

PROJECT NO. 8888
ROUTE: 9407 ?
FILE NO. 9407 ?
cc FILE NO. _____

Master

MEMORANDUM

TO: Byung Maeng, Ecology **DATE:** December 12, 2003
FROM: David Haddock, Geomatrix **CC:** Carl Bach, Boeing
Licensed Hydrogeologist Ray Power, Boeing
No. 1790 / *David Haddock*

SUBJECT: Boeing Renton Lot 13B Addendum Investigation Results, Voluntary Cleanup Program

Geomatrix Consultants, Inc. (Geomatrix), on behalf of Boeing, is submitting the investigation results for the Lot 13B Addendum Investigation. Geomatrix installed three push probes along the northeastern eastern side of Lot 13B parking lot, in accordance with the Final Lot 13B Soil Investigation Work Plan (URS, November 2002), and as specified in the letter titled Boeing Renton Lot 13B, Voluntary Cleanup Program Preliminary Investigation Results and Recommendation for Additional Work (Geomatrix, May 14, 2003). The three push probes (SB06 through SB08) were advanced along the eastern property boundary to identify whether the hydrocarbon affected soil noted near an earlier sample location (SB05) might be attributable to a potential off-site source (Figure 1).

The Lot 13B Addendum investigation was completed on May 16, 2003. One soil sample was collected at each push probe location at the water table at approximately nine feet in depth. Each soil sample was analyzed for hydrocarbons using Northwest Total Petroleum Hydrocarbons Diesel Range Extended (NWTPH-Dx) and Northwest Total Petroleum Hydrocarbons Gasoline Range (NWTPH-G). The samples were also analyzed for volatile organic compounds (VOCs) using EPA Method 8260B and for polynuclear aromatic hydrocarbons using EPA Method 8270 SIM.

The soil samples were labeled, stored on ice, and then delivered to Analytical Resources Laboratory in Tukwila, Washington, for analysis. Tables 1 and 2 present the analytical data for the soil samples. Figure 2 is a map with results posted for total hydrocarbon concentrations at SB06 through SB08 and earlier soil borings completed at the site. The boring logs for push probes SB06 through SB08 are attached to this memorandum. A complete copy of the laboratory data package for these samples and a data quality review are attached to this memorandum for your review.

Memorandum
Byung Maeng
Washington Department of Ecology
December 12, 2003
Page 2

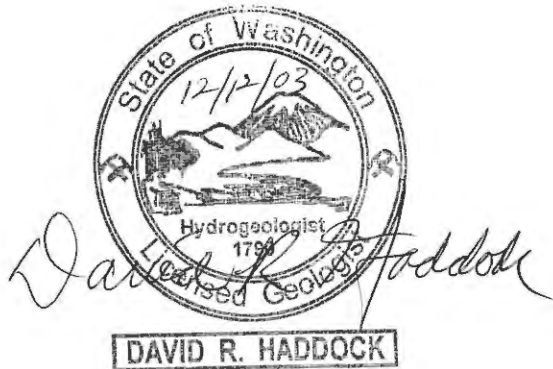
Please contact me at (206) 342-1787, or Carl Bach at (206) 898-0438 if you have any questions about these results.

DH:mny
J:\8888.000\004\004.doc

Attachments:

Table 1
Table 2
Figure 1
Figure 2
Laboratory Data Package
Boring Logs

Licensed Hydrogeologist No. 1790:



TABLES

TABLE 1
SOIL ANALYTICAL RESULTS
SB06, SB07, and SB08

Lot 13B Soil Investigation, May 2003
Boeing Renton Plant, Renton Washington

Sample ID	U-SB06-L13B-0090	U-SB07-L13B-0090	U-SB08-L13B-0090
Date Sampled	5/16/03	5/16/03	5/16/03
TPH (mg/Kg)			
Gasoline Range Hydrocarbons	5.3 U	98	5.5 U
Diesel Range Hydrocarbons	19	580	17
Motor Oil	10 U	1700	12
EPH (mg/Kg)			
Aliphatic Compounds			
C8-C10 Aliphatics	3.6 U	24	4.1 U
C10-C12 Aliphatics	3.6 U	43	4.1 U
C12-C16 Aliphatics	3.6 U	68	4.1 U
C16-C21 Aliphatics	6.0	94	4.1 U
C21-C34 Aliphatics	4.6	1000	4.5
Aromatic Compounds			
C8-C10 Aromatics	3.6 U	3.5 U	4.1 U
C10-C12 Aromatics	3.6 U	4.6	4.1 U
C12-C16 Aromatics	3.6 U	22	4.1 U
C16-C21 Aromatics	3.6 U	20	4.1 U
C21-C34 Aromatics	3.6 U	280	4.1 U
VPH (mg/Kg)			
Aliphatic Compounds			
C5-C6 Aliphatics	5.0 U	5.0 U	5.0 U
C6-C8 Aliphatics	5.0 U	5.0 U	5.0 U
C8-C10 Aliphatics	5.0 U	5.0 U	5.0 U
C10-C12 Aliphatics	5.0 U	7.2	5.0 U
Total Aliphatics	NA	7.2	NA
Aromatic Compounds			
C8-C10 Aromatics	5.0 U	5.0 U	5.0 U
C10-C12 Aromatics	5.0 U	14	5.0 U
C12-C13 Aromatics	5.0 U	39	5.0 U
Total Aromatics	NA	53	NA
Target Compounds			
Methyl t-butyl ether	0.052 U	0.054 U	0.063 U
Benzene	0.010 U	0.011 U	0.013 U
Toluene	0.5 U	0.50 U	0.50 U
Ethylbenzene	0.5 U	0.50 U	0.50 U
m,p-Xylene	0.5 U	0.50 U	0.50 U
o-Xylene	0.5 U	0.50 U	0.50 U
PNAs (µg/Kg)			
2-Methylnaphthalene	7.1 U	11 J	8.2 U
Acenaphthene	7.1 U	9.2 U	8.2 U
Acenaphthylene	7.1 U	7.1 U	8.2 U
Anthracene	7.1 U	21	8.2 U
Benzo(a)anthracene	7.1 U	22	8.2 U
Benzo(a)pyrene	7.1 U	21 U	8.2 U
Benzo(b)fluoranthene	7.1 U	14 U	8.2 U
Benzo(g,h,i)perylene	7.1 U	21 U	8.2 U
Benzo(k)fluoranthene	7.1 U	14 U	8.2 U
Chrysene	7.1 U	33 J	8.2 U
Dibenz(a,h)anthracene	7.1 U	7.1 U	8.2 U
Dibenzofuran	7.1 U	7.1 U	8.2 U
Fluoranthene	7.1 U	67	8.2 U
Fluorene	7.1 U	33 J	8.2 U
Indeno(1,2,3-cd)pyrene	7.1 U	7.1 U	8.2 U
Naphthalene	7.1 U	7.1 U	8.2 U
Phenanthrene	7.1 U	110	8.2 U
Pyrene	7.1 U	110	8.2 U

