26/2012 11:30	Sally L Appleyard	1
00388	GC - Field Preserved (MA-VPH)	MA DEP VPH modified	1	201214627757	05/22/2012 13:10	Client Supplied	1
05970	WA EPH in Soil	ECY 97-602 WA EPH	1	121520027A	06/02/2012 13:39	Heather E Williams	1
05970	WA EPH in Soil	ECY 97-602 WA EPH	1	121520027A	06/02/2012 14:24	Heather E Williams	1
05666	WA- VPH soils	ECY 97-602 WA VPH	1	12153A08A	06/01/2012 14:23	Nicholas R Rossi	70.15
12093	TPH-Dx SW Fuel ID w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	121500031A	05/31/2012 02:12	Heather E Williams	1
12118	TPH-Dx w/Fuel Soil Ext. (SG)	ECY 97-602 NWTPH-Dx 06/97	1	121500031A	05/30/2012 09:00	Kerrie A Freeburn	1
11213	WA EPH Soils Extraction	ECY 97-602 WA EPH	1	121520027A	05/31/2012 18:10	Sally L Appleyard	1
00497	Silica Gel Fractionation	SW-846 3630C modified	1	121520027A	06/01/2012 14:45	Edwin Ortiz	1
00111	Moisture	EPA 160.3 modified	1	12150820004A	05/29/2012 11:48	William C Schwebel	1

Sample Description: RI-SB01-PP216-9-14
Boeing_RTN: FFF

LLI Sample # SW 6665556
LLI Group # 1311382
Account # 13419

Project Name: Boeing_RTN: FFF

Collected: 05/22/2012 13:20 by CJ

The Boeing Company
PO Box 3707 MC 1W-12
Seattle WA 98124

Submitted: 05/24/2012 09:45

Reported: 06/06/2012 18:22

16914 SDG#: BNX71-06

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Limit of Quantitation	Dilution Factor
GC/MS	Volatiles	SW-846 8260C	ug/kg		ug/kg	
11995	Benzene	71-43-2	0.8		0.4	0.4
11995	Ethylbenzene	100-41-4	2	U	2	0.4
11995	Toluene	108-88-3	2	U	2	0.4
11995	m+p-Xylene	179601-23-1	2	U	2	0.4
11995	o-Xylene	95-47-6	2	U	2	0.4
GC/MS	Semivolatiles	SW-846 8270D	ug/kg		ug/kg	
10726	2-Methylnaphthalene	91-57-6	79	J	18	1
GC Petroleum	ECY 97-602 WA EPH		mg/kg		mg/kg	
Hydrocarbons						
05970	>C10-C12 Aliphatic	n.a.	5.3	U	5.3	1
05970	>C10-C12 Aromatic	n.a.	5.3	U	5.3	1
05970	>C12-C16 Aliphatic	n.a.	5.3	U	5.3	1
05970	>C12-C16 Aromatic	n.a.	5.3	U	5.3	1
05970	>C16-C21 Aliphatic	n.a.	5.3	U	5.3	1
05970	>C16-C21 Aromatic	n.a.	5.3	U	5.3	1
05970	>C21-C34 Aliphatic	n.a.	11	U	11	1
05970	>C21-C34 Aromatic	n.a.	5.3	U	5.3	1
GC Petroleum	ECY 97-602 WA VPH		mg/kg		mg/kg	
Hydrocarbons						
05666	Benzene	71-43-2	0.826	U	0.826	78.48
05666	C5-C6 Aliphatic Hydrocarbons	n.a.	8.26	U	8.26	78.48
05666	C6-C8 Aliphatic Hydrocarbons	n.a.	20.5		8.26	78.48
05666	C8-C10 Aliphatic Hydrocarbons	n.a.	8.85		8.26	78.48
05666	C8-C10 Aromatic Hydrocarbons	n.a.	8.26	U	8.26	78.48
05666	Ethylbenzene	100-41-4	0.826	U	0.826	78.48
05666	Methyl t-butyl ether	1634-04-4	0.826	U	0.826	78.48
05666	Toluene	108-88-3	0.826	U	0.826	78.48
05666	o-Xylene	95-47-6	0.826	U	0.826	78.48
05666	m,p-Xylenes	179601-23-1	1.65	U	1.65	78.48
GC Petroleum	ECY 97-602 NWTPH-Dx modified		mg/kg		mg/kg	
Hydrocarbons w/Si						
12093	DRO C12-C24 w/Si Gel	n.a.	7.4	U	7.4	1
12093	HRO C24-C40 w/Si Gel	n.a.	32	U	32	1
12093	TPH JetA C8-C18 w/Si Gel	n.a.	7.4	U	7.4	1
TPH quantitation is based on peak area comparison of the sample pattern to that of a hydrocarbon component mix calibration in a range that includes C8 (n-octane) through C40 (n-tetracontane) normal hydrocarbons.						
Wet Chemistry	EPA 160.3 modified		%		%	
00111	Moisture	n.a.	5.0		0.50	1

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7/17/12

Sample Description: RI-SB01-PP216-9-14
Boeing_RTN: FFF

LLI Sample # SW 6665556
LLI Group # 1311382
Account # 13419

Project Name: Boeing_RTN: FFF

Collected: 05/22/2012 13:20 by CJ

The Boeing Company

PO Box 3707 MC 1W-12

Submitted: 05/24/2012 09:45

Seattle WA 98124

Reported: 06/06/2012 18:22

16914 SDG#: BNX71-06

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Limit of Quantitation	Dilution Factor
	Wet Chemistry	EPA 160.3 modified	%	%	
	"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported above is on an as-received basis.				

General Sample Comments

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11995	8260C Soil Master	SW-846 8260C	1	X121531AA	06/01/2012 18:56	Chelsea B Eastep	0.4
02392	GC/MS - Field Preserved NaHSO4	SW-846 5035A	1	201214627757	05/22/2012 13:20	Client Supplied	1
02392	GC/MS - Field Preserved NaHSO4	SW-846 5035A	2	201214627757	05/22/2012 13:20	Client Supplied	1
07579	GC/MS-5g Field Preserv.MeOH-NC	SW-846 5035A	1	201214627757	05/22/2012 13:20	Client Supplied	1
10726	SVOA 8270D (microwave)	SW-846 8270D	1	12146SLB026	05/27/2012 15:10	Jennifer R Riggs	1
10813	BNA Soil Microwave APP IX	SW-846 3546	1	12146SLB026	05/26/2012 11:30	Sally L Appleyard	1
00388	GC - Field Preserved (MA-VPH)	MA DEP VPH modified	1	201214627757	05/22/2012 13:20	Client Supplied	1
05970	WA EPH in Soil	ECY 97-602 WA EPH	1	121520027A	06/03/2012 00:03	Heather E Williams	1
05970	WA EPH in Soil	ECY 97-602 WA EPH	1	121520027A	06/03/2012 00:48	Heather E Williams	1
05666	WA- VPH soils	ECY 97-602 WA VPH	1	12153A08A	06/01/2012 15:04	Nicholas R Rossi	78.48
12093	TPH-Dx SW Fuel ID w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	121500031A	05/31/2012 02:56	Heather E Williams	1
12118	TPH-Dx w/Fuel Soil Ext. (SG)	ECY 97-602 NWTPH-Dx 06/97	1	121500031A	05/30/2012 09:00	Kerrie A Freeburn	1
11213	WA EPH Soils Extraction	ECY 97-602 WA EPH	1	121520027A	05/31/2012 18:10	Sally L Appleyard	1
00497	Silica Gel Fractionation	SW-846 3630C modified	1	121520027A	06/01/2012 14:45	Edwin Ortiz	1
00111	Moisture	EPA 160.3 modified	1	12150820004A	05/29/2012 11:48	William C Schwebel	1

Sample Description: RI-SB01-PP211-10
Boeing_RTN: FFF

LLI Sample # SW 666557
LLI Group # 1311382
Account # 13419

Project Name: Boeing_RTN: FFF

Collected: 05/22/2012 15:20 by CJ

The Boeing Company
PO Box 3707 MC 1W-12
Seattle WA 98124

Submitted: 05/24/2012 09:45

Reported: 06/06/2012 18:22

21110 SDG#: BNX71-07BKG

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Limit of Quantitation	Dilution Factor
GC/MS Volatiles SW-846 8260C						
11995	Benzene	71-43-2	0.8	U	0.8	0.58
11995	Ethylbenzene	100-41-4	4	U	4	0.58
11995	Toluene	108-88-3	4	U	4	0.58
11995	m+p-Xylene	179601-23-1	4	U	4	0.58
11995	o-Xylene	95-47-6	4	U	4	0.58
GC/MS Semivolatiles SW-846 8270D						
10726	2-Methylnaphthalene	91-57-6	22	U	22	1
GC Petroleum ECY 97-602 WA EPH						
Hydrocarbons						
05970	>C10-C12 Aliphatic	n.a.	6.6	U	6.6	1
05970	>C10-C12 Aromatic	n.a.	6.6	U	6.6	1
05970	>C12-C16 Aliphatic	n.a.	6.6	U	6.6	1
05970	>C12-C16 Aromatic	n.a.	6.6	U	6.6	1
05970	>C16-C21 Aliphatic	n.a.	16		6.6	1
05970	>C16-C21 Aromatic	n.a.	11		6.6	1
05970	>C21-C34 Aliphatic	n.a.	62		13	1
05970	>C21-C34 Aromatic	n.a.	49		6.6	1
GC Petroleum ECY 97-602 WA VPH						
Hydrocarbons						
05666	Benzene	71-43-2	1.24	U	1.24	94.26
05666	C5-C6 Aliphatic Hydrocarbons	n.a.	12.4	U	12.4	94.26
05666	C6-C8 Aliphatic Hydrocarbons	n.a.	12.4	U	12.4	94.26
05666	C8-C10 Aliphatic Hydrocarbons	n.a.	12.4	U	12.4	94.26
05666	C8-C10 Aromatic Hydrocarbons	n.a.	12.4	U	12.4	94.26
05666	Ethylbenzene	100-41-4	1.24	U	1.24	94.26
05666	Methyl t-butyl ether	1634-04-4	1.24	U	1.24	94.26
05666	Toluene	108-88-3	1.24	U	1.24	94.26
05666	o-Xylene	95-47-6	1.24	U	1.24	94.26
05666	m,p-Xylenes	179601-23-1	2.47	U	2.47	94.26
GC Petroleum ECY 97-602 NWTPH-Dx						
Hydrocarbons w/Si modified						
12093	DRO C12-C24 w/Si Gel	n.a.	20	J	9.1	1
12093	HRO C24-C40 w/Si Gel	n.a.	82	J	39	1
12093	TPH JetA C8-C18 w/Si Gel	n.a.	9.1	U	9.1	1
TPH quantitation is based on peak area comparison of the sample pattern to that of a hydrocarbon component mix calibration in a range that includes C8 (n-octane) through C40 (n-tetracontane) normal hydrocarbons.						
Wet Chemistry EPA 160.3 modified						
00111	Moisture	n.a.	23.7		0.50	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported above is on an as-received basis.						

CN
7/17/12

Sample Description: RI-SB01-PP211-10
Boeing_RTN: FFF

LLI Sample # SW 6665557
LLI Group # 1311382
Account # 13419

Project Name: Boeing_RTN: FFF

Collected: 05/22/2012 15:20 by CJ

The Boeing Company
PO Box 3707 MC 1W-12
Seattle WA 98124

Submitted: 05/24/2012 09:45

Reported: 06/06/2012 18:22

21110 SDG#: BNX71-07BKG

General Sample Comments

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11995	8260C Soil Master	SW-846 8260C	1	X121531AA	06/01/2012 17:25	Chelsea B Eastep	0.58
02392	GC/MS - Field Preserved NaHSO4	SW-846 5035A	1	201214627757	05/22/2012 15:20	Client Supplied	1
02392	GC/MS - Field Preserved NaHSO4	SW-846 5035A	2	201214627757	05/22/2012 15:20	Client Supplied	1
02392	GC/MS - Field Preserved NaHSO4	SW-846 5035A	3	201214627757	05/22/2012 15:20	Client Supplied	1
02392	GC/MS - Field Preserved NaHSO4	SW-846 5035A	4	201214627757	05/22/2012 15:20	Client Supplied	1
02392	GC/MS - Field Preserved NaHSO4	SW-846 5035A	5	201214627757	05/22/2012 15:20	Client Supplied	1
02392	GC/MS - Field Preserved NaHSO4	SW-846 5035A	6	201214627757	05/22/2012 15:20	Client Supplied	1
06645	GC/MS-15g Field Preserv. MeOH	SW-846 5035A	1	201214627757	05/22/2012 15:20	Client Supplied	n.a.
06645	GC/MS-15g Field Preserv. MeOH	SW-846 5035A	2	201214627757	05/22/2012 15:20	Client Supplied	n.a.
07579	GC/MS-5g Field Preserv.MeOH-NC	SW-846 5035A	2	201215027774	05/22/2012 15:20	Client Supplied	1
10726	SVOA 8270D (microwave)	SW-846 8270D	1	12146SLB026	05/27/2012 15:35	Jennifer R Riggs	1
10813	BNA Soil Microwave APP IX	SW-846 3546	1	12146SLB026	05/26/2012 11:30	Sally L Appleyard	1
00388	GC - Field Preserved (MA-VPH)	MA DEP VPH modified	1	201215027774	05/22/2012 15:20	Client Supplied	1
05970	WA EPH in Soil	ECY 97-602 WA EPH	1	121520027A	06/03/2012 01:32	Heather E Williams	1
05970	WA EPH in Soil	ECY 97-602 WA EPH	1	121520027A	06/03/2012 02:17	Heather E Williams	1
05666	WA- VPH soils	ECY 97-602 WA VPH	1	12153A08B	06/04/2012 11:52	Nicholas R Rossi	94.26
12093	TPH-Dx SW Fuel ID w/Si Gel	ECY 97-602 NWTTPH-Dx modified	1	121500031A	05/31/2012 05:10	Heather E Williams	1
12118	TPH-Dx w/Fuel Soil Ext. (SG)	ECY 97-602 NWTTPH-Dx 06/97	1	121500031A	05/30/2012 09:00	Kerrie A Freeburn	1
11213	WA EPH Soils Extraction	ECY 97-602 WA EPH	1	121520027A	05/31/2012 18:10	Sally L Appleyard	1
00497	Silica Gel Fractionation	SW-846 3630C modified	1	121520027A	06/01/2012 14:45	Edwin Ortiz	1
00111	Moisture	EPA 160.3 modified	1	12150820004A	05/29/2012 11:48	William C Schwebel	1