Notes:

U = analyte was not detected at the concentration shown to the left of the U

mg/Kg = milligrams per kilogram

µg/Kg = micrograms per kilogram

NA = this value is not applicable

TABLE 2
SOIL VOC ANALYTICAL RESULTS
SB06, SB07, and SB08

Lot 13B Soil Investigation, May 2003
Boeing Renton Plant, Renton Washington

Sample ID Date Sampled	U-SB06-L13B-0090 5/16/03	U-SB07-L13B-0090 5/16/03	U-SB08-L13B-0090 5/16/03
VOCs (µg/Kg)			
1,1,1,2-Tetrachloroethane	1.1 U	5 U	1.1 U
1,1,1-Trichloroethane	1.1 U	5 U	1.1 U
1,1,2,2-Tetrachloroethane	1.1 U	47 U	1.1 U
1,1,2-Trichloro-1,2,2-trifluoroethane	2.3 U	10 U	2.3 U
1,1,2-Trichloroethane	1.1 U	5 U	1.1 U
1,1-Dichloroethane	1.1 U	5 U	1.1 U
1,1-Dichloroethene	1.1 U	5 U	1.1 U
1,1-Dichloropropene	1.1 U	5 U	1.1 U
1,2,3-Trichlorobenzene	5.7 U	34 U	5.7 U
1,2,3-Trichloropropane	2.3 U	76 U	2.3 U
1,2,4-Trichlorobenzene	5.7 U	49 U	5.7 U
1,2,4-Trimethylbenzene	1.1 U	5 U	1.1 U
1,2-Dibromo-3-chloropropane	5.7 U	25 U	5.7 U
1,2-Dichlorobenzene	1.1 U	5 U	1.1 U
1,2-Dichloroethane	1.1 U	5 U	1.1 U
1,2-Dichloropropane	1.1 U	5 U	1.1 U
1,3,5-Trimethylbenzene	1.1 U	5 U	1.1 U
1,3-Dichlorobenzene	1.1 U	5 U	1.1 U
1,3-Dichloropropane	1.1 U	5 U	1.1 U
1,4-Dichlorobenzene	1.1 U	5 U	1.1 U
2,2-Dichloropropane	1.1 U	5 U	1.1 U
2-Butanone	5.7 U	25 U	5.7 U
2-Chloroethylvinylether	5.7 U	25 U	5.7 U
2-Chlorotoluene	1.1 U	5 U	1.1 U
2-Hexanone	5.7 U	25 U	5.7 U
4-Chlorotoluene	1.1 U	5 U	1.1 U
4-Isopropyltoluene	1.1 U	5 U	1.1 U
4-Methyl-2-Pentanone (MIBK)	5.7 U	25 U	5.7 U
Acetone	9.6	25 U	15
Acrolein	57 U	250 U	57 U
Acrylonitrile	5.7 U	25 U	5.7 U
Benzene	1.1 U	5 U	1.1 U
Bromobenzene	1.1 U	15 U	1.1 U
Bromochloromethane	1.1 U	5 U	1.1 U
Bromodichloromethane	1.1 U	5 U	1.1 U
Bromoethane	2.3 U	10 U	2.3 U
Bromoform	1.1 U	5 U	1.1 U
Bromomethane	1.1 U	5 U	1.1 U
Carbon Disulfide	1.1 U	5 U	1.1 U
Carbon Tetrachloride	1.1 U	5 U	1.1 U
Chlorobenzene	1.1 U	5 U	1.1 U
Chloroethane	1.1 U	5 U	1.1 U
Chloroform	1.1 U	5 U	1.1 U
Chloromethane	1.1 U	5 U	1.1 U
Dibromochloromethane	1.1 U	5 U	1.1 U

TABLE 2
SOIL VOC ANALYTICAL RESULTS
SB06, SB07, and SB08

Lot 13B Soil Investigation, May 2003
Boeing Renton Plant, Renton Washington

Sample ID Date Sampled	U-SB06-L13B-0090 5/16/03	U-SB07-L13B-0090 5/16/03	U-SB08-L13B-0090 5/16/03
Dibromomethane	1.1 U	5 U	1.1 U
Ethylbenzene	1.1 U	5 U	1.1 U
Ethylene Dibromide	1.1 U	5 U	1.1 U
Hexachlorobutadiene	5.7 U	25 U	5.7 U
Isopropylbenzene	1.1 U	5 U	1.1 U
Methyl Iodide	1.1 U	5 U	1.1 U
Methylene Chloride	2.3 U	10 U	2.3 U
Naphthalene	5.7 U	25 U	5.7 U
Styrene	1.1 U	5 U	1.1 U
Tetrachloroethene	1.1 U	5 U	1.3
Toluene	1.1 U	5 U	2.8
Trichloroethene	1.1 U	5 U	1.1 U
Trichlorofluoromethane	1.1 U	5 U	1.1 U
Vinyl Acetate	5.7 U	25 U	5.7 U
Vinyl Chloride	1.1 U	5 U	1.1 U
cis-1,2-Dichloroethene	1.1 U	5 U	1.1 U
cis-1,3-Dichloropropene	1.1 U	5 U	1.1 U
m,p-Xylene	1.1 U	5 U	1.1 U
n-Butylbenzene	1.1 U	9.4 U	1.1 U
n-Propylbenzene	1.1 U	5 U	1.1 U
o-Xylene	1.1 U	5 U	1.1 U
sec-Butylbenzene	1.1 U	5 U	1.1 U
tert-Butylbenzene	1.1 U	5 U	1.1 U
trans-1,2-Dichloroethene	1.1 U	5 U	1.1 U
trans-1,3-Dichloropropene	1.1 U	5 U	1.1 U
trans-1,4-Dichloro-2-butene	5.7 U	25 U	5.7 U