Sample Description: RI-SB23-PP401-14
Boeing_RTN: FFF

LLI Sample # SW 6665558
LLI Group # 1311382
Account # 13419

Project Name: Boeing_RTN: FFF

Collected: 05/22/2012 16:20 by CJ

The Boeing Company
PO Box 3707 MC 1W-12
Seattle WA 98124

Submitted: 05/24/2012 09:45

Reported: 06/06/2012 18:22

40114 SDG#: BNX71-08

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Limit of Quantitation	Dilution Factor
GC/MS Volatiles SW-846 8260C						
11995	Benzene	71-43-2	420	U	420	375
11995	Ethylbenzene	100-41-4	2,100	U	2,100	375
11995	Toluene	108-88-3	2,100	U	2,100	375
11995	m+p-Xylene	179601-23-1	9,700		2,100	375
11995	o-Xylene	95-47-6	2,100	U	2,100	375
GC/MS Semivolatiles SW-846 8270D						
10726	2-Methylnaphthalene	91-57-6	19,000		190	10
GC Petroleum ECY 97-602 WA EPH						
Hydrocarbons						
05970	>C10-C12 Aliphatic	n.a.	89		5.6	1
05970	>C10-C12 Aromatic	n.a.	6.5		5.6	1
05970	>C12-C16 Aliphatic	n.a.	270		5.6	1
05970	>C12-C16 Aromatic	n.a.	50		5.6	1
05970	>C16-C21 Aliphatic	n.a.	40		5.6	1
05970	>C16-C21 Aromatic	n.a.	17		5.6	1
05970	>C21-C34 Aliphatic	n.a.	13		11	1
05970	>C21-C34 Aromatic	n.a.	8.2		5.6	1
GC Petroleum ECY 97-602 WA VPH						
Hydrocarbons						
05666	Benzene	71-43-2	1.08	U	1.08	95.42
05666	C5-C6 Aliphatic Hydrocarbons	n.a.	10.8	U	10.8	95.42
05666	C6-C8 Aliphatic Hydrocarbons	n.a.	702	E DNR	10.8	95.42
05666	C8-C10 Aliphatic Hydrocarbons	n.a.	377	4	10.8	95.42
05666	C8-C10 Aromatic Hydrocarbons	n.a.	192	5	10.8	95.42
05666	Ethylbenzene	100-41-4	1.08	U	1.08	95.42
05666	Methyl t-butyl ether	1634-04-4	1.08	U	1.08	95.42
05666	Toluene	108-88-3	1.08	U	1.08	95.42
05666	o-Xylene	95-47-6	1.53	U	1.08	95.42
05666	m,p-Xylenes	179601-23-1	3.76	U	2.15	95.42
Trial ID: REDL						
05666	Benzene	71-43-2	5.38	U DNR	5.38	477.08
05666	C5-C6 Aliphatic Hydrocarbons	n.a.	53.8	U DNR	53.8	477.08
05666	C6-C8 Aliphatic Hydrocarbons	n.a.	847	5	53.8	477.08
05666	C8-C10 Aliphatic Hydrocarbons	n.a.	381	DNR	53.8	477.08
05666	C8-C10 Aromatic Hydrocarbons	n.a.	200	DNR	53.8	477.08

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7/17/12

Sample Description: RI-SB23-PP401-14
Boeing_RTN: FFF

LLI Sample # SW 6665558
LLI Group # 1311382
Account # 13419

Project Name: Boeing_RTN: FFF

Collected: 05/22/2012 16:20 by CJ

The Boeing Company
PO Box 3707 MC 1W-12
Seattle WA 98124

Submitted: 05/24/2012 09:45

Reported: 06/06/2012 18:22

40114 SDG#: BNX71-08

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Limit of Quantitation	Dilution Factor
GC Petroleum Hydrocarbons		ECY 97-602 WA VPH	mg/kg		mg/kg	
05666	Ethylbenzene	100-41-4	5.38	U <i>one</i>	5.38	477.08
05666	Methyl t-butyl ether	1634-04-4	5.38	U	5.38	477.08
05666	Toluene	108-88-3	5.38	U	5.38	477.08
05666	o-Xylene	95-47-6	5.38	U	5.38	477.08
05666	m,p-Xylenes	179601-23-1	10.8	U	10.8	477.08
GC Petroleum Hydrocarbons w/Si modified		ECY 97-602 NWTPh-Dx	mg/kg		mg/kg	
12093	DRO C12-C24 w/Si Gel	n.a.	130		7.8	1
12093	HRO C24-C40 w/Si Gel	n.a.	34	U	34	1
12093	TPH JetA C8-C18 w/Si Gel	n.a.	150		7.8	1
TPH quantitation is based on peak area comparison of the sample pattern to that of a hydrocarbon component mix calibration in a range that includes C8 (n-octane) through C40 (n-tetracontane) normal hydrocarbons.						
Wet Chemistry		EPA 160.3 modified	%		%	
00111	Moisture	n.a.	11.4		0.50	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported above is on an as-received basis.						

General Sample Comments

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11995	8260C Soil Master	SW-846 8260C	1	R121562AA	06/05/2012 01:57	Andrea E Lando	375
02392	GC/MS - Field Preserved NaHSO4	SW-846 5035A	1	201214627757	05/22/2012 16:20	Client Supplied	1
02392	GC/MS - Field Preserved NaHSO4	SW-846 5035A	2	201214627757	05/22/2012 16:20	Client Supplied	1
06645	GC/MS-15g Field Preserv. MeOH	SW-846 5035A	1	201214627757	05/22/2012 16:20	Client Supplied	n.a.
10726	SVOA 8270D (microwave)	SW-846 8270D	1	12146SLB026	05/27/2012 17:04	Jennifer R Riggs	10
10813	BNA Soil Microwave APP IX	SW-846 3546	1	12146SLB026	05/26/2012 11:30	Sally L Appleyard	1
00388	GC - Field Preserved (MA-VPH)	MA DEP VPH modified	1	201215027774	05/22/2012 16:20	Client Supplied	1
05970	WA EPH in Soil	ECY 97-602 WA EPH	1	121520027A	06/02/2012 21:05	Heather E Williams	1

Ch
7/17/12

Sample Description: RI-SB23-PP401-14
Boeing_RTN: FFF

LLI Sample # SW 6665558
LLI Group # 1311382
Account # 13419

Project Name: Boeing_RTN: FFF

Collected: 05/22/2012 16:20 by CJ

The Boeing Company

PO Box 3707 MC 1W-12

Seattle WA 98124

Submitted: 05/24/2012 09:45

Reported: 06/06/2012 18:22

40114 SDG#: BNX71-08

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
05970	WA EPH in Soil	ECY 97-602 WA EPH	1	121520027A	06/02/2012 21:49	Heather E Williams	1
05666	WA- VPH soils	ECY 97-602 WA VPH	1	12153A08B	06/04/2012 14:37	Nicholas R Rossi	95.42
05666	WA- VPH soils	ECY 97-602 WA VPH	2- REDL	12153A08B	06/04/2012 15:19	Nicholas R Rossi	477.08
12093	TPH-Dx SW Fuel ID w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	121500031A	05/31/2012 03:41	Heather E Williams	1
12118	TPH-Dx w/Fuel Soil Ext. (SG)	ECY 97-602 NWTPH-Dx 06/97	1	121500031A	05/30/2012 09:00	Kerrie A Freeburn	1
11213	WA EPH Soils Extraction	ECY 97-602 WA EPH	1	121520027A	05/31/2012 18:10	Sally L Appleyard	1
00497	Silica Gel Fractionation	SW-846 3630C modified	1	121520027A	06/01/2012 14:45	Edwin Ortiz	1
00111	Moisture	EPA 160.3 modified	1	12150820004A	05/29/2012 11:48	William C Schwebel	1

Sample Description: RI-SB23-PP401-16
Boeing_RTN: FFF

LLI Sample # SW 6665559
LLI Group # 1311382
Account # 13419

Project Name: Boeing_RTN: FFF

Collected: 05/22/2012 16:30 by CJ

The Boeing Company
PO Box 3707 MC 1W-12
Seattle WA 98124

Submitted: 05/24/2012 09:45

Reported: 06/06/2012 18:22

40116 SDG#: BNX71-09

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Limit of Quantitation	Dilution Factor
GC/MS Volatiles SW-846 8260C					
11995	Benzene	71-43-2	86 U	86	71.5
11995	Ethylbenzene	100-41-4	430 U	430	71.5
11995	Toluene	108-88-3	430 U	430	71.5
11995	m+p-Xylene	179601-23-1	430 U	430	71.5
11995	o-Xylene	95-47-6	430 U	430	71.5
Reporting limits were raised due to interference from the sample matrix.					
GC/MS Semivolatiles SW-846 8270D					
10726	2-Methylnaphthalene	91-57-6	2,100	20	1
GC Petroleum ECY 97-602 WA EPH					
Hydrocarbons					
05970	>C10-C12 Aliphatic	n.a.	20	6.0	1
05970	>C10-C12 Aromatic	n.a.	6.0 U	6.0	1
05970	>C12-C16 Aliphatic	n.a.	58	6.0	1
05970	>C12-C16 Aromatic	n.a.	14	6.0	1
05970	>C16-C21 Aliphatic	n.a.	11	6.0	1
05970	>C16-C21 Aromatic	n.a.	6.0 U	6.0	1
05970	>C21-C34 Aliphatic	n.a.	12 U	12	1
05970	>C21-C34 Aromatic	n.a.	6.0 U	6.0	1
GC Petroleum ECY 97-602 WA VPH					
Hydrocarbons					
05666	Benzene	71-43-2	1.12 U	1.12	93.34
05666	C5-C6 Aliphatic Hydrocarbons	n.a.	11.2 U	11.2	93.34
05666	C6-C8 Aliphatic Hydrocarbons	n.a.	176 U	11.2	93.34
05666	C8-C10 Aliphatic Hydrocarbons	n.a.	17.9 U	11.2	93.34
05666	C8-C10 Aromatic Hydrocarbons	n.a.	11.2 U	11.2	93.34
05666	Ethylbenzene	100-41-4	1.12 U	1.12	93.34
05666	Methyl t-butyl ether	1634-04-4	1.12 U	1.12	93.34
05666	Toluene	108-88-3	1.12 U	1.12	93.34
05666	o-Xylene	95-47-6	1.12 U	1.12	93.34
05666	m,p-Xylenes	179601-23-1	2.24 U	2.24	93.34
GC Petroleum ECY 97-602 NWTPH-Dx					
Hydrocarbons w/Si modified					
12093	DRO C12-C24 w/Si Gel	n.a.	36	8.4	1
12093	HRO C24-C40 w/Si Gel	n.a.	36 U	36	1
12093	TPH JetA C8-C18 w/Si Gel	n.a.	51	8.4	1
TPH quantitation is based on peak area comparison of the sample pattern to that of a hydrocarbon component mix calibration in a range that includes C8 (n-octane) through C40 (n-tetracontane) normal hydrocarbons.					
Wet Chemistry EPA 160.3 modified					
00111	Moisture	n.a.	16.8	0.50	1

on 7/17/12

Sample Description: RI-SB23-PP401-16
Boeing_RTN: FFF

LLI Sample # SW 6665559
LLI Group # 1311382
Account # 13419

Project Name: Boeing_RTN: FFF

Collected: 05/22/2012 16:30 by CJ

The Boeing Company
PO Box 3707 MC 1W-12
Seattle WA 98124

Submitted: 05/24/2012 09:45

Reported: 06/06/2012 18:22

40116 SDG#: BNX71-09

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Limit of Quantitation	Dilution Factor
	Wet Chemistry	EPA 160.3 modified	%	%	
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported above is on an as-received basis.					