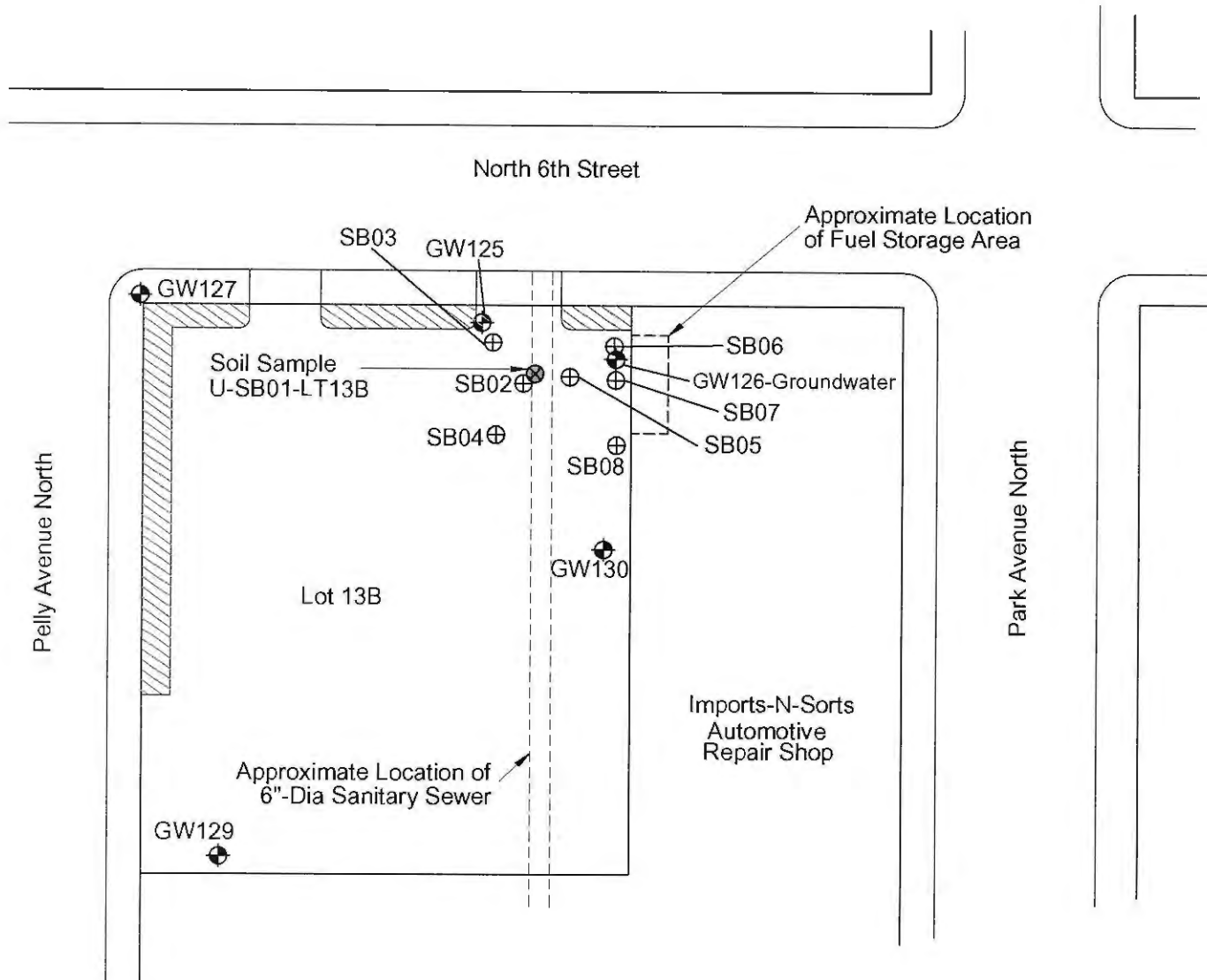
Notes:

U = analyte was not detected at the concentration shown to the left of the U

µg/Kg = milligrams per kilogram

NA = this value is not applicable

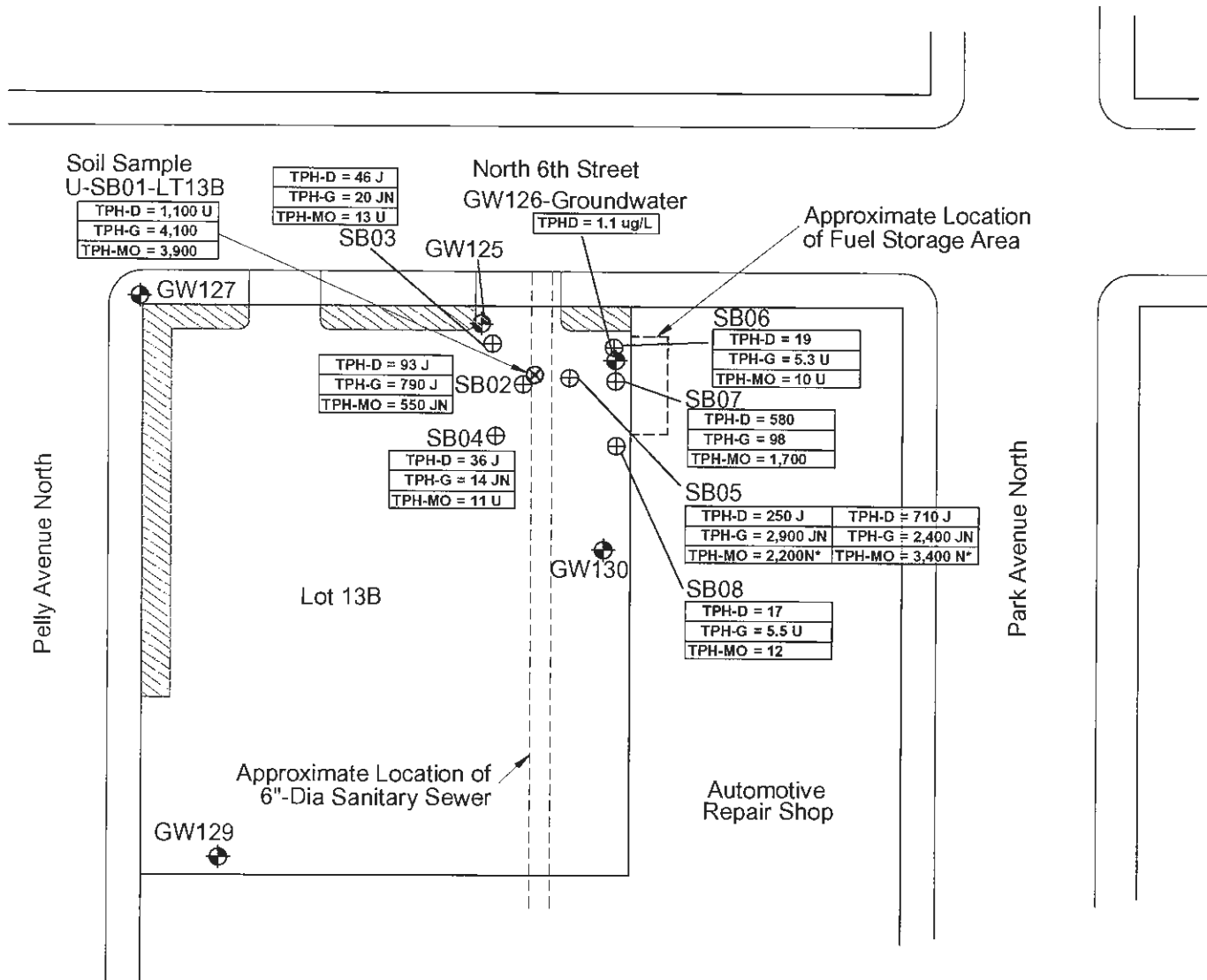
FIGURES



LEGEND

- GW125 Monitoring Well Location and Number
- Location of Soil Sample U-SB01-LT13B
- Approximate Push Probe Soil Boring Location
- Landscape Area





LEGEND

- GW125 Monitoring Well Location and Number
- Location of Soil Sample U-SB01-LT13B
- Approximate Push Probe Location
- Landscape Area
- J - Estimated Value
- N - Not a good match for the specified hydrocarbon.
- * - Caution should be used in interpreting these results.
- TPH-D - Total Petroleum Hydrocarbons as Diesel
- TPH-G - Total Petroleum Hydrocarbons as Gasoline
- TPH-MO - Total Petroleum Hydrocarbons as Motor Oil

Note: Data for borehole SB01 and GW126 from Weston Lot 13B Soil and Groundwater Sampling Report (May 2001).