General Sample Comments

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11995	8260C Soil Master	SW-846 8260C	1	R121562AA	06/05/2012 02:41	Andrea E Lando	71.5
02392	GC/MS - Field Preserved NaHSO4	SW-846 5035A	1	201214627757	05/22/2012 16:30	Client Supplied	1
02392	GC/MS - Field Preserved NaHSO4	SW-846 5035A	2	201214627757	05/22/2012 16:30	Client Supplied	1
06645	GC/MS-15g Field Preserv. MeOH	SW-846 5035A	1	201214627757	05/22/2012 16:30	Client Supplied	n.a.
10726	SVOA 8270D (microwave)	SW-846 8270D	1	12146SLB026	05/27/2012 16:26	Jennifer R Riggs	1
10813	BNA Soil Microwave APP IX	SW-846 3546	1	12146SLB026	05/26/2012 11:30	Sally L Appleyard	1
00388	GC - Field Preserved (MA-VPH)	MA DEP VPH modified	1	201215027774	05/22/2012 16:30	Client Supplied	1
05970	WA EPH in Soil	ECY 97-602 WA EPH	1	121520027A	06/02/2012 15:08	Heather E Williams	1
05970	WA EPH in Soil	ECY 97-602 WA EPH	1	121520027A	06/02/2012 15:52	Heather E Williams	1
05666	WA- VPH soils	ECY 97-602 WA VPH	1	12153A08B	06/04/2012 12:33	Nicholas R Rossi	93.34
12093	TPH-Dx SW Fuel ID w/Si Gel	ECY 97-602 NWTTPH-Dx modified	1	121500031A	05/31/2012 04:26	Heather E Williams	1
12118	TPH-Dx w/Fuel Soil Ext. (SG)	ECY 97-602 NWTTPH-Dx 06/97	1	121500031A	05/30/2012 09:00	Kerrie A Freeburn	1
11213	WA EPH Soils Extraction	ECY 97-602 WA EPH	1	121520027A	05/31/2012 18:10	Sally L Appleyard	1
00497	Silica Gel Fractionation	SW-846 3630C modified	1	121520027A	06/01/2012 14:45	Edwin Ortiz	1
00111	Moisture	EPA 160.3 modified	1	12150820004A	05/29/2012 11:48	William C Schwebel	1

Sample Description: Trip Blank
Boeing_RTN: FFF

LLI Sample # G5 6665561
LLI Group # 1311382
Account # 13419

Project Name: Boeing_RTN: FFF

Collected: 05/22/2012

The Boeing Company
PO Box 3707 MC 1W-12
Seattle WA 98124

Submitted: 05/24/2012 09:45

Reported: 06/06/2012 18:22

TBSFF SDG#: BNX71-11TB

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
GC/MS	Volatiles	SW-846 8260C	ug/kg	ug/kg	
11995	Benzene	71-43-2	1 U	1	1
11995	Ethylbenzene	100-41-4	5 U	5	1
11995	Toluene	108-88-3	5 U	5	1
11995	m+p-Xylene	179601-23-1	5 U	5	1
11995	o-Xylene	95-47-6	5 U	5	1

General Sample Comments

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11995	8260C Soil Master	SW-846 8260C	1	X121531AA	06/01/2012 14:22	Chelsea B Eastep	1
02392	GC/MS - Field Preserved NaHSO4	SW-846 5035A	1	201214627757	05/22/2012 00:00	Client Supplied	1

Sample Description: Trip Blank
Boeing_RTN: FFF

LLI Sample # G5 6665562
LLI Group # 1311382
Account # 13419

Project Name: Boeing_RTN: FFF

Collected: 05/22/2012

The Boeing Company
PO Box 3707 MC 1W-12
Seattle WA 98124

Submitted: 05/24/2012 09:45

Reported: 06/06/2012 18:22

TBMFF SDG#: BNX71-12TB*

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
GC Petroleum Hydrocarbons		ECY 97-602 WA VPH	mg/kg	mg/kg	
05666	Benzene	71-43-2	0.500 U	0.500	50
05666	C5-C6 Aliphatic Hydrocarbons	n.a.	5.00 U	5.00	50
05666	C6-C8 Aliphatic Hydrocarbons	n.a.	5.00 U	5.00	50
05666	C8-C10 Aliphatic Hydrocarbons	n.a.	5.00 U	5.00	50
05666	C8-C10 Aromatic Hydrocarbons	n.a.	5.00 U	5.00	50
05666	Ethylbenzene	100-41-4	0.500 U	0.500	50
05666	Methyl t-butyl ether	1634-04-4	0.500 U	0.500	50
05666	Toluene	108-88-3	0.500 U	0.500	50
05666	o-Xylene	95-47-6	0.500 U	0.500	50
05666	m,p-Xylenes	179601-23-1	1.00 U	1.00	50

General Sample Comments

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06647	GC-5g Field Preserved MeOH	SW-846 5035A	1	201214627757	05/22/2012 00:00	Client Supplied	n.a.
05666	WA- VPH soils	ECY 97-602 WA VPH	1	12153A08B	06/04/2012 16:41	Nicholas R Rossi	50

Quality Control Summary

Client Name: The Boeing Company
Reported: 06/06/12 at 06:22 PM

Group Number: 1311382

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: R121562AA								
Sample number(s): 6665551, 6665553-6665554, 6665558-6665559								
Benzene	50 U	50.	ug/kg	117	118	80-120	1	30
Ethylbenzene	250 U	250.	ug/kg	110	112	80-120	2	30
Toluene	250 U	250.	ug/kg	112	113	80-120	1	30
m+p-Xylene	250 U	250.	ug/kg	113	114	80-120	2	30
o-Xylene	250 U	250.	ug/kg	112	113	80-120	1	30
Batch number: X121531AA								
Sample number(s): 6665552, 6665555-6665557, 6665561								
Benzene	1 U	1.	ug/kg	119		80-120		
Ethylbenzene	5 U	5.	ug/kg	113		80-120		
Toluene	5 U	5.	ug/kg	113		80-120		
m+p-Xylene	5 U	5.	ug/kg	113		80-120		
o-Xylene	5 U	5.	ug/kg	114		80-120		
Batch number: 12146SLB026								
2-Methylnaphthalene								
Sample number(s): 6665551-6665559								
	17 U	17.	ug/kg			79-110		
Batch number: 121520027A								
Sample number(s): 6665551-6665559								
>C10-C12 Aliphatic	5.0 U	5.0	mg/kg	83		31-137		
>C10-C12 Aromatic	5.0 U	5.0	mg/kg	89		22-119		
>C12-C16 Aliphatic	5.0 U	5.0	mg/kg	83		42-146		
>C12-C16 Aromatic	5.0 U	5.0	mg/kg	90		24-136		
>C16-C21 Aliphatic	5.0 U	5.0	mg/kg	82		57-111		
>C16-C21 Aromatic	5.0 U	5.0	mg/kg	94		34-143		
>C21-C34 Aliphatic	10 U	10.	mg/kg	81		50-124		
>C21-C34 Aromatic	5.0 U	5.0	mg/kg	87		44-134		
Batch number: 12153A08A								
Sample number(s): 6665551-6665552, 6665555-6665556								
Benzene	0.500 U	0.500	mg/kg	104	106	70-130	2	50
C5-C6 Aliphatic Hydrocarbons	5.00 U	5.00	mg/kg	88	81	70-130	8	50
C6-C8 Aliphatic Hydrocarbons	5.00 U	5.00	mg/kg	90	83	70-130	8	50
C8-C10 Aliphatic Hydrocarbons	5.00 U	5.00	mg/kg	86	83	70-130	3	50
C8-C10 Aromatic Hydrocarbons	5.00 U	5.00	mg/kg	104	102	70-130	2	50
Ethylbenzene	0.500 U	0.500	mg/kg	102	100	70-130	3	50
Methyl t-butyl ether	0.500 U	0.500	mg/kg	110	103	70-130	6	50
Toluene	0.500 U	0.500	mg/kg	99	100	70-130	1	50
o-Xylene	0.500 U	0.500	mg/kg	107	107	70-130	0	50
m,p-Xylenes	1.00 U	1.00	mg/kg	104	103	70-130	1	50
Batch number: 12153A08B								
Sample number(s): 6665553-6665554, 6665557-6665559, 6665562								
Benzene	0.500 U	0.500	mg/kg	104	106	70-130	2	50
C5-C6 Aliphatic Hydrocarbons	5.00 U	5.00	mg/kg	88	81	70-130	8	50
C6-C8 Aliphatic Hydrocarbons	5.00 U	5.00	mg/kg	90	83	70-130	8	50
C8-C10 Aliphatic Hydrocarbons	5.00 U	5.00	mg/kg	86	83	70-130	3	50
C8-C10 Aromatic Hydrocarbons	5.00 U	5.00	mg/kg	104	102	70-130	2	50
Ethylbenzene	0.500 U	0.500	mg/kg	102	100	70-130	3	50

*- Outside of specification

- (1) The result for one or both determinations was less than five times the LOQ.
- (2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: The Boeing Company
Reported: 06/06/12 at 06:22 PM

Group Number: 1311382

Analysis Name	Blank Result	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Methyl t-butyl ether	0.500 U	0.500	mg/kg	110	103	70-130	6	50
Toluene	0.500 U	0.500	mg/kg	99	100	70-130	1	50
o-Xylene	0.500 U	0.500	mg/kg	107	107	70-130	0	50
m,p-Xylenes	1.00 U	1.00	mg/kg	104	103	70-130	1	50

Batch number: 121500031A	Sample number(s): 6665551-6665559
DRO C12-C24 w/Si Gel	7.0 U 7.0 mg/kg 74
HR0 C24-C40 w/Si Gel	30 U 30. mg/kg
TPH JetA C8-C18 w/Si Gel	7.0 U 7.0 mg/kg

Batch number: 12150820004A	Sample number(s): 6665551-6665559
Moisture	100 99-101

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: X121531AA	Sample number(s): 6665552,6665555-6665557,6665561 UNSPK: 6665557								
Benzene	71	96	55-143	27	30				
Ethylbenzene	55	82	44-141	38*	30				
Toluene	61	93	50-146	40*	30				
m+p-Xylene	58	83	44-137	35*	30				
o-Xylene	55	82	42-137	38*	30				
Batch number: 12146SLB026	Sample number(s): 6665551-6665559 UNSPK: 6665551								
2-Methylnaphthalene	118	109	45-134	5	30				
Batch number: 121520027A	Sample number(s): 6665551-6665559 UNSPK: 6665557 BKG: 6665557								
>C10-C12 Aliphatic	89		31-137			5.0 U	5.0 U	0 (1)	25
>C10-C12 Aromatic	86		22-119			5.0 U	5.0 U	0 (1)	25
>C12-C16 Aliphatic	78		42-146			5.0 U	5.0 U	1 (1)	25
>C12-C16 Aromatic	88		42-122			5.0 U	5.0 U	0 (1)	25
>C16-C21 Aliphatic	80		57-111			12	12	3 (1)	25
>C16-C21 Aromatic	78		53-132			8.3	9.4	12 (1)	25
>C21-C34 Aliphatic	104		38-120			47	78	50* (1)	25
>C21-C34 Aromatic	67		55-126			37	60	48*	25
Batch number: 12153A08A	Sample number(s): 6665551-6665552,6665555-6665556 UNSPK: 6665557								
Benzene	72	80	70-130	24	50				
C5-C6 Aliphatic Hydrocarbons	68*	80	70-130	30	50				
C6-C8 Aliphatic Hydrocarbons	60*	130	70-130	32	50				
C8-C10 Aliphatic Hydrocarbons	141*	150*	70-130	20	50				
C8-C10 Aromatic Hydrocarbons	490*	523*	70-130	20	50				
Ethylbenzene	74	81	70-130	23	50				
Methyl t-butyl ether	76	81	70-130	20	50				
Toluene	73	79	70-130	22	50				
o-Xylene	83	81	70-130	12	50				
m,p-Xylenes	74	81	70-130	23	50				
Batch number: 12153A08B	Sample number(s): 6665553-6665554,6665557-6665559,6665562 UNSPK: 6665557								
Benzene	72	80	70-130	24	50				

*- Outside of specification

- (1) The result for one or both determinations was less than five times the LOQ.
- (2) The unspiked result was more than four times the spike added.

Quality Control Summary

 Client Name: The Boeing Company
 Reported: 06/06/12 at 06:22 PM

Group Number: 1311382

Sample Matrix Quality Control

 Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
 Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
C5-C6 Aliphatic Hydrocarbons	68*	80	70-130	30	50				
C6-C8 Aliphatic Hydrocarbons	60*	130	70-130	32	50				
C8-C10 Aliphatic Hydrocarbons	141*	150*	70-130	20	50				
C8-C10 Aromatic Hydrocarbons	490*	523*	70-130	20	50				
Ethylbenzene	74	81	70-130	23	50				
Methyl t-butyl ether	76	81	70-130	20	50				
Toluene	73	79	70-130	22	50				
o-Xylene	83	81	70-130	12	50				
m,p-Xylenes	74	81	70-130	23	50				

Batch number: 121500031A	Sample number(s): 6665551-6665559	BKG: 6665557			
DRO C12-C24 w/Si Gel		15	25	50* (1)	20
HRO C24-C40 w/Si Gel		62	96	43* (1)	20
TPH JetA C8-C18 w/Si Gel		7.0	U	7.0	U
				200* (1)	20

Batch number: 12150820004A	Sample number(s): 6665551-6665559	BKG: 6665557			
Moisture		23.7	24.3	3	13

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

 Analysis Name: 8260C Soil Master
 Batch number: R121562AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
6665551	71	70	65	64
6665553	96	92	86	92
6665554	98	97	89	88
6665558	109	102	112	122
6665559	94	91	90	85
Blank	102	98	93	90
LCS	102	100	94	96
LCS	102	94	95	94
Limits:	50-141	54-135	52-141	50-131

 Analysis Name: 8260C Soil Master
 Batch number: X121531AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
6665552	102	111	91	122
6665555	101	111	97	96
6665556	99	109	96	94
6665557	102	109	92	92
6665561	104	109	93	97
Blank	103	109	91	93
LCS	101	110	104	100
MS	102	111	104	93

*- Outside of specification

- (1) The result for one or both determinations was less than five times the LOQ.
- (2) The unspiked result was more than four times the spike added.

Quality Control Summary

 Client Name: The Boeing Company
 Reported: 06/06/12 at 06:22 PM

Group Number: 1311382

Surrogate Quality Control

MSD	103	112	104	97
Limits:	50-141	54-135	52-141	50-131

 Analysis Name: SVOA 8270D (microwave)
 Batch number: 12146SLB026

	Nitrobenzene-d5	2-Fluorobiphenyl	Terphenyl-d14
6665551	78	88	105
6665552	81	92	108
6665553	76	79	95
6665554	106	97	109
6665555	86	92	116
6665556	84	96	112
6665557	74	84	102
6665558	78	88	110
6665559	83	91	113
Blank	92	107	129
LCS	87	98	113
MS	82	91	107
MSD	86	96	109
Limits:	45-123	56-121	36-135

 Analysis Name: TPH-Dx SW Fuel ID w/Si Gel
 Batch number: 121500031A

	Chlorobenzene	Orthoterphenyl
6665551	65	97
6665552	69	117
6665553	0*	119
6665554	87	107
6665555	68	92
6665556	76	102
6665557	79	96
6665558	80	99
6665559	98	119
Blank	94	105
DUP	67	97
LCS	90	99
Limits:	49-125	50-150

 Analysis Name: WA EPH in Soil
 Batch number: 121520027A

	Orthoterphenyl	1-chlorooctadecane
6665551	90	76
6665552	90	66
6665553	61	84
6665554	93	71
6665555	93	70
6665556	92	74
6665557	86	52
6665558	91	74
6665559	93	71
Blank	95	67

*- Outside of specification

- (1) The result for one or both determinations was less than five times the LOQ.
- (2) The unspiked result was more than four times the spike added.