All data for SB01 to SB08 from samples collected at water table (8-9' bls).



Figure 2
Total Petroleum Hydrocarbons Concentrations
Lot 13B, Renton, Washington

**DATA QUALITY REVIEW AND
LABORATORY DATA PACKAGE**

Summary Data Quality Review
Boeing Renton

the QAPP. If data qualification was required, data were qualified based on the definitions and use of qualifying flags outlined in the EPA documents *USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Organic Data Review*, October 1999, and *USEPA Contract Laboratory Program (CLP) National Functional Guidelines for Inorganic Data Review*, July 2002.

Organic Analyses

Samples were analyzed for TPH, PAHs, EPH/MPH, and VOCs by the method identified in the introduction to this report.

1. Holding Times – Acceptable.

2. Blanks – Acceptable except as noted below.

VOCs by EPA 8260B – The method blank analyzed on 5/19/03 had a detection of methylene chloride at 2.3 ug/kg. As methylene chloride is a common laboratory contaminant, associated samples with detections of methylene chloride less than 10 times the blank contamination were qualified as non-detect and flagged with a "U".

3. Surrogates – Acceptable

4. Laboratory Control Samples – Acceptable except as noted below.

SOIL VOCs by EPA 8260B – The recoveries for the following analytes were greater than the control limits of 70-130% in the soil LCS and/or LCSD analyzed on 5/19/03: vinyl acetate (185% LCS), and acrolein (133% LCS). As the analytes were not detected in the associated samples, no sample results were qualified. The LCSD percent recovery for 1,1-dichloroethene was 67.4%, less than the control limits of 70-130%. The LCS/LCSD RPD was 32.5%, greater than the control limit of 30%. Associated sample results were qualified as estimated and flagged with a "J". The LCSD percent recovery for toluene was 149%, greater than the control limits of 70-130%. The LCS/LCSD RPD was 36.8%, greater than the control limit of 30%. Associated sample results were less than the detection limit; therefore, no data were qualified. The following analytes had LCS/LCSD RPDs greater than the control limit of 30%: methylene chloride (32.4%), 1,1-dichloroethane (49.4%), trans-1,4-dichloroethene (32.5%), cis-1,2-dichloroethene (31%), 2-butanone (32.2%), and vinyl acetate (53.2%). As the LCS/LCSD percent recoveries were within the control limits, no data were qualified.

SOIL VOCs by EPA 8260B – The recoveries for the following analytes were greater than the control limits of 70-130% in the soil LCS and/or LCSD analyzed on 5/28/03: methyl iodide (131% and 138%), n-propylbenzene (136% and 133%), 4-isopropyltoluene (141% and 138%), and n-butylbenzene (152% and 153%). As the analytes were not detected in the associated samples, no sample results were qualified. The LCS percent recovery for tetrachloroethene was 134%, greater than the control limits of 70-130%. The LCS/LCSD RPD was 43.7%, greater than the control limit of 30%. Tetrachloroethene was not detected in the associated samples, no sample results were qualified.

5. Matrix Spike/Matrix Spike Duplicate (MS/MSD) – A MS/MSD was not submitted with the project samples. Data quality were evaluated based on the LCS and surrogate data.

6. Field Duplicates – Not Applicable. Field duplicates were not collected as part of this sampling event.

7. Reporting Limits – Acceptable.

Summary Data Quality Review Boeing Renton

VOCs by EPA 8260B – The laboratory assigned a ‘Y’ data qualifier to some analytes in the VOC analyses indicating a raised reporting limit due to background interference or activity on the instrument. The compound is still not detected at or above the raised level. The results that were flagged with a ‘Y’ by the laboratory were qualified as non-detect and flagged with a ‘U’. The affected results and samples are:

U-SB07-L13B-0090	1,1,2,2-tetrachloroethane	47 U
	1,2,3-trichloropropane	76 U
	bromobenzene	15 U
	n-butylbenzene	9.4 U
	1,2,3-trichlorobenzene	34 U

PAHs by EPA 8270 SIM – The laboratory assigned a ‘Y’ data qualifier to some analytes in the PAH analyses indicating a raised reporting limit due to background interference or activity on the instrument. The compound is still not detected at or above the raised level. The results that were flagged with a ‘Y’ by the laboratory were qualified as non-detect and flagged with a ‘U’. The affected results and samples are:

U-SB07-L13B-0090	acenaphthene	9.2 U
	benzo(b)fluoranthene	14 U
	benzo(k)fluoranthene	14 U
	benzo(a)pyrene	21 U
	benzo(g,h,i)perylene	21 U

PAHs by EPA 8270 SIM – The laboratory assigned a ‘M’ data qualifier to some analytes in the PAH analyses indicating an estimated value of analyte found and confirmed by the analyst but with a low spectral match. The results that were flagged with a ‘M’ by the laboratory were qualified as estimated and flagged with a ‘J’. The affected results and samples are:

U-SB07-L13B-0090	2-methylnaphthalene	11 J
	chrysene	33 J

Overall Assessment of Data

The completeness of SDG FM15 is 100%. The usefulness of this data is based on USEPA guidance documents and the QAPP referenced in the introduction to this report.



June 3, 2003

David R. Haddock
Geomatrix Consultants, Inc.
One Union Square
600 University Street, Suite 1020
Seattle, WA 98101

RE: Project: Renton Lot 13B / 8888.000
ARI Job: FM15

Dear David:

Please find enclosed the original chain of custody record and analytical results for the above referenced project. Analytical Resources, Inc. accepted three soil samples and a trip blank in good condition on May 16, 2003.

Samples were analyzed for Volatile Organics, SIM PNAs, EPH (aliphatics and aromatics) and diesel and gasoline range hydrocarbons referencing NWPTH methods, EPA methods and ARI SOPs. The analysis for VPH was subcontracted to OnSite Environmental, Inc. of Redmond, WA and results are included in this data package.

Methylene chloride was detected in the 5/19/03 method blank. Associated samples have been "B" flagged indicating possible method blank contamination. Several volatile analytes have raised reporting limits and have been "Y" flagged due to background interferences in sample **U-SB07-L13B-0090**.

Several of the 5/19/03 Volatile LCS/LCSD relative percent differences (RPDs) are elevated due to varying percent recoveries. As the percent recoveries for these analytes are within compliance, no corrective action was taken. The variation in percent recoveries is due to the matrix of the sample.

2-Methylnaphthalene and chrysene have been "M" flagged in sample **U-SB07-L13B-0090** indicating an estimated value of analyte found and confirmed by analyst but with low spectral match. Several analytes have raised reporting limits and have been "Y" flagged due to background interferences in sample **U-SB07-L13B-0090**.



Analytical Resources, Incorporated

Analytical Chemists and Consultants

David Haddock

Boeing Renton Lot 13B / 8888.000

ARI Job FM15

June 3, 2003

Page 2

No other analytical complications were noted. Quality control analysis results are included for your review. Copies of the OnSite and ARI reports and all associated ARI raw data will be kept on file at ARI. If you have any questions or require additional information, please contact me at your convenience.

Sincerely,

ANALYTICAL RESOURCES, INC.

A handwritten signature in cursive script that reads "Stephanie Lucas".

Stephanie Lucas

Project Manager

(206) 695-6213

Enclosure

cc: Ray Power, The Boeing Company, P.O. Box 3707, M/S 63-41, Seattle, WA 98124-2207
Peter Hudelson, The Boeing Company, PO Box 3707, MS 1W-12, Seattle, WA 98124
Karen Mixon, URS Corporation, Century Square, 1501 4th Avenue, Suite 1400, Seattle, WA 98101

FM15



Analytical Resources, Incorporated
 Analytical Chemists and Consultants
 4611 South 134th Place, Suite 100
 Tukwila WA 98168
 206-695-6200 206-695-6201 (fax)

Chain of Custody Record & Laboratory Analysis Request

Page 1 of 1

Turn Around Requested: Normal

Report to: <u>John Long</u>		Proj Name: <u>Boeing Renton Lot 13B</u>			Analyses Requested:						Notes/Comments:
Company: <u>Geomatrix</u>		Proj Number: <u>8888.000</u>			TPH-DX	TPH-GX	PAHs	VOCs (EPA 8260)	EPH/VPH		
Address: <u>600 University, #1020</u> <u>Seattle, WA 98101</u>		Sampler: <u>K. Alexander</u>									
Phone: <u>206/342-1760</u>		Shipping Method: <u>drop off</u>									
Fax: <u>206/342-1761</u>		Analyte:									
Sample ID	Sample Date	Sample Time	Sample Matrix	No Containers							
<u>U-SB06-L13B-0090</u>	<u>5/16</u>	<u>845</u>	<u>S</u>	<u>4</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>		
<u>U-SB07-L13B-0090</u>	<u>5/16</u>	<u>935</u>	<u>S</u>	<u>4</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>		
<u>U-SB08-L13B-0090</u>	<u>5/16</u>	<u>1045</u>	<u>S</u>	<u>4</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>		
<u>U-TB-L13B-2001</u>	<u>5/16</u>	<u>-</u>	<u>W</u>	<u>2</u>			<u>X</u>				

Relinquished: (Signature) <u>K.B. alex</u>	Received by: (Signature) <u>Eric Branson</u>	Special Instructions/Notes
Printed name: <u>Kenneth B. Alexander</u>	Printed name: <u>ERIC BRANSON</u>	
Company: <u>Geomatrix</u>	Company: <u>ARI</u>	
Date: <u>5/16/03</u> Time: <u>1230</u>	Date: <u>5/16/03</u> Time: <u>1230</u>	

Number of Coolers:	<u>1</u>
Cooler Temp(s):	<u>9.5</u>
CDC Seals Intact?	<u>NA</u>
Bottles Intact?	

Limits of Liability: Analytical Resources, Inc. (ARI) will perform all requested services in accordance with appropriate methodology, follow ARI Standard Operating Procedures with Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the invoice amount for said services. The acceptance by the client of a proposal for services by ARI releases ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the client.

Please sign here if you would like these samples disposed of after expiration of standard archive times (30 days for waters 90 days for soils, sediments per contract). If you do not want these samples discarded, we will begin charging you for storage after the disposal date.
 Samples to be discarded after expiration:

ORGANIC COMPOUND DATA REPORTING QUALIFIERS

- U** Indicates the compound was undetected at the reported concentration. (Same as ND).
- J** Indicates an estimated concentration when the value is less than the calculated reporting limit.
- D** Indicates the surrogate/spike(s) was not detected, due to dilution of extract.
- NR** Indicates the surrogate recovery cannot be reported due to matrix interference.
- E** Indicates a value above the linear range of the detector. Sample dilution required.
- S** Indicates no value reported due to saturation of the detector. Sample dilution required.
- NA** Indicates compound not analyzed for.
- M** Indicates an estimated value of analyte found and confirmed by analyst but with low spectral match. (GC-MS)
- B** Indicates possible/probable blank contamination. Flagged when the analyte is detected in the blank as well as the sample.
- Y** Indicates raised reporting limit due to background interference or to activity on the instrument. Compound is still not detected at or above the raised level.
- C** Indicates a probable hit that cannot be confirmed due to matrix interference (GC).
- P** Indicates a high RPD between detected concentrations for dual column GC analyses, without obvious interference.

SW8260 SURROGATE RECOVERY SUMMARY

Matrix: Soil

QC Report No: FM15-The Boeing Company
Project: Renton LOT 13A
8888.000

Client ID	DCE	TOL	BFB	DCB	TOT OUT
U-SB06-L13B-0090	82.4%	96.8%	94.5%	101%	0
MB-052803	99.8%	101%	103%	98.6%	0
LCS-052803	94.7%	103%	103%	102%	0
LCSD-052803	101%	101%	104%	94.2%	0
U-SB#7-L13B-0090	103%	105%	105%	108%	0
U-SB08-L13B-0090	109%	101%	106%	97.8%	0
MB-051903	84.9%	98.6%	91.2%	100%	0
LCS-051903	106%	94.2%	95.0%	97.2%	0
LCSD-051903	87.6%	94.2%	95.7%	90.1%	0
U-TB-L13B-2001	84.9%	89.3%	92.0%	98.7%	0

LCS/MB LIMITS QC LIMITS

(DCE) = 24-1,2-Dichloroethane	(74-128)	(71-143)
(TOL) = m-Toluene	(76-119)	(79-118)
(BFB) = Bromofluorobenzene	(78-116)	(69-126)
(DCB) = m-1,2-Dichlorobenzene	(78-122)	(79-119)

Prep Method: SW5030
Analytical Method: SW8260B
Log Number Range: 03-5913 to 03-5916

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method 8260B
Page 1 of 2

Sample ID: MB-051903
METHOD BLANK

Lab Sample ID: MB-051903

QC Report No: FMI5-The Boeing Company

LIMS ID: 03 5916

Project: Renton LOT 13B

Matrix: Soil

8888.000

Data Release Authorized:

Date Sampled: NA

Reported: 06/03/03

Date Received: NA

Instrument/Analyst: FINN5/PAB

Sample Amount: 5.00 g

Date Analyzed: 05/19/03 16:38

Percent Moisture: NA

CAS Number	Analyte	µg/kg
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.5
67-64-1	Acetone	5.0 U
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
134-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-3	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-2	Acrylonitrile	5.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
670-20-6	1,1,1,2-Tetrachloroethane	1.0 U
56-12-8	1,2-Dibromo-3-chloropropane	5.0 U

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method 8280B
Page 2 of 3

Sample ID: MB-051903
METHOD BLANK

Lab Sample ID: MB-051903

QC Report No: PM15-The Boeing Company

LIMS ID: 03-5916

Project: Renton LOT 13B

MATRIX: Soil

8888.000

Date Analyzed: 05/19/03 16:38

CAS Number	Analyte	µg/kg
96-18-4	1,2,3-Trichloropropane	2.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-5	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	84.9%
d8-Toluene	98.6%
Bromofluorobenzene	93.2%
d4-1,2-Dichlorobenzene	100%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method 8260B

Page 1 of 2

Sample ID: MB-052803

METHOD BLANK

Lab Sample ID: MB-052803

LIMS ID: 03-5914

Matrix: Soil

Data Release Authorized:

Reported: 06/03/03

QC Report No: FM15-The Boeing Company

Project: Renton LOT 13B

8888.000

Date Sampled: NA

Date Received: NA

Instrument/Analyst: FINNI/PAB

Date Analyzed: 05/28/03 15:52

Sample Amount: 5.00 g

Percent Moisture: NA

CAS Number	Analyte	µg/kg
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	Acetone	5.0 U
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
941-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	5.0 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	5.0 U
563-58-6	1,1-Dichloropropene	2.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,3-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method 8260B
Page 2 of 2

Sample ID: MB-052803
METHOD BLANK

Lab Sample ID: MB-052803
LIMS ID: 03-5914
Matrix: Soil
Date Analyzed: 05/28/03 15:52

QC Report No: PM15-The Boeing Company
Project: Renton LOT 13B
0888.000

CAS Number	Analyte	µg/kg
56-18-4	1,2,3-Trichloropropane	2.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	99.8%
d8-Toluene	101%
Bromofluorobenzene	103%
d4-1,2-Dichlorobenzene	98.6%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method 8260B

Page 1 of 3

Sample ID: U-SB06-L13B-0090

SAMPLE

Lab Sample ID: FM15A

LIMS ID: 03-5913

Matrix: Soil

Data Release Authorized:

Reported: 06/03/03

QC Report No: FM15-The Boeing Company

Project: Renton LOT 13B

8888,000

Date Sampled: 05/16/03

Date Received: 05/16/03

Instrument/Analyst: FINN5/PAB

Date Analyzed: 05/19/03 19:26

Sample Amount: 4.38 g dry-wt

Percent Moisture: 13.3%

CAS Number	Analyte	µg/kg
74-87-3	Chloromethane	1.1 U
74-83-9	Bromomethane	1.1 U
75-01-4	Vinyl Chloride	1.1 U
75-00-3	Chloroethane	1.1 U
75-09-2	Methylene Chloride	2.3 U
67-64-1	Acetone	9.6
75-15-0	Carbon Disulfide	1.1 U
75-35-4	1,1-Dichloroethene	1.1 U
75-34-3	1,1-Dichloroethane	1.1 U
156-60-5	trans-1,2-Dichloroethene	1.1 U
156-59-2	cis-1,2-Dichloroethene	1.1 U
67-66-3	Chloroform	1.1 U
107-06-2	1,2-Dichloroethane	1.1 U
78-93-3	2-Butanone	5.7 U
71-55-6	1,1,1-Trichloroethane	1.1 U
56-23-5	Carbon Tetrachloride	1.1 U
108-05-4	Vinyl Acetate	5.7 U
75-27-4	Bromodichloromethane	1.1 U
78-87-5	1,2-Dichloropropane	1.1 U
10061-01-5	cis-1,3-Dichloropropene	1.1 U
79-01-6	Trichloroethene	1.1 U
124-48-1	Dibromochloromethane	1.1 U
79-00-5	1,1,2-Trichloroethane	1.1 U
71-43-2	Benzene	1.1 U
10061-02-6	trans-1,3-Dichloropropene	1.1 U
110-75-8	2-Chloroethylvinylether	5.7 U
75-25-2	Bromoform	1.1 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.7 U
591-78-6	2-Hexanone	5.7 U
127-18-4	Tetrachloroethene	1.1 U
79-34-5	1,1,2,2-Tetrachloroethane	1.1 U
108-88-3	Toluene	1.1 U
108-90-7	Chlorobenzene	1.1 U
100-41-4	Ethylbenzene	1.1 U
100-42-5	Styrene	1.1 U
75-69-4	Trichlorofluoromethane	1.1 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.3 U
1330-20-7	m,p-Xylene	1.1 U
95-47-6	o-Xylene	1.1 U
95-50-1	1,2-Dichlorobenzene	1.1 U
542-73-1	1,3-Dichlorobenzene	1.1 U
106-46-7	1,4-Dichlorobenzene	1.1 U
107-02-8	Acrolein	5.7 U
74-88-4	Methyl Iodide	1.1 U
74-96-4	Bromoethane	2.3 U
107-13-1	Acrylonitrile	5.7 U
563-58-6	1,1-Dichloropropene	1.1 U
74-95-3	Dibromomethane	1.1 U
630-20-6	1,1,1,2-Tetrachloroethane	1.1 U
96-12-8	1,2-Dibromo-3 Chloropropane	5.7 U

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method #2608
Page 2 of 2Sample ID: U-SB06-L13B-0090
SAMPLE

Lab Sample ID: FM15A

QC Report No: FM15-The Boeing Company

LIMS ID: 03-5913

Project: Renton LOT 13B

Matrix: Soil

8888.000

Date Analyzed: 05/19/03 19:26

CAS Number	Analyte	µg/kg
96-18-4	1,2,3-Trichloropropane	2.3 U
110-57-6	trans-1,4-Dichloro-2-butene	5.7 U
108-67-8	1,3,5-Trimethylbenzene	1.1 U
95-63-6	1,2,4-Trimethylbenzene	1.1 U
87-68-3	Hexachlorobutadiene	5.7 U
106-93-4	Ethylene Dibromide	1.1 U
74-97-5	Bromochloromethane	1.1 U
594-20-7	2,2-Dichloropropane	1.1 U
142-28-9	1,3-Dichloropropane	1.1 U
98-82-9	Isopropylbenzene	1.1 U
103-65-1	n-Propylbenzene	1.1 U
108-86-1	Bromobenzene	1.1 U
95-49-8	2-Chlorotoluene	1.1 U
106-43-4	4-Chlorotoluene	1.1 U
98-06-6	tert-Butylbenzene	1.1 U
135-98-8	sec-Butylbenzene	1.1 U
99-87-6	4-Isopropyltoluene	1.1 U
104-51-8	n-Butylbenzene	1.1 U
120-82-1	1,2,4-Trichlorobenzene	5.7 U
91-20-3	Naphthalene	5.7 U
87-61-6	1,2,3-Trichlorobenzene	5.7 U