Quality Control Summary

 Client Name: The Boeing Company
 Reported: 06/06/12 at 06:22 PM

Group Number: 1311382

Surrogate Quality Control

DUP	87	66
LCS	93	68
MS	88	55

 Limits: 30-127 33-122

 Analysis Name: WA- VPH soils
 Batch number: 12153A08A

	Trifluorotoluene-P	Trifluorotoluene-F
6665551	81	85
6665552	115	115
6665555	110	96
6665556	124	93
Blank	137	124
LCS	143*	122
LCSD	130	118
MS	82	74
MSD	93	79

 Limits: 60-140 60-140

 Analysis Name: WA- VPH soils
 Batch number: 12153A08B

	Trifluorotoluene-P	Trifluorotoluene-F
6665553	37*	507*
6665553	34*	587*
REDL		
6665554	87	84
6665554	93	97
REDL		
6665557	88	74
6665558	181*	176*
6665558	267*	319*
REDL		
6665559	146*	140
6665562	61	60
Blank	137	122
LCS	143*	122
LCSD	130	118
MS	82	74
MSD	93	79

 Limits: 60-140 60-140

*- Outside of specification

- (1) The result for one or both determinations was less than five times the LOQ.
- (2) The unspiked result was more than four times the spike added.

Project Name: Boeing_RTN: FFF
 LLI Group #: 1311382

General Comments:

See the Laboratory Sample Analysis Record section of the Analysis Report for the method references.

All QC met criteria unless otherwise noted in an Analysis Specific Comment below. Refer to the QC Summary for specific values and acceptance criteria.

Project specific QC samples are included in this data set

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Surrogate recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in an Analysis Specific Comment below.

The samples were received at the appropriate temperature and in accordance with the chain of custody unless otherwise noted.

Analysis Specific Comments:
SW-846 8260C, GC/MS Volatiles

Batch #: X121531AA (Sample number(s): 6665552, 6665555-6665557, 6665561 UNSPK: 6665557)

The relative percent difference(s) for the following analyte(s) in the MS/MSD were outside outside acceptance windows: Toluene, Ethylbenzene, m+p-Xylene, o-Xylene

Sample #s: 6665551, 6665553, 6665554, 6665559

Reporting limits were raised due to interference from the sample matrix.

ECY 97-602 NWTPH-Dx modified, GC Petroleum Hydrocarbons w/Si

Batch #: 121500031A (Sample number(s): 6665551-6665559 BKG: 6665557)

The duplicate RPD for the following analyte(s) exceeded the acceptance window: DRO C12-C24 w/Si Gel, HRO C24-C40 w/Si Gel, TPH JetA C8-C18 w/Si Gel

The recovery(ies) for one or more surrogates were outside of the QC window for sample(s) 6665553

Sample #s: 6665553

The surrogate data is outside the QC limits due to unresolvable matrix problems evident in the sample chromatogram.

ECY 97-602 WA EPH, GC Petroleum Hydrocarbons

Batch #: 121520027A (Sample number(s): 6665551-6665559 UNSPK: 6665557 BKG: 6665557)

The duplicate RPD for the following analyte(s) exceeded the acceptance window: >C21-C34 Aliphatic, >C21-C34 Aromatic

ECY 97-602 WA VPH, GC Petroleum Hydrocarbons

Batch #: 12153A08A (Sample number(s): 6665551-6665552, 6665555-6665556 UNSPK: P665557)

The recovery(ies) for the following analyte(s) in the MS and/or MSD was outside the acceptance window: C8-C10 Aliphatic Hydrocarbons, C8-C10 Aromatic Hydrocarbons, C5-C6 Aliphatic Hydrocarbons, C6-C8 Aliphatic Hydrocarbons

The recovery(ies) for one or more surrogates were outside of the QC window for sample(s) LCS

Batch #: 12153A08B (Sample number(s): 6665553-6665554, 6665557-6665559, 6665562 UNSPK: 6665557)

The recovery(ies) for the following analyte(s) in the MS and/or MSD was outside the acceptance window: C8-C10 Aliphatic Hydrocarbons, C8-C10 Aromatic Hydrocarbons, C5-C6 Aliphatic Hydrocarbons, C6-C8 Aliphatic Hydrocarbons

The recovery(ies) for one or more surrogates were outside of the QC window for sample(s) 6665553, 6665553REDL, 6665558, 6665558REDL, 6665559, LCS

Revised COC. RUC 5/29/12

Boeing Chain of Custody



Lancaster Laboratories

Acc. # 13419 Group # 1341387 Sample # 665551-62
 For Lancaster Laboratories use only
 Please print. Instructions on reverse side correspond.

Client Information

Site Location: Boeing Benton Former Fuel Farm
 Site Project: Former Fuel Farm Cleanup Action
 Site Program#: 008880080
 Boeing PM: Fred Williams
 Consultant Contact: John Long, AMEC
 Report To: John Long
 Invoice To: Boeing EHS Other (specify):
 Sampler: Charles Jefferson # of Coolers: 2

Sample Identification	Collected		Matrix	No. of Containers	Analyses Requested					Remarks/Comments
	Date	Time			TPH-DX/TPH-It-Fire	BTEX	2-Methylnaphthalene	VPH	EPH	
R1-SB23-PP405-12	5/22/12	1000	S	7	X	X	X	X		
R1-SB23-PP405-14		1018		7	X	X	X	X		
R1-SB23-PP420-13		1140		7	X	X	X	X		
R1-SB23-PP420-10		1200		7	X	X	X	X		
R1-SB01-PP210-14		1310		7	X	X	X	X		
R1-SB01-PP210-14		1320		7	X	X	X	X		
R1-SB01-PP211-10		1500		19	X	X	X	X		Xtra volume for MS/MSD
R1-SB23-PP401-14		1020		7	X	X	X	X		
R1-SB23-PP401-10		1080		7	X	X	X	X		
Field blanks				1	X	X	X	X		Field blanks all analyzed
TRIP BLANK	5/22/12		TB	2	X	X	X	X		

Turnaround Time Requested (please circle)

Standard 72 hour 5 day 4 day 24 hour

Date needed: _____

Relinquished by: Charles Jefferson Date/Time: 5/25/12 09:00
 Relinquished by: _____ Date/Time: _____
 Relinquished by: _____ Date/Time: _____

Temperature upon Receipt: 25.4 °C
 Custody Seals Intact?: Yes No

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

RL	Reporting Limit	BMQL	Below Minimum Quantitation Level
N.D.	none detected	MPN	Most Probable Number
TNTC	Too Numerous To Count	CP Units	cobalt-chloroplatinate units
IU	International Units	NTU	nephelometric turbidity units
umhos/cm	micromhos/cm	ng	nanogram(s)
C	degrees Celsius	F	degrees Fahrenheit
meq	milliequivalents	lb.	pound(s)
g	gram(s)	kg	kilogram(s)
µg	microgram(s)	mg	milligram(s)
mL	milliliter(s)	L	liter(s)
m³	cubic meter(s)	µL	microliter(s)
		pg/L	picogram/liter

< less than - The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Data Qualifiers:

C – result confirmed by reanalysis.

J - estimated value – The result is \geq the Method Detection Limit (MDL) and $<$ the Limit of Quantitation (LOQ).

U.S. EPA CLP Data Qualifiers:

Organic Qualifiers

A	TIC is a possible aldol-condensation product
B	Analyte was also detected in the blank
C	Pesticide result confirmed by GC/MS
D	Compound quantitated on a diluted sample
E	Concentration exceeds the calibration range of the instrument
N	Presumptive evidence of a compound (TICs only)
P	Concentration difference between primary and confirmation columns $>25\%$
U	Compound was not detected
X,Y,Z	Defined in case narrative

Inorganic Qualifiers

B	Value is $<$ CRDL, but \geq IDL
E	Estimated due to interference
M	Duplicate injection precision not met
N	Spike sample not within control limits
S	Method of standard additions (MSA) used for calculation
U	Compound was not detected
W	Post digestion spike out of control limits
*	Duplicate analysis not within control limits
+	Correlation coefficient for MSA <0.995

Analytical test results meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR part 136 Table II as "analyze immediately" are not performed within 15 minutes.

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Lancaster
Laboratories

Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

ANALYTICAL RESULTS

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

Prepared for:

The Boeing Company
PO Box 3707 MC 1W-12
Seattle WA 98124

June 14, 2012

Project: Boeing_RTN: FFF

Submittal Date: 06/01/2012

Group Number: 1312959

SDG: BNX77

State of Sample Origin: WA

Client Sample Description

R1-SB01-PP213-14

R1-SB01-PP213-16

R1-SB01-PP217-12

R1-SB01-PP217-16

Field Blank

Trip Blank

Trip Blank

Lancaster Labs (LLI)

6674330

6674331

6674332

6674333

6674334

6674335

6674336

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

ELECTRONIC The Boeing Company

COPY TO

ELECTRONIC

AMEC

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1 COPY TO

Data Package Group

Attn: Carl Bach

Attn: Crystal Neirby



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Laboratories

Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Respectfully Submitted,

Rachel L. Kreamer

Rachel L. Kreamer
Group Leader

(717) 556-7221

Sample Description: R1-SB01-PP213-14
Boeing RTN: FFF

LLI Sample # SW 6674330
LLI Group # 1312959
Account # 13419

Project Name: Boeing RTN: FFF

Collected: 05/31/2012 10:00 by CJ

The Boeing Company

PO Box 3707 MC 1W-12

Submitted: 06/01/2012 09:25

Seattle WA 98124

Reported: 06/14/2012 11:20

PP213 SDG#: BNX77-01

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Limit of Quantitation	Dilution Factor
GC/MS Volatiles		SW-846 8260C	ug/kg		ug/kg	
11995	Benzene	71-43-2	230	U	230	184.91
11995	Ethylbenzene	100-41-4	1,200	U	1,200	184.91
11995	Toluene	108-88-3	1,200	U	1,200	184.91
11995	m+p-Xylene	179601-23-1	1,200	U	1,200	184.91
11995	o-Xylene	95-47-6	1,200	U	1,200	184.91

Reporting limits were raised due to interference from the sample matrix.

GC/MS Semivolatiles		SW-846 8270D	ug/kg		ug/kg	
10726	2-Methylnaphthalene	91-57-6	46		21	1

GC Petroleum Hydrocarbons		ECY 97-602 WA EPH	mg/kg		mg/kg	
05970	>C10-C12 Aliphatic	n.a.	6.2	U	6.2	1
05970	>C10-C12 Aromatic	n.a.	6.2	U	6.2	1
05970	>C12-C16 Aliphatic	n.a.	6.2	U	6.2	1
05970	>C12-C16 Aromatic	n.a.	6.2	U	6.2	1
05970	>C16-C21 Aliphatic	n.a.	6.2	U	6.2	1
05970	>C16-C21 Aromatic	n.a.	6.2	U	6.2	1
05970	>C21-C34 Aliphatic	n.a.	12	U	12	1
05970	>C21-C34 Aromatic	n.a.	6.2	U	6.2	1

GC Petroleum Hydrocarbons		ECY 97-602 WA VPH	mg/kg		mg/kg	
05666	Benzene	71-43-2	4.40	U	4.40	351.79
05666	C5-C6 Aliphatic Hydrocarbons	n.a.	44.0	U	44.0	351.79
05666	C6-C8 Aliphatic Hydrocarbons	n.a.	2,300	E DNR	44.0	351.79
05666	C8-C10 Aliphatic Hydrocarbons	n.a.	406		44.0	351.79
05666	C8-C10 Aromatic Hydrocarbons	n.a.	161		44.0	351.79
05666	Ethylbenzene	100-41-4	4.40	U	4.40	351.79
05666	Methyl t-butyl ether	1634-04-4	4.40	U	4.40	351.79
05666	Toluene	108-88-3	4.40	U	4.40	351.79
05666	o-Xylene	95-47-6	4.40	U	4.40	351.79
05666	m,p-Xylenes	179601-23-1	8.81	U	8.81	351.79

Trial ID: DL

05666	Benzene	71-43-2	44.0	U DNR	44.0	3517.88
05666	C5-C6 Aliphatic Hydrocarbons	n.a.	440	U DNR	440	3517.88
05666	C6-C8 Aliphatic Hydrocarbons	n.a.	2,200		440	3517.88
05666	C8-C10 Aliphatic Hydrocarbons	n.a.	440	U DNR	440	3517.88
05666	C8-C10 Aromatic Hydrocarbons	n.a.	440	U	440	3517.88
05666	Ethylbenzene	100-41-4	44.0	U	44.0	3517.88
05666	Methyl t-butyl ether	1634-04-4	44.0	U	44.0	3517.88
05666	Toluene	108-88-3	44.0	U	44.0	3517.88
05666	o-Xylene	95-47-6	44.0	U	44.0	3517.88

on
7/17/12

Sample Description: R1-SB01-PP213-14
Boeing_RTN: FFF

LLI Sample # SW 6674330
LLI Group # 1312959
Account # 13419

Project Name: Boeing_RTN: FFF

Collected: 05/31/2012 10:00 by CJ

The Boeing Company

PO Box 3707 MC 1W-12

Submitted: 06/01/2012 09:25

Seattle WA 98124

Reported: 06/14/2012 11:20

PP213 SDG#: BNX77-01

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Limit of Quantitation	Dilution Factor
GC Petroleum	ECY 97-602 WA VPH		mg/kg		mg/kg	
Hydrocarbons						
05666	m,p-Xylenes	179601-23-1	88.1	U	88.1	3517.88

The recovery for the method blank surrogate(s) is outside the QC acceptance limits as noted on the QC Summary. Since the recovery is high and no target analytes were detected, the data is reported.