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	82.4%
d8-Toluene	96.8%
Bromofluorobenzene	94.5%
d4-1,2-Dichlorobenzene	101%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method 8260B

Page 1 of 2


Sample ID: U-SB07-L11B-0090

SAMPLE

Lab Sample ID: FM15B

LIMS ID: 03-5914

Matrix: Soil

Data Release Authorized: 

Reported: 06/03/03

QC Report No: FM15-The Boeing Company

Project: Renton LOT 13B

8888.000

Date Sampled: 05/16/03

Date Received: 05/16/03

Instrument/Analyst: FINNI/PAB

Date Analyzed: 05/28/03 17:59

Sample Amount: 0.99 g-dry-wt

Percent Moisture: 5.8%

CAS Number	Analyte	µg/kg
74-87-3	Chloromethane	5.0 U
74-83-9	Bromomethane	5.0 U
75-01-4	Vinyl Chloride	5.0 U
75-00-3	Chloroethane	5.0 U
75-09-2	Methylene Chloride	10 U
67-64-1	Acetone	25 U
75-15-0	Carbon Disulfide	5.0 U
75-35-4	1,1-Dichloroethene	5.0 U
75-34-3	1,1-Dichloroethane	5.0 U
156-60-5	trans-1,2-Dichloroethene	5.0 U
156-59-2	cis-1,2-Dichloroethene	5.0 U
67-66-3	Chloroform	5.0 U
107-06-2	1,2-Dichloroethane	5.0 U
78-93-3	2-Butanone	25 U
71-55-6	1,1,1-Trichloroethane	5.0 U
56-23-5	Carbon Tetrachloride	5.0 U
108-05-4	Vinyl Acetate	25 U
75-27-4	Bromodichloromethane	5.0 U
78-87-5	1,2-Dichloropropane	5.0 U
10061-01-5	cis-1,3-Dichloropropene	5.0 U
79-01-6	Trichloroethene	5.0 U
124-48-1	Dibromochloromethane	5.0 U
79-00-5	1,1,2-Trichloroethane	5.0 U
71-43-2	Benzene	5.0 U
10061-02-6	trans-1,3-Dichloropropene	5.0 U
110-75-8	2-Chloroethylvinylether	25 U
75-25-2	Bromoform	5.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	25 U
591-78-6	2-Hexanone	25 U
127-18-4	Tetrachloroethene	5.0 U
79-34-5	1,1,2,2-Tetrachloroethane	47 U <i>ad 7/03</i>
108-88-3	Toluene	5.0 U
108-90-7	Chlorobenzene	5.0 U
100-41-4	Ethylbenzene	5.0 U
100-42-5	Styrene	5.0 U
75-69-4	Trichlorofluoromethane	5.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	10 U
1330-20-7	m,p-Xylene	5.0 U
95-47-6	o-Xylene	5.0 U
95-50-1	1,2-Dichlorobenzene	5.0 U
542-73-1	1,3-Dichlorobenzene	5.0 U
106-46-7	1,4-Dichlorobenzene	5.0 U
107-02-8	Acrolein	250 U
74-88-4	Methyl Iodide	5.0 U
74-96-4	Bromoethane	10 U
107-13-1	Acrylonitrile	25 U
563-58-6	1,1-Dichloropropene	5.0 U
74-95-3	Dibromomethane	5.0 U
030-20-6	1,1,1,2-Tetrachloroethane	5.0 U
96-12-8	1,2-Dibromo-3-chloropropane	25 U

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method 8260B
Page 2 of 2

Sample ID: U-SB07-L13B-0090
SAMPLE

Lab Sample ID: PM15B

QC Report No: PM15-The Boeing Company

LIMS ID: 03-5914

Project: Renton LOT 13B

Matrix: Soil

8888-000

Date Analyzed: 05/28/03 17:59

CAS Number	Analyte	µg/kg
96-18-4	1,2,3-Trichloropropane	76 <i>Y</i>
110-57-6	trans-1,4-Dichloro-2-butene	25 U
108-67-8	1,3,5-Trimethylbenzene	5.0 U
95-63-6	1,2,4-Trimethylbenzene	5.0 U
87-68-3	Hexachlorobutadiene	25 U
106-93-4	Ethylene Dibromide	5.0 U
74-97-5	Bromochloromethane	5.0 U
594-20-7	2,2-Dichloropropane	5.0 U
142-28-9	1,3-Dichloropropane	5.0 U
98-82-8	Isopropylbenzene	5.0 U
103-65-1	n-Propylbenzene	5.0 U
108-86-1	Bromobenzene	15 <i>Y</i>
95-49-8	2-Chlorotoluene	5.0 U
106-43-4	4-Chlorotoluene	5.0 U
98-06-6	tert-Butylbenzene	5.0 U
135-98-8	sec-Butylbenzene	5.0 U
99-87-6	4-Isopropyltoluene	5.0 U
104-51-8	n-Butylbenzene	9.4 <i>Y</i>
120-82-1	1,2,4-Trichlorobenzene	49 <i>Y</i>
91-20-3	Naphthalene	25 U
87-61-6	1,2,3-Trichlorobenzene	34 <i>Y</i>

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	103%
d8-Toluene	105%
Bromofluorobenzene	105%
d4-1,2-Dichlorobenzene	108%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method 8260B
Page 1 of 2

Sample ID: U-SB08-L13B-0090
SAMPLE

Lab Sample ID: FM15C
LIMS ID: 03 5915
Matrix: Soil
Data Release Authorized:
Reported: 06/03/03

QC Report No: FM15-The Boeing Company
Project: Renton LOT 13B
8888,000
Date Sampled: 05/16/03
Date Received: 05/16/03