The LCS/LCSD surrogate(s) recovery is outside the QC acceptance limits as noted on the QC Summary. Since the recovery for the target analytes is compliant, the data is reported.

Reporting limits were raised due to interference from the sample matrix.

GC Petroleum	ECY 97-602 NWTPH-Dx		mg/kg		mg/kg	
Hydrocarbons w/Si	modified					
12093	DRO C12-C24 w/Si Gel	n.a.	8.7	U	8.7	1
12093	HRO C24-C40 w/Si Gel	n.a.	37	U	37	1
12093	TPH JetA C8-C18 w/Si Gel	n.a.	31		8.7	1

TPH quantitation is based on peak area comparison of the sample pattern to that of a hydrocarbon component mix calibration in a range that includes C8 (n-octane) through C40 (n-tetracontane) normal hydrocarbons.

Wet Chemistry	EPA 160.3 modified		%		%	
00111	Moisture	n.a.	20.1		0.50	1

"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported above is on an as-received basis.

General Sample Comments

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11995	8260C Soil Master	SW-846 8260C	1	R121651AA	06/13/2012 05:40	Stephanie A Selis	184.91
02392	GC/MS - Field Preserved NaHSO4	SW-846 5035A	1	201215627810	05/31/2012 10:00	Client Supplied	1
02392	GC/MS - Field Preserved NaHSO4	SW-846 5035A	2	201215627810	05/31/2012 10:00	Client Supplied	1
07579	GC/MS-5g Field Preserv.MeOH-NC	SW-846 5035A	2	201216427877	05/31/2012 10:00	Client Supplied	1
10726	SVOA 8270D (microwave)	SW-846 8270D	1	12156SLA026	06/06/2012 02:20	Jennifer R Riggs	1
10813	BNA Soil Microwave APP IX	SW-846 3546	1	12156SLA026	06/05/2012 02:30	Sherry L Morrow	1

Sample Description: R1-SB01-PP213-14
Boeing_RTN: FFF

LLI Sample # SW 6674330
LLI Group # 1312959
Account # 13419

Project Name: Boeing_RTN: FFF

Collected: 05/31/2012 10:00 by CJ

The Boeing Company

Submitted: 06/01/2012 09:25

PO Box 3707 MC 1W-12

Reported: 06/14/2012 11:20

Seattle WA 98124

PP213 SDG#: BNX77-01

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
06647	GC-5g Field Preserved MeOH	SW-846 5035A	2	201216427877	05/31/2012 10:00	Client Supplied	n.a.
05970	WA EPH in Soil	ECY 97-602 WA EPH	1	121560009A	06/06/2012 01:38	Heather E Williams	1
05970	WA EPH in Soil	ECY 97-602 WA EPH	1	121560009A	06/06/2012 02:23	Heather E Williams	1
05666	WA- VPH soils	ECY 97-602 WA VPH	1	12163A08A	06/11/2012 15:10	Nicholas R Rossi	351.79
05666	WA- VPH soils	ECY 97-602 WA VPH	2-DL	12163A08A	06/11/2012 15:51	Nicholas R Rossi	3517.88
12093	TPH-Dx SW Fuel ID w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	121560016A	06/06/2012 10:35	Tracy A Cole	1
12118	TPH-Dx w/Fuel Soil Ext. (SG)	ECY 97-602 NWTPH-Dx 06/97	1	121560016A	06/05/2012 09:00	Kerrie A Freeburn	1
11213	WA EPH Soils Extraction	ECY 97-602 WA EPH	1	121560009A	06/05/2012 02:30	Sherry L Morrow	1
00497	Silica Gel Fractionation	SW-846 3630C modified	1	121560009A	06/05/2012 11:45	Edwin Ortiz	1
00111	Moisture	EPA 160.3 modified	1	12158820002A	06/06/2012 11:38	William C'Schwebel	1

Sample Description: R1-SB01-PP213-16
Boeing_RTN: FFF

LLI Sample # SW 6674331
LLI Group # 1312959
Account # 13419

Project Name: Boeing_RTN: FFF

Collected: 05/31/2012 10:25 by CJ

The Boeing Company
PO Box 3707 MC 1W-12
Seattle WA 98124

Submitted: 06/01/2012 09:25
Reported: 06/14/2012 11:20

PP216 SDG#: BNX77-02

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Limit of Quantitation	Dilution Factor
GC/MS Volatiles SW-846 8260C					
11995	Benzene	71-43-2	0.6 U	0.6	0.48
11995	Ethylbenzene	100-41-4	3 U	3	0.48
11995	Toluene	108-88-3	3 U	3	0.48
11995	m+p-Xylene	179601-23-1	3 U	3	0.48
11995	o-Xylene	95-47-6	3 U	3	0.48
Trial ID: RE					
11995	Benzene	71-43-2	0.5 U DNR	0.5	0.42
11995	Ethylbenzene	100-41-4	3 U	3	0.42
11995	Toluene	108-88-3	3 U	3	0.42
11995	m+p-Xylene	179601-23-1	3 U	3	0.42
11995	o-Xylene	95-47-6	3 U	3	0.42
GC/MS Semivolatiles SW-846 8270D					
10726	2-Methylnaphthalene	91-57-6	110	21	1
GC Petroleum ECY 97-602 WA EPH					
Hydrocarbons					
05970	>C10-C12 Aliphatic	n.a.	6.0 U	6.0	1
05970	>C10-C12 Aromatic	n.a.	6.0 U	6.0	1
05970	>C12-C16 Aliphatic	n.a.	6.0 U	6.0	1
05970	>C12-C16 Aromatic	n.a.	6.0 U	6.0	1
05970	>C16-C21 Aliphatic	n.a.	6.0 U	6.0	1
05970	>C16-C21 Aromatic	n.a.	6.0 U	6.0	1
05970	>C21-C34 Aliphatic	n.a.	12 U	12	1
05970	>C21-C34 Aromatic	n.a.	6.0 U	6.0	1
GC Petroleum ECY 97-602 WA VPH					
Hydrocarbons					
05666	Benzene	71-43-2	0.413 U	0.413	34.15
05666	C5-C6 Aliphatic Hydrocarbons	n.a.	4.13 U	4.13	34.15
05666	C6-C8 Aliphatic Hydrocarbons	n.a.	4.13 U	4.13	34.15
05666	C8-C10 Aliphatic Hydrocarbons	n.a.	4.13 U	4.13	34.15
05666	C8-C10 Aromatic Hydrocarbons	n.a.	4.13 U	4.13	34.15
05666	Ethylbenzene	100-41-4	0.413 U	0.413	34.15
05666	Methyl t-butyl ether	1634-04-4	0.413 U	0.413	34.15
05666	Toluene	108-88-3	0.413 U	0.413	34.15
05666	o-Xylene	95-47-6	0.413 U	0.413	34.15
05666	m,p-Xylenes	179601-23-1	0.827 U	0.827	34.15

The recovery for the method blank surrogate(s) is outside the QC acceptance limits as noted on the QC Summary. Since the recovery is high and no target analytes were detected, the data is reported.

The LCS/LCSD surrogate(s) recovery is outside the QC acceptance limits as noted on the QC Summary. Since the recovery for the target analytes is compliant, the data is reported.

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7/17/12

Sample Description: R1-SB01-PP213-16
Boeing_RTIN: FFF

LLI Sample # SW 6674331
LLI Group # 1312959
Account # 13419

Project Name: Boeing_RTIN: FFF

Collected: 05/31/2012 10:25 by CJ

The Boeing Company
PO Box 3707 MC 1W-12
Seattle WA 98124

Submitted: 06/01/2012 09:25

Reported: 06/14/2012 11:20

PP216 SDG#: BNX77-02

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Limit of Quantitation	Dilution Factor
GC Petroleum Hydrocarbons w/Si					
	ECY 97-602 NWTPH-Dx modified		mg/kg	mg/kg	
12093	DRO C12-C24 w/Si Gel	n.a.	8.4 U	8.4	1
12093	HRO C24-C40 w/Si Gel	n.a.	36 U	36	1
12093	TPH JetA C8-C18 w/Si Gel	n.a.	8.4 U	8.4	1
TPH quantitation is based on peak area comparison of the sample pattern to that of a hydrocarbon component mix calibration in a range that includes C8 (n-octane) through C40 (n-tetracontane) normal hydrocarbons.					
Wet Chemistry EPA 160.3 modified					
00111	Moisture	n.a.	17.4	0.50	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported above is on an as-received basis.					

General Sample Comments

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11995	8260C Soil Master	SW-846 8260C	1	X121651AA	06/13/2012 13:21	Chelsea B Eastep	0.48
11995	8260C Soil Master	SW-846 8260C	2-RE	X121651AA	06/13/2012 14:04	Chelsea B Eastep	0.42
02392	GC/MS - Field Preserved NaHSO4	SW-846 5035A	1	201215627810	05/31/2012 10:25	Client Supplied	1
02392	GC/MS - Field Preserved NaHSO4	SW-846 5035A	2	201215627810	05/31/2012 10:25	Client Supplied	1
07579	GC/MS-5g Field Preserv.MeOH-NC	SW-846 5035A	2	201216427877	05/31/2012 10:25	Client Supplied	1
10726	SVOA 8270D (microwave)	SW-846 8270D	1	12156SLA026	06/06/2012 03:35	Jennifer R Riggs	1
10813	BNA Soil Microwave APP IX	SW-846 3546	1	12156SLA026	06/05/2012 02:30	Sherry L Morrow	1
06647	GC-5g Field Preserved MeOH	SW-846 5035A	2	201216427877	05/31/2012 10:25	Client Supplied	n.a.
05970	WA EPH in Soil	ECY 97-602 WA EPH	1	121560009A	06/12/2012 02:21	Heather E Williams	1
05970	WA EPH in Soil	ECY 97-602 WA EPH	1	121560009A	06/12/2012 03:05	Heather E Williams	1
05666	WA- VPH soils	ECY 97-602 WA VPH	1	12163A08A	06/11/2012 12:25	Nicholas R Rossi	34.15
12093	TPH-Dx SW Fuel ID w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	121560016A	06/06/2012 12:07	Tracy A Cole	1
12118	TPH-Dx w/Fuel Soil Ext. (SG)	ECY 97-602 NWTPH-Dx 06/97	1	121560016A	06/05/2012 09:00	Kerrie A Freeburn	1
11213	WA EPH Soils Extraction	ECY 97-602 WA EPH	1	121560009A	06/05/2012 02:30	Sherry L Morrow	1
00497	Silica Gel Fractionation	SW-846 3630C modified	1	121560009A	06/05/2012 11:45	Edwin Ortiz	1

Sample Description: R1-SB01-PP213-16
Boeing_RTN: FFF

LLI Sample # SW 6674331
LLI Group # 1312959
Account # 13419

Project Name: Boeing_RTN: FFF

Collected: 05/31/2012 10:25 by CJ

The Boeing Company

Submitted: 06/01/2012 09:25

PO Box 3707 MC 1W-12

Reported: 06/14/2012 11:20

Seattle WA 98124

PP216 SDG#: BNX77-02

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	12158820002A	06/06/2012 11:38	William C Schwebel	1

Sample Description: R1-SB01-PP217-12
Boeing_RTN: FFF

LLI Sample # SW 6674332
LLI Group # 1312959
Account # 13419

Project Name: Boeing_RTN: FFF

Collected: 05/31/2012 11:20 by CJ

The Boeing Company
PO Box 3707 MC 1W-12
Seattle WA 98124

Submitted: 06/01/2012 09:25

Reported: 06/14/2012 11:20

PP217 SDG#: BNX77-03

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Limit of Quantitation	Dilution Factor
GC/MS Volatiles		SW-846 8260C	ug/kg	ug/kg	
11995	Benzene	71-43-2	35 U	35	28.03
11995	Ethylbenzene	100-41-4	170 U	170	28.03
11995	Toluene	108-88-3	170 U	170	28.03
11995	m+p-Xylene	179601-23-1	170 U	170	28.03
11995	o-Xylene	95-47-6	170 U	170	28.03

Reporting limits were raised due to interference from the sample matrix.

GC/MS Semivolatiles		SW-846 8270D	ug/kg	ug/kg	
10726	2-Methylnaphthalene	91-57-6	760	21	1

GC Petroleum		ECY 97-602 WA EPH	mg/kg	mg/kg	
Hydrocarbons					
05970	>C10-C12 Aliphatic	n.a.	980	150	25
05970	>C10-C12 Aromatic	n.a.	32	6.1	1
05970	>C12-C16 Aliphatic	n.a.	1,900	150	25
05970	>C12-C16 Aromatic	n.a.	170	6.1	1
05970	>C16-C21 Aliphatic	n.a.	150 U	150	25
05970	>C16-C21 Aromatic	n.a.	55	6.1	1
05970	>C21-C34 Aliphatic	n.a.	310 U	310	25
05970	>C21-C34 Aromatic	n.a.	22	6.1	1

GC Petroleum		ECY 97-602 WA VPH	mg/kg	mg/kg	
Hydrocarbons					
05666	Benzene	71-43-2	0.448 U	0.448	36.13
05666	C5-C6 Aliphatic Hydrocarbons	n.a.	4.48 U	4.48	36.13
05666	C6-C8 Aliphatic Hydrocarbons	n.a.	4.48 U	4.48	36.13
05666	C8-C10 Aliphatic Hydrocarbons	n.a.	42.1	4.48	36.13
05666	C8-C10 Aromatic Hydrocarbons	n.a.	29.1	4.48	36.13
05666	Ethylbenzene	100-41-4	0.559	0.448	36.13
05666	Methyl t-butyl ether	1634-04-4	0.448 U	0.448	36.13
05666	Toluene	108-88-3	0.448 U	0.448	36.13
05666	o-Xylene	95-47-6	0.568	0.448	36.13
05666	m,p-Xylenes	179601-23-1	0.897 U	0.897	36.13

The recovery for the method blank surrogate(s) is outside the QC acceptance limits as noted on the QC Summary. Since the recovery is high and no target analytes were detected, the data is reported.

The LCS/LCSD surrogate(s) recovery is outside the QC acceptance limits as noted on the QC Summary. Since the recovery for the target analytes is compliant, the data is reported.

GC Petroleum		ECY 97-602 NWTPH-Dx modified	mg/kg	mg/kg	
Hydrocarbons w/Si					
12093	DRO C12-C24 w/Si Gel	n.a.	2,200	87	10

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7/17/12

Sample Description: R1-SB01-PP217-12
Boeing_RTN: FFF

LLI Sample # SW 6674332
LLI Group # 1312959
Account # 13419

Project Name: Boeing_RTN: FFF

Collected: 05/31/2012 11:20 by CJ

The Boeing Company
PO Box 3707 MC 1W-12
Seattle WA 98124

Submitted: 06/01/2012 09:25

Reported: 06/14/2012 11:20

PP217 SDG#: BNX77-03

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Limit of Quantitation	Dilution Factor
GC Petroleum Hydrocarbons w/Si		ECY 97-602 NWTPH-Dx modified	mg/kg	mg/kg	
12093	HRO C24-C40 w/Si Gel	n.a.	370	370	10
12093	TPH JetA C8-C18 w/Si Gel	n.a.	3,600	87	10
TPH quantitation is based on peak area comparison of the sample pattern to that of a hydrocarbon component mix calibration in a range that includes C8 (n-octane) through C40 (n-tetracontane) normal hydrocarbons.					
Wet Chemistry		EPA 160.3 modified	%	%	
00111	Moisture	n.a.	19.4	0.50	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported above is on an as-received basis.					

General Sample Comments

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11995	8260C Soil Master	SW-846 8260C	1	R121651AA	06/13/2012 04:32	Stephanie A Selis	28.03
02392	GC/MS - Field Preserved NaHSO4	SW-846 5035A	1	201215627810	05/31/2012 11:20	Client Supplied	1
02392	GC/MS - Field Preserved NaHSO4	SW-846 5035A	2	201215627810	05/31/2012 11:20	Client Supplied	1
07579	GC/MS-5g Field Preserv.MeOH-NC	SW-846 5035A	2	201216427877	05/31/2012 11:20	Client Supplied	1
10726	SVOA 8270D (microwave)	SW-846 8270D	1	12156SLA026	06/06/2012 04:00	Jennifer R Riggs	1
10813	BNA Soil Microwave APP IX	SW-846 3546	1	12156SLA026	06/05/2012 02:30	Sherry L Morrow	1
06647	GC-5g Field Preserved MeOH	SW-846 5035A	2	201216427877	05/31/2012 11:20	Client Supplied	n.a.
05970	WA EPH in Soil	ECY 97-602 WA EPH	1	121560009A	06/12/2012 03:50	Heather E Williams	1
05970	WA EPH in Soil	ECY 97-602 WA EPH	1	121560009A	06/12/2012 04:34	Heather E Williams	25
05666	WA- VPH soils	ECY 97-602 WA VPH	1	12163A08A	06/11/2012 13:06	Nicholas R Rossi	36.13
12093	TPH-Dx SW Fuel ID w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	121560016A	06/07/2012 11:19	Tracy A Cole	10
12118	TPH-Dx w/Fuel Soil Ext. (SG)	ECY 97-602 NWTPH-Dx 06/97	1	121560016A	06/05/2012 09:00	Kerrie A Freeburn	1
11213	WA EPH Soils Extraction	ECY 97-602 WA EPH	1	121560009A	06/05/2012 02:30	Sherry L Morrow	1
00497	Silica Gel Fractionation	SW-846 3630C modified	1	121560009A	06/05/2012 11:45	Edwin Ortiz	1

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7/17/12

Sample Description: R1-SB01-PP217-12
Boeing_RTN: FFF

LLI Sample # SW 6674332
LLI Group # 1312959
Account # 13419

Project Name: Boeing_RTN: FFF

Collected: 05/31/2012 11:20 by CJ

The Boeing Company

PO Box 3707 MC 1W-12

Seattle WA 98124

Submitted: 06/01/2012 09:25

Reported: 06/14/2012 11:20

PP217 SDG#: BNX77-03

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	12158820002A	06/06/2012 11:38	William C Schwebel	1

Sample Description: R1-SB01-PP217-16
Boeing RTN: FFF

LLI Sample # SW 6674333
LLI Group # 1312959
Account # 13419

Project Name: Boeing RTN: FFF

Collected: 05/31/2012 11:45 by CJ

The Boeing Company
PO Box 3707 MC 1W-12
Seattle WA 98124

Submitted: 06/01/2012 09:25

Reported: 06/14/2012 11:20

PP176 SDG#: BNX77-04

CAT No.	Analysis Name	CAS Number	Dry Result		Dry Limit of Quantitation	Dilution Factor
GC/MS Volatiles		SW-846 8260C	ug/kg		ug/kg	
11995	Benzene	71-43-2	39	U	39	32.2
11995	Ethylbenzene	100-41-4	200	U	200	32.2
11995	Toluene	108-88-3	200	U	200	32.2
11995	m+p-Xylene	179601-23-1	200	U	200	32.2
11995	o-Xylene	95-47-6	200	U	200	32.2

Reporting limits were raised due to interference from the sample matrix.

GC/MS Semivolatiles		SW-846 8270D	ug/kg		ug/kg	
10726	2-Methylnaphthalene	91-57-6	370		21	1

GC Petroleum		ECY 97-602 WA EPH	mg/kg		mg/kg	
Hydrocarbons						
05970	>C10-C12 Aliphatic	n.a.	22		6.0	1
05970	>C10-C12 Aromatic	n.a.	6.0	U	6.0	1
05970	>C12-C16 Aliphatic	n.a.	110		6.0	1
05970	>C12-C16 Aromatic	n.a.	7.0		6.0	1
05970	>C16-C21 Aliphatic	n.a.	17		6.0	1
05970	>C16-C21 Aromatic	n.a.	7.2		6.0	1
05970	>C21-C34 Aliphatic	n.a.	12	U	12	1
05970	>C21-C34 Aromatic	n.a.	6.0	U	6.0	1

GC Petroleum		ECY 97-602 WA VPH	mg/kg		mg/kg	
Hydrocarbons						
05666	Benzene	71-43-2	0.428	U	0.428	35.21
05666	C5-C6 Aliphatic Hydrocarbons	n.a.	4.28	U	4.28	35.21
05666	C6-C8 Aliphatic Hydrocarbons	n.a.	8.08		4.28	35.21
05666	C8-C10 Aliphatic Hydrocarbons	n.a.	125		4.28	35.21
05666	C8-C10 Aromatic Hydrocarbons	n.a.	94.7		4.28	35.21
05666	Ethylbenzene	100-41-4	1.76		0.428	35.21
05666	Methyl t-butyl ether	1634-04-4	0.428	U	0.428	35.21
05666	Toluene	108-88-3	0.537		0.428	35.21
05666	o-Xylene	95-47-6	2.52		0.428	35.21
05666	m,p-Xylenes	179601-23-1	0.857	U	0.857	35.21

The recovery for the method blank surrogate(s) is outside the QC acceptance limits as noted on the QC Summary. Since the recovery is high and no target analytes were detected, the data is reported.

The LCS/LCSD surrogate(s) recovery is outside the QC acceptance limits as noted on the QC Summary. Since the recovery for the target analytes is compliant, the data is reported.

GC Petroleum		ECY 97-602 NWTPH-Dx	mg/kg		mg/kg	
Hydrocarbons w/Si modified						

Sample Description: R1-SB01-PP217-16
Boeing_RTN: FFF

LLI Sample # SW 6674333
LLI Group # 1312959
Account # 13419

Project Name: Boeing_RTN: FFF

Collected: 05/31/2012 11:45 by CJ

The Boeing Company
PO Box 3707 MC 1W-12
Seattle WA 98124

Submitted: 06/01/2012 09:25

Reported: 06/14/2012 11:20

PP176 SDG#: BNX77-04

CAT No.	Analysis Name	CAS Number	Dry Result	Dry Limit of Quantitation	Dilution Factor
GC Petroleum Hydrocarbons w/Si		ECY 97-602 NWTPH-Dx modified	mg/kg	mg/kg	
12093	DRO C12-C24 w/Si Gel	n.a.	450	17	2
12093	HRO C24-C40 w/Si Gel	n.a.	73 U	73	2
12093	TPH JetA C8-C18 w/Si Gel	n.a.	650	17	2
TPH quantitation is based on peak area comparison of the sample pattern to that of a hydrocarbon component mix calibration in a range that includes C8 (n-octane) through C40 (n-tetracontane) normal hydrocarbons.					
Wet Chemistry		EPA 160.3 modified	%	%	
00111	Moisture	n.a.	17.8	0.50	1
"Moisture" represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported above is on an as-received basis.					

General Sample Comments

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11995	8260C Soil Master	SW-846 8260C	1	R121651AA	06/13/2012 04:55	Stephanie A Selis	32.2
02392	GC/MS - Field Preserved NaHSO4	SW-846 5035A	1	201215627810	05/31/2012 11:45	Client Supplied	1
02392	GC/MS - Field Preserved NaHSO4	SW-846 5035A	2	201215627810	05/31/2012 11:45	Client Supplied	1
07579	GC/MS-5g Field Preserv.MeOH-NC	SW-846 5035A	2	201216427877	05/31/2012 11:45	Client Supplied	1
10726	SVOA 8270D (microwave)	SW-846 8270D	1	12156SLA026	06/06/2012 04:25	Jennifer R Riggs	1
10813	BNA Soil Microwave APP IX	SW-846 3546	1	12156SLA026	06/05/2012 02:30	Sherry L Morrow	1
06647	GC-5g Field Preserved MeOH	SW-846 5035A	2	201216427877	05/31/2012 11:45	Client Supplied	n.a.
05970	WA EPH in Soil	ECY 97-602 WA EPH	1	121560009A	06/12/2012 05:19	Heather E Williams	1
05970	WA EPH in Soil	ECY 97-602 WA EPH	1	121560009A	06/12/2012 06:03	Heather E Williams	1
05666	WA- VPH soils	ECY 97-602 WA VPH	1	12163A08A	06/11/2012 14:28	Nicholas R Rossi	35.21
12093	TPH-Dx SW Fuel ID w/Si Gel	ECY 97-602 NWTPH-Dx modified	1	121560016A	06/07/2012 09:47	Tracy A Cole	2
12118	TPH-Dx w/Fuel Soil Ext. (SG)	ECY 97-602 NWTPH-Dx 06/97	1	121560016A	06/05/2012 09:00	Kerrie A Freeburn	1
11213	WA EPH Soils Extraction	ECY 97-602 WA EPH	1	121560009A	06/05/2012 02:30	Sherry L Morrow	1
00497	Silica Gel Fractionation	SW-846 3630C modified	1	121560009A	06/05/2012 11:45	Edwin Ortiz	1



Lancaster
Laboratories

Analysis Report

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Page 3 of 3

Sample Description: R1-SB01-PP217-16
Boeing_RTN: FFF

LLI Sample # SW 6674333
LLI Group # 1312959
Account # 13419

Project Name: Boeing_RTN: FFF

Collected: 05/31/2012 11:45 by CJ

The Boeing Company
PO Box 3707 MC 1W-12
Seattle WA 98124

Submitted: 06/01/2012 09:25

Reported: 06/14/2012 11:20

PP176 SDG#: BNX77-04

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00111	Moisture	EPA 160.3 modified	1	12158820002A	06/06/2012 11:38	William C Schwebel	1

Sample Description: Field Blank
Boeing_RTN: FFF

LLI Sample # WW 6674334
LLI Group # 1312959
Account # 13419

Project Name: Boeing_RTN: FFF

Collected: 05/31/2012 12:00 by CJ

The Boeing Company
PO Box 3707 MC 1W-12
Seattle WA 98124

Submitted: 06/01/2012 09:25

Reported: 06/14/2012 11:20

PPFB1 SDG#: BNX77-05FB

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
GC/MS Volatiles SW-846 8260C ug/l					
11996	Benzene	71-43-2	0.2 U	0.2	1
11996	Ethylbenzene	100-41-4	0.5 U	0.5	1
11996	Toluene	108-88-3	0.2 U	0.2	1
11996	m+p-Xylene	179601-23-1	0.5 U	0.5	1
11996	o-Xylene	95-47-6	0.5 U	0.5	1
GC/MS Semivolatiles SW-846 8270D ug/l					
10461	2-Methylnaphthalene	91-57-6	0.5 U	0.5	1
GC Petroleum ECY 97-602 WA EPH ug/l					
Hydrocarbons					
05979	>C10-C12 Aliphatic	n.a.	50 U	50	1
05979	>C10-C12 Aromatic	n.a.	50 U	50	1
05979	>C12-C16 Aliphatic	n.a.	50 U	50	1
05979	>C12-C16 Aromatic	n.a.	50 U	50	1
05979	>C16-C21 Aliphatic	n.a.	50 U	50	1
05979	>C16-C21 Aromatic	n.a.	50 U	50	1
05979	>C21-C34 Aliphatic	n.a.	60	50	1
05979	>C21-C34 Aromatic	n.a.	50 U	50	1
GC Petroleum ECY 97-602 WA VPH ug/l					
Hydrocarbons					
05665	Benzene	71-43-2	5.0 U	5.0	1
05665	C5-C6 Aliphatic Hydrocarbons	n.a.	50.0 U	50.0	1
05665	C6-C8 Aliphatic Hydrocarbons	n.a.	50.0 U	50.0	1
05665	C8-C10 Aliphatic Hydrocarbons	n.a.	50.0 U	50.0	1
05665	C8-C10 Aromatic Hydrocarbons	n.a.	50.0 U	50.0	1
05665	Ethylbenzene	100-41-4	5.0 U	5.0	1
05665	Methyl t-butyl ether	1634-04-4	5.0 U	5.0	1
05665	Toluene	108-88-3	5.0 U	5.0	1
05665	o-Xylene	95-47-6	5.0 U	5.0	1
05665	m,p-Xylenes	179601-23-1	10.0 U	10.0	1
GC Petroleum ECY 97-602 NWTPH-Dx mg/l					
Hydrocarbons w/Si modified					
12094	Diesel/#2 Fuel w/Si Gel	68334-30-5	0.095 U	0.095	1
12094	DRO C12-C24 w/Si Gel	n.a.	0.095 U	0.095	1
12094	Motor Oil w/Si Gel	n.a.	0.24 U	0.24	1
12094	TPH JetA C8-C18 w/Si Gel	n.a.	0.095 U	0.095	1

General Sample Comments

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Sample Description: Field Blank
Boeing_RTN: FFF

LLI Sample # WW 6674334
LLI Group # 1312959
Account # 13419

Project Name: Boeing_RTN: FFF

Collected: 05/31/2012 12:00 by CJ

The Boeing Company

Submitted: 06/01/2012 09:25

PO Box 3707 MC 1W-12

Reported: 06/14/2012 11:20

Seattle WA 98124

PPFB1 SDG#: BNX77-05FB

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11996	8260C Water(25ml) Master	SW-846 8260C	1	G121631AA	06/11/2012 11:45	Angela D Sneeringer	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	G121631AA	06/11/2012 11:45	Angela D Sneeringer	1
10461	SVOAs by 8270D in Water	SW-846 8270D	1	12156WAX026	06/06/2012 01:55	Jennifer R Riggs	1
11010	8270D BNA Extraction	SW-846 3510C	1	12156WAX026	06/04/2012 22:00	Elaine F Stoltzfus	1
05979	WA EPH in Water	ECY 97-602 WA EPH	1	121580017A	06/12/2012 14:17	Heather E Williams	1
05979	WA EPH in Water	ECY 97-602 WA EPH	1	121580017A	06/12/2012 15:02	Heather E Williams	1
05665	WA - VPH waters	ECY 97-602 WA VPH	1	12164A08A	06/12/2012 15:00	Nicholas R Rossi	1
12094	NWTPH-Dx,MO,Jet A w/ Si Gel	ECY 97-602 NWTPH-Dx modified	1	121580005A	06/12/2012 04:13	Heather E Williams	1
12120	TPH-Dx w/Fuel Water Ext. (SG)	ECY 97-602 NWTPH-Dx 06/97	1	121580005A	06/06/2012 13:30	Kelli M Barto	1
11175	WA EPH Waters Extraction	ECY 97-602 WA EPH	1	121580017A	06/07/2012 02:30	Sherry L Morrow	1
00497	Silica Gel Fractionation	SW-846 3630C modified	1	121580017A	06/08/2012 06:00	David V Hershey Jr	1



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Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Page 1 of 1

Sample Description: Trip Blank
Boeing_RTN: FFF

LLI Sample # SW 6674335
LLI Group # 1312959
Account # 13419

Project Name: Boeing_RTN: FFF

Collected: 05/31/2012

The Boeing Company
PO Box 3707 MC 1W-12
Seattle WA 98124

Submitted: 06/01/2012 09:25
Reported: 06/14/2012 11:20

PPTB1 SDG#: BNX77-06TB

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
GC/MS	Volatiles	SW-846 8260C	ug/kg	ug/kg	
11995	Benzene	71-43-2	1 U	1	1
11995	Ethylbenzene	100-41-4	5 U	5	1
11995	Toluene	108-88-3	5 U	5	1
11995	m+p-Xylene	179601-23-1	5 U	5	1
11995	o-Xylene	95-47-6	5 U	5	1

General Sample Comments

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
11995	8260C Soil Master	SW-846 8260C	1	X121651AA	06/13/2012 12:58	Chelsea B Eastep	1
02392	GC/MS - Field Preserved NaHSO4	SW-846 5035A	1	201215627810	05/31/2012 00:00	Client Supplied	1

Sample Description: Trip Blank
Boeing_RTN: FFF

LLI Sample # SW 6674336
LLI Group # 1312959
Account # 13419

Project Name: Boeing_RTN: FFF

Collected: 05/31/2012

The Boeing Company
PO Box 3707 MC 1W-12
Seattle WA 98124

Submitted: 06/01/2012 09:25

Reported: 06/14/2012 11:20

PPTB2 SDG#: BNX77-07TB*

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Limit of Quantitation	Dilution Factor
GC Petroleum		ECY 97-602 WA VPH	mg/kg	mg/kg	
Hydrocarbons					
05666	Benzene	71-43-2	0.500 U	0.500	50
05666	C5-C6 Aliphatic Hydrocarbons	n.a.	5.00 U	5.00	50
05666	C6-C8 Aliphatic Hydrocarbons	n.a.	5.00 U	5.00	50
05666	C8-C10 Aliphatic Hydrocarbons	n.a.	5.00 U	5.00	50
05666	C8-C10 Aromatic Hydrocarbons	n.a.	5.00 U	5.00	50
05666	Ethylbenzene	100-41-4	0.500 U	0.500	50
05666	Methyl t-butyl ether	1634-04-4	0.500 U	0.500	50
05666	Toluene	108-88-3	0.500 U	0.500	50
05666	o-Xylene	95-47-6	0.500 U	0.500	50
05666	m,p-Xylenes	179601-23-1	1.00 U	1.00	50

The recovery for the method blank surrogate(s) is outside the QC acceptance limits as noted on the QC Summary. Since the recovery is high and no target analytes were detected, the data is reported.

The LCS/LCSD surrogate(s) recovery is outside the QC acceptance limits as noted on the QC Summary. Since the recovery for the target analytes is compliant, the data is reported.

General Sample Comments

State of Washington Lab Certification No. C259

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00388	GC - Field Preserved (MA-VPH)	SW-846 5035	1	201215627810	05/31/2012 00:00	Client Supplied	1
05666	WA- VPH soils	ECY 97-602 WA VPH	1	12163A08A	06/11/2012 13:47	Nicholas R Rossi	50

Quality Control Summary

 Client Name: The Boeing Company
 Reported: 06/14/12 at 11:20 AM

Group Number: 1312959

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Laboratory Compliance Quality Control

Analysis Name	Blank Result	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: G121631AA Sample number(s): 6674334								
Benzene	0.2 U	0.2	ug/l	88		80-120		
Ethylbenzene	0.5 U	0.5	ug/l	93		80-120		
Toluene	0.2 U	0.2	ug/l	91		80-120		
m+p-Xylene	0.5 U	0.5	ug/l	94		80-120		
o-Xylene	0.5 U	0.5	ug/l	97		80-120		
Batch number: R121651AA Sample number(s): 6674330, 6674332-6674333								
Benzene	50 U	50.	ug/kg	103	104	80-120	1	30
Ethylbenzene	250 U	250.	ug/kg	108		80-120	2	30
Toluene	250 U	250.	ug/kg	110	109	80-120	1	30
m+p-Xylene	250 U	250.	ug/kg	110	111	80-120	1	30
o-Xylene	250 U	250.	ug/kg	111	109	80-120	2	30
Batch number: X121651AA Sample number(s): 6674331, 6674335								
Benzene	1 U	1.	ug/kg	111	116	80-120	5	30
Ethylbenzene	5 U	5.	ug/kg	102	110	80-120	7	30
Toluene	5 U	5.	ug/kg	105	112	80-120	6	30
m+p-Xylene	5 U	5.	ug/kg	105	112	80-120	6	30
o-Xylene	5 U	5.	ug/kg	106	112	80-120	5	30
Batch number: 12156SLA026 Sample number(s): 6674330-6674333								
2-Methylnaphthalene	17 U	17.	ug/kg	110		79-110		
Batch number: 12156WAX026 Sample number(s): 6674334								
2-Methylnaphthalene	0.5 U	0.5	ug/l	108		69-108		
Batch number: 121560009A Sample number(s): 6674330-6674333								
>C10-C12 Aliphatic	5.0 U	5.0	mg/kg	72		31-137		
>C10-C12 Aromatic	5.0 U	5.0	mg/kg	71		22-119		
>C12-C16 Aliphatic	5.0 U	5.0	mg/kg	73		42-146		
>C12-C16 Aromatic	5.0 U	5.0	mg/kg	71		24-136		
>C16-C21 Aliphatic	5.0 U	5.0	mg/kg	72		57-111		
>C16-C21 Aromatic	5.0 U	5.0	mg/kg	74		34-143		
>C21-C34 Aliphatic	10 U	10.	mg/kg	75		50-124		
>C21-C34 Aromatic	5.0 U	5.0	mg/kg	75		44-134		
Batch number: 121580017A Sample number(s): 6674334								
>C10-C12 Aliphatic	50 U	50.	ug/l	80	83	30-137	3	30
>C10-C12 Aromatic	50 U	50.	ug/l	65	78	30-140	18	30
>C12-C16 Aliphatic	50 U	50.	ug/l	90	95	68-116	5	30
>C12-C16 Aromatic	50 U	50.	ug/l	71	83	30-149	16	30
>C16-C21 Aliphatic	50 U	50.	ug/l	83	83	81-116	0	30
>C16-C21 Aromatic	50 U	50.	ug/l	80	95	30-148	17	30
>C21-C34 Aliphatic	50 U	50.	ug/l	110	85	44-133	26	30
>C21-C34 Aromatic	50 U	50.	ug/l	81	94	57-127	14	30

*- Outside of specification

- (1) The result for one or both determinations was less than five times the LOQ.
- (2) The unspiked result was more than four times the spike added.

Quality Control Summary

 Client Name: The Boeing Company
 Reported: 06/14/12 at 11:20 AM

Group Number: 1312959

Analysis Name	Blank Result	Blank LOQ	Report Units	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 12163A08A Sample number(s): 6674330-6674333,6674336								
Benzene	0.500 U	0.500	mg/kg	105	118	70-130	11	50
C5-C6 Aliphatic Hydrocarbons	5.00 U	5.00	mg/kg	82	97	70-130	16	50
C6-C8 Aliphatic Hydrocarbons	5.00 U	5.00	mg/kg	84	96	70-130	13	50
C8-C10 Aliphatic Hydrocarbons	5.00 U	5.00	mg/kg	77	92	70-130	17	50
C8-C10 Aromatic Hydrocarbons	5.00 U	5.00	mg/kg	104	110	70-130	6	50
Ethylbenzene	0.500 U	0.500	mg/kg	102	110	70-130	7	50
Methyl t-butyl ether	0.500 U	0.500	mg/kg	108	105	70-130	2	50
Toluene	0.500 U	0.500	mg/kg	101	108	70-130	6	50
o-Xylene	0.500 U	0.500	mg/kg	106	117	70-130	10	50
m,p-Xylenes	1.00 U	1.00	mg/kg	105	112	70-130	6	50
Batch number: 12164A08A Sample number(s): 6674334								
Benzene	5.0 U	5.0	ug/l	110	112	70-130	2	50
C5-C6 Aliphatic Hydrocarbons	50.0 U	50.0	ug/l	100	100	70-130	0	50
C6-C8 Aliphatic Hydrocarbons	50.0 U	50.0	ug/l	102	96	70-130	6	50
C8-C10 Aliphatic Hydrocarbons	50.0 U	50.0	ug/l	92	90	70-130	2	50
C8-C10 Aromatic Hydrocarbons	50.0 U	50.0	ug/l	110	110	70-130	0	50
Ethylbenzene	5.0 U	5.0	ug/l	112	106	70-130	6	50
Methyl t-butyl ether	5.0 U	5.0	ug/l	114	110	70-130	4	50
Toluene	5.0 U	5.0	ug/l	108	106	70-130	2	50
o-Xylene	5.0 U	5.0	ug/l	120	114	70-130	5	50
m,p-Xylenes	10.0 U	10.0	ug/l	110	110	70-130	0	50
Batch number: 121560016A Sample number(s): 6674330-6674333								
DRO C12-C24 w/Si Gel	7.0 U	7.0	mg/kg	74		60-120		
HRO C24-C40 w/Si Gel	30 U	30.	mg/kg					
TPH JetA C8-C18 w/Si Gel	7.0 U	7.0	mg/kg					
Batch number: 121580005A Sample number(s): 6674334								
Diesel/#2 Fuel w/Si Gel	0.10 U	0.10	mg/l					
DRO C12-C24 w/Si Gel	0.10 U	0.10	mg/l	69	69	50-120	0	20
Motor Oil w/Si Gel	0.25 U	0.25	mg/l					
TPH JetA C8-C18 w/Si Gel	0.10 U	0.10	mg/l					
Batch number: 12158820002A Sample number(s): 6674330-6674333								
Moisture				100		99-101		

Sample Matrix Quality Control

 Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
 Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
Batch number: G121631AA Sample number(s): 6674334 UNSPK: P674434									
Benzene	101	93	87-126	8	30				
Ethylbenzene	107	99	80-140	8	30				
Toluene	101	93	83-127	9	30				
m+p-Xylene	108	100	81-137	8	30				
o-Xylene	110	102	81-137	7	30				
Batch number: 12156SLA026 Sample number(s): 6674330-6674333 UNSPK: 6674330									

*- Outside of specification

- (1) The result for one or both determinations was less than five times the LOQ.
- (2) The unspiked result was more than four times the spike added.

Quality Control Summary

Client Name: The Boeing Company
Reported: 06/14/12 at 11:20 AM

Group Number: 1312959

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike
Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD MAX	BKG Conc	DUP Conc	DUP RPD	Dup RPD Max
2-Methylnaphthalene	112	111	45-134	1	30				
Batch number: 12156WAX026	Sample number(s): 6674334 UNSPK: P56WXUS								
2-Methylnaphthalene	107	109	80-111	2	30				
Batch number: 121560009A	Sample number(s): 6674330-6674333 UNSPK: 6674330								
>C10-C12 Aliphatic	134	101	31-137	27	50				
>C10-C12 Aromatic	53	84	22-119	45	50				
>C12-C16 Aliphatic	131	98	42-146	29	50				
>C12-C16 Aromatic	65	90	42-122	32	50				
>C16-C21 Aliphatic	101	102	57-111	1	50				
>C16-C21 Aromatic	89	97	53-132	10	50				
>C21-C34 Aliphatic	100	107	38-120	7	50				
>C21-C34 Aromatic	84	97	55-126	14	50				
Batch number: 121560016A	Sample number(s): 6674330-6674333 BKG: 6674330								
DRO C12-C24 w/Si Gel						6.9	U	6.9	U 200* (1) 20
HRO C24-C40 w/Si Gel						30	U	30	U 0 (1) 20
TPH JetA C8-C18 w/Si Gel						25		17	35* (1) 20
Batch number: 12158820002A	Sample number(s): 6674330-6674333 BKG: 6674330								
Moisture						20.1	19.3	4	13

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: 8260C Water (25ml) Master
Batch number: G121631AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
6674334	104	101	98	102
Blank	106	108	100	105
LCS	105	102	98	101
MS	102	100	96	100
MSD	102	105	97	100
Limits:	77-114	74-113	77-110	78-110

Analysis Name: 8260C Soil Master
Batch number: R121651AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
6674330	70	61	75	91
6674332	85	81	83	113
6674333	83	80	81	109
Blank	90	83	90	90
LCS	97	90	98	98
LCSD	98	96	99	98

*- Outside of specification

- (1) The result for one or both determinations was less than five times the LOQ.
- (2) The unspiked result was more than four times the spike added.

Quality Control Summary

 Client Name: The Boeing Company
 Reported: 06/14/12 at 11:20 AM

Group Number: 1312959

Surrogate Quality Control

Limits:	50-141	54-135	52-141	50-131
Analysis Name: 8260C Soil Master				
Batch number: X121651AA				
	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
6674331	117	124	35*	109
6674331	107	115	28*	108
RE				
6674335	104	111	91	102
Blank	104	103	91	97
LCS	105	108	102	102
LCS D	102	108	102	101
Limits:	50-141	54-135	52-141	50-131
Analysis Name: SVOA 8270D (microwave)				
Batch number: 12156SLA026				
	Nitrobenzene-d5	2-Fluorobiphenyl	Terphenyl-d14	
6674330	95	92	108	
6674331	102	94	112	
6674332	110	70	109	
6674333	108	87	111	
Blank	102	103	128	
LCS	101	97	114	
MS	99	93	112	
MSD	98	93	112	
Limits:	45-123	56-121	36-135	
Analysis Name: SVOAs by 8270D in Water				
Batch number: 12156WAX026				
	Nitrobenzene-d5	2-Fluorobiphenyl	Terphenyl-d14	
6674334	97	93	112	
Blank	92	90	110	
LCS	96	92	108	
MS	97	94	108	
MSD	99	93	110	
Limits:	52-120	63-114	34-118	
Analysis Name: WA EPH in Soil				
Batch number: 121560009A				
	Orthoterphenyl	1-chlorooctadecane		
6674330	94	74		
6674331	94	73		
6674332	96	89		
6674333	106	76		
Blank	94	75		
LCS	78	67		
MS	94	81		
MSD	95	74		

*- Outside of specification

- (1) The result for one or both determinations was less than five times the LOQ.
- (2) The unspiked result was more than four times the spike added.

Quality Control Summary

 Client Name: The Boeing Company
 Reported: 06/14/12 at 11:20 AM

Group Number: 1312959

Surrogate Quality Control

Limits: 30-127 33-122

 Analysis Name: TPH-Dx SW Fuel ID w/Si Gel
 Batch number: 121560016A

	Chlorobenzene	Orthoterphenyl
6674330	109	94
6674331	85	92
6674332	0*	127
6674333	78	89
Blank	80	92
DUP	105	94
LCS	88	97

Limits: 50-150 50-150

 Analysis Name: NWTPH-Dx & MO w/ Si Gel
 Batch number: 121580005A

	Chlorobenzene	Orthoterphenyl
6674334	78	77
Blank	71	77
LCS	79	81
LCSD	79	82

Limits: 50-150 50-150

 Analysis Name: WA EPH in Water
 Batch number: 121580017A

	Orthoterphenyl	1-chlorooctadecane
6674334	91	110
Blank	91	63
LCS	87	86
LCSD	101	83

Limits: 36-118 32-132

 Analysis Name: WA- VPH soils
 Batch number: 12163A08A

	Trifluorotoluene-P	Trifluorotoluene-F
6674330	352*	554*
6674330	39*	64
DL		
6674331	83	79
6674332	96	86
6674333	100	95
6674336	124	118
Blank	141*	128
LCS	137	121
LCSD	144*	127

Limits: 60-140 60-140

 Analysis Name: WA - VPH waters
 Batch number: 12164A08A

*- Outside of specification

- (1) The result for one or both determinations was less than five times the LOQ.
- (2) The unspiked result was more than four times the spike added.

Quality Control SummaryClient Name: The Boeing Company
Reported: 06/14/12 at 11:20 AM

Group Number: 1312959

Surrogate Quality Control

	Trifluorotoluene-P	Trifluorotoluene-F
6674334	122	116
Blank	125	114
LCS	129	118
LCSD	135	114
Limits:	60-140	60-140

*- Outside of specification

- (1) The result for one or both determinations was less than five times the LOQ.
- (2) The unspiked result was more than four times the spike added.

Project Name: Boeing_RTN: FFF
LLI Group #: 1312959

General Comments:

See the Laboratory Sample Analysis Record section of the Analysis Report for the method references.

All QC met criteria unless otherwise noted in an Analysis Specific Comment below. Refer to the QC Summary for specific values and acceptance criteria.

Project specific QC samples are not included in this data set

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

Surrogate recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in an Analysis Specific Comment below.

The samples were received at the appropriate temperature and in accordance with the chain of custody unless otherwise noted.

Analysis Specific Comments:**SW-846 8260C, GC/MS volatiles**

Batch #: X121651AA (Sample number(s): 6674331, 6674335)

The recovery(ies) for one or more surrogates were outside of the QC window for sample(s) 6674331, 6674331RE

Sample #s: 6674330, 6674332, 6674333

Reporting limits were raised due to interference from the sample matrix.

ECY 97-602 NWTPH-Dx modified, GC Petroleum Hydrocarbons w/Si

Batch #: 121560016A (Sample number(s): 6674330-6674333 BKG: 6674330)

The duplicate RPD for the following analyte(s) exceeded the acceptance window:
DRO C12-C24 w/Si Gel, TPH JetA C8-C18 w/Si Gel

The recovery(ies) for one or more surrogates were outside of the QC window for sample(s) 6674332

Sample #s: 6674333

ECY 97-602 WA VPH, GC Petroleum Hydrocarbons

Batch #: 12163A08A (Sample number(s): 6674330-6674333, 6674336)

The recovery(ies) for one or more surrogates were outside of the QC window for sample(s) 6674330, 6674330DL, Blank, LCSD

Sample #s: 6674331, 6674332, 6674333, 6674336

The recovery for the method blank surrogate(s) is outside the QC acceptance limits as noted on the QC Summary. Since the recovery is high and no target analytes were detected, the data is reported.

The LCS/LCSD surrogate(s) recovery is outside the QC acceptance limits as noted on the QC Summary. Since the recovery for the target analytes is compliant, the data is reported.

Sample #s: 6674330

The recovery for the method blank surrogate(s) is outside the QC acceptance limits as noted on the QC Summary. Since the recovery is high and no target analytes were detected, the data is reported.

The LCS/LCSD surrogate(s) recovery is outside the QC acceptance limits as noted on the QC Summary. Since the recovery for the target analytes is compliant, the data is reported.
Reporting limits were raised due to interference from the sample matrix.



Lancaster Laboratories

Boeing Chain of Custody

Acct. # 13419 Group # 131295A Sample # 0674330-36

For Lancaster Laboratories use only. Please print. Instructions on reverse side correspond.

1 Client Information		2 Sample Identification		3 Collected		4		5	
Site Location:	Boeing Renton Former Fuel Farm	Sample Identification	Matrix	Date	Time	No. of Containers	Analyses Requested	Remarks/Comments	Date/Time
Site Project:	Former Fuel Farm Cleanup Action								
Site Program#:	008880080								
Boeing PM:	Fred Wallace								
Consultant Contact:	John Long, AME								
Report To:	John Long								
Invoice To:	<input checked="" type="checkbox"/> Boeing EHS <input type="checkbox"/> Other (specify):								
Sampler:	Chelsea Jefferson # of Coolers:								
R1-SB01-PP213-14	S	5/3/12	1000			7	TPH-DX/TRH-Set Fuel		
R1-SB01-PP213-16	S	5/3/12	1025			7	BTEX		
R1-SB01-PP217-12	S	5/3/12	1120			7	2-Methylnaphthalene		
R1-SB01-PP217-16	S	5/3/12	1145			7	VPH		
Field Blanks	AQ	5/3/12	1200			10	EPH		
Trip Blank	AQ	--	--			2			
6 Turnaround Time Requested (please circle)		Standard		5 day		4 day		7	
Date needed:		72 hour		48 hour		24 hour		Date/Time	
		Relinquished by: Chelsea Jefferson		Relinquished by: Chelsea Jefferson		Relinquished by: Chelsea Jefferson		Date/Time: 5/11/12	
		Relinquished by commercial carrier (circle):		Temperature upon Receipt: 4.4 °C		Custody Seals Intact?: Yes		Date/Time: 5/11/12	
		UPS		FedEx		Other:		No	

The white copy should accompany samples to Lancaster Laboratories. The yellow copy should be retained by the client.

Environmental Sample Administration
Receipt Documentation Log

Client/Project: Boeing
 Date of Receipt: 6/1/12
 Time of Receipt: 0925
 Source Code: SO-1

Shipping Container Sealed: YES NO
 Custody Seal Present * : YES NO
* Custody seal was intact unless otherwise noted in the discrepancy section
 Package: Chilled Not Chilled

Temperature of Shipping Containers							
Cooler #	Thermometer ID	Temperature (°C)	Temp Bottle (TB) or Surface Temp (ST)	Wet Ice (WI) or Dry Ice (DI) or Ice Packs (IP)	Ice Present? Y/N	Loose (L) Bagged Ice (B) or NA	Comments
1	9422	4.4	TB	wl	Y	B	
2							
3							
4							
5							
6							

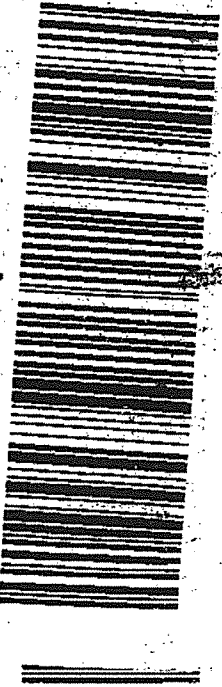
Number of Trip Blanks received NOT listed on chain of custody: 0*

Paperwork Discrepancy/Unpacking Problems:
* TBs → 1 MeOH, 1 NaHSO₄

Unpacker Signature/Emp#: ICQm 2291 Date/Time: 6/1/12 1435

A# 13419 Gy# 1312959

389

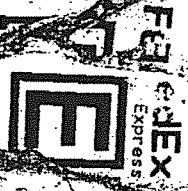


XHLNSA

986 3588 9877

FRI - 11 JUN 87
PRIORITY OVERNIGHT
AL **

17601 EA
PA-US MDT



MCMASTER PA 17601
TREET

MCMASTER LABORATORIES
425 NEW HOLLAND PIKE

SHIP DATE: 16JUN87
ACTING: 16 JUN 87
CDD: 01HS 0915S44/CMT: 251
DIR: 01HS 25X14X14 IN
BILL BILL SENDER

ED STATES US

MCMASTER PA 17601

7 986-2800

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

RL	Reporting Limit	BMQL	Below Minimum Quantitation Level
N.D.	none detected	MPN	Most Probable Number
TNTC	Too Numerous To Count	CP Units	cobalt-chloroplatinate units
IU	International Units	NTU	nephelometric turbidity units
umhos/cm	micromhos/cm	ng	nanogram(s)
C	degrees Celsius	F	degrees Fahrenheit
meq	milliequivalents	lb.	pound(s)
g	gram(s)	kg	kilogram(s)
µg	microgram(s)	mg	milligram(s)
mL	milliliter(s)	L	liter(s)
m³	cubic meter(s)	µL	microliter(s)
		pg/L	picogram/liter

< less than - The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

> greater than

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Data Qualifiers:

C – result confirmed by reanalysis.

J - estimated value – The result is \geq the Method Detection Limit (MDL) and $<$ the Limit of Quantitation (LOQ).

U.S. EPA CLP Data Qualifiers:

Organic Qualifiers

A	TIC is a possible aldol-condensation product
B	Analyte was also detected in the blank
C	Pesticide result confirmed by GC/MS
D	Compound quantitated on a diluted sample
E	Concentration exceeds the calibration range of the instrument
N	Presumptive evidence of a compound (TICs only)
P	Concentration difference between primary and confirmation columns $>25\%$
U	Compound was not detected
X,Y,Z	Defined in case narrative

Inorganic Qualifiers

B	Value is $<$ CRDL, but \geq IDL
E	Estimated due to interference
M	Duplicate injection precision not met
N	Spike sample not within control limits
S	Method of standard additions (MSA) used for calculation
U	Compound was not detected
W	Post digestion spike out of control limits
*	Duplicate analysis not within control limits
+	Correlation coefficient for MSA <0.995

Analytical test results meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR part 136 Table II as "analyze immediately" are not performed within 15 minutes.

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