Instrument/Analyst: FINNI/PAB
Date Analyzed: 05/28/03 18:27

Sample Amount: 4.38 g-dry-wt
Percent Moisture: 11.2%

CAS Number	Analyte	µg/kg
74-87-3	Chloromethane	1.1 U
74-83-9	Bromomethane	1.1 U
75-01-4	Vinyl Chloride	1.1 U
75-00-3	Chloroethane	1.1 U
75-09-2	Methylene Chloride	2.3 U
67-64-1	Acetone	15
75-15-0	Carbon Disulfide	1.1 U
75-35-4	1,1-Dichloroethene	1.1 U
75-34-3	1,1-Dichloroethane	1.1 U
156-60-5	trans-1,2-Dichloroethene	1.1 U
156-59-2	cis-1,2-Dichloroethene	1.1 U
67-66-3	Chloroform	1.1 U
107-06-2	1,2-Dichloroethane	1.1 U
78-93-3	2-Butanone	5.7 U
71-55-6	1,1,1-Trichloroethane	1.1 U
56-23-5	Carbon Tetrachloride	1.1 U
108-05-4	Vinyl Acetate	5.7 U
75-27-4	Bromodichloromethane	1.1 U
78-87-5	1,2-Dichloropropane	1.1 U
10061-01-5	cis-1,3-Dichloropropene	1.1 U
79-01-6	Trichloroethene	1.1 U
124-48-1	Dibromochloromethane	1.1 U
79-00-5	1,1,2-Trichloroethane	1.1 U
71-43-2	Benzene	1.1 U
10061-02-6	trans-1,3-Dichloropropene	1.1 U
110-75-8	2-Chloroethylvinylether	5.7 U
75-25-2	Bromoform	1.1 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.7 U
591-78-6	2-Hexanone	5.7 U
127-18-4	Tetrachloroethene	1.3
79-34-5	1,1,2,2-Tetrachloroethane	1.1 U
108-88-3	Toluene	2.8
108-90-7	Chlorobenzene	1.1 U
100-41-4	Ethylbenzene	1.1 U
100-42-5	Styrene	1.1 U
75-69-4	Trichlorofluoromethane	1.1 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.3 U
1330-20-9	m,p-Xylene	1.1 U
95-47-6	o-Xylene	1.1 U
95-50-1	1,2-Dichlorobenzene	1.1 U
541-73-1	1,3-Dichlorobenzene	1.1 U
106-46-7	1,4-Dichlorobenzene	1.1 U
107-02-8	Acrolein	5.7 U
74-88-4	Methyl Iodide	1.1 U
74-96-4	Bromoethane	1.3 U
107-13-1	Acrylonitrile	5.7 U
563-58-6	1,1-Dichloropropene	1.1 U
74-95-3	Dibromomethane	1.1 U
830-20-6	1,1,1,2-Tetrachloroethane	1.1 U
96-12-8	1,2-Dibromo-3-chloropropane	5.7 U

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method 8260B

Sample ID: U-SB08-L13B-0090

Page 2 of 2

SAMPLE

Lab Sample ID: FM15C

QC Report No: FM15-The Boeing Company

LIMS ID: 03-5915

Project: Renton LOT 13B

Matrix: Soil

8888.000

Date Analyzed: 09/28/03 18:27

CAS Number	Analyte	µg/kg
96-18-4	1,2,3-Trichloropropane	2.3 U
110-57-6	trans-1,2-Dichloro-2-butene	5.7 U
108-67-8	1,3,5-Trimethylbenzene	1.1 U
95-63-6	1,2,4-Trimethylbenzene	1.1 U
87-68-3	Hexachlorobutadiene	5.7 U
106-93-4	Ethylene Dibromide	1.1 U
74-97-5	Bromochloromethane	1.1 U
594-20-7	2,3-Dichloropropane	1.1 U
142-28-9	2,3-Dichloropropane	1.1 U
98-82-8	Isopropylbenzene	1.1 U
103-65-1	n-Propylbenzene	1.1 U
106-86-1	Bromobenzene	1.1 U
95-49-8	2-Chlorotoluene	1.1 U
106-43-4	4-Chlorotoluene	1.1 U
98-06-6	tert-Butylbenzene	1.1 U
135-98-8	sec-Butylbenzene	1.1 U
99-87-6	4-Isopropyltoluene	1.1 U
104-51-8	n-Butylbenzene	1.2 U
120-82-1	1,2,4-Trichlorobenzene	5.7 U
91-20-3	Naphthalene	5.7 U
87-61-6	1,2,3-Trichlorobenzene	5.7 U

Volatiles Surrogate Recovery

d4-1,2-Dichloroethane	109%
d8-Toluene	101%
Bromofluorobenzene	106%
d4-1,2-Dichlorobenzene	97.8%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method 8260B

Sample ID: U-TB-L13B-2001

Page 1 of 2

SAMPLE

Lab Sample ID: FM15E

QC Report No: FM15-The Boeing Company

LIMS ID: 03 5916

Project: Renton LOT 13B

Matrix: Water

8888,000

Data Release Authorized:

Date Sampled: 05/16/03

Reported: 06/03/03

Date Received: 05/16/03

Instrument/Analyst: PINN5/PAB

Sample Amount: 5.00 mL

Date Analyzed: 05/19/03 21:52

CAS Number	Analyte	µg/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	7.1 U
67-64-1	Acetone	5.0 U
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-1	2-Butanone	5.0 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
106-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	5.0 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	5.0 U
563-58-6	1,1-Dichloropropene	2.0 U
74-95-1	Dibromomethane	2.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U

U 0.0 = 1/1/03

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method 8260B
Page 2 of 2Sample ID: U-TB-L13B-2001
SAMPLE

Lab Sample ID: FM15E

LIMS ID: 03-5916

Matrix: Water

Date Analyzed: 05/19/03 21:52

QC Report No: FM15-The Boeing Company

Project: Renton LOT 13B

8888.000

CAS Number	Analyte	µg/L
96-18-4	1,2,3-Trichloropropane	2.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
67-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-83-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
130-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	84.9%
d8-Toluene	89.3%
Bromofluorobenzene	92.0%
d4-1,2-Dichlorobenzene	98.7%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method 8260B

Sample ID: LCS-051903

Page 1 of 2

LCS/LCSD

Lab Sample ID: LCS-051903

QC Report No: FM15-The Boeing Company

LIMS ID: 03-5916

Project: Renton LOT 13A

Matrix: Water

8888-000

Data Release Authorized:

Date Sampled: NA

Reported: 05/03/03

Date Received: NA

Instrument/Analyst: FINN5/PAB

Sample Amount: 5.00 g

LCSD: FINN5/PAB

LCSD: 5.00 g

Data Analyzed: 05/19/03 14:16

LCSD: 05/19/03 15:11

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Chloromethane	48.3	50.0	96.6%	40.6	50.0	81.2%	17.3%
Bromomethane	51.8	50.0	104%	44.8	50.0	89.6%	14.5%
Vinyl Chloride	58.6	50.0	117%	47.4	50.0	94.8%	21.1%
Chloroethane	58.3	50.0	117%	49.3	50.0	98.6%	16.7%
Methylene Chloride	62.4	50.0	125%	45.0	50.0	90.0%	32.4%
Acetone	269	250	108%	215	250	86.0%	22.3%
Carbon Disulfide	59.5	50.0	119%	53.5	50.0	107%	10.6%
1,1-Dichloroethane	46.8	50.0	93.6%	33.7	50.0	67.4%	32.5%
1,1-Dichloroethane	61.9	50.0	124%	38.6	50.0	77.2%	46.4%
trans-1,2-Dichloroethane	51.9	50.0	104%	37.4	50.0	74.8%	32.5%
cis-1,2-Dichloroethane	51.3	50.0	103%	37.2	50.0	74.4%	31.9%
Chloroform	54.0	50.0	108%	40.6	50.0	81.2%	20.3%
1,2-Dichloroethane	59.8	50.0	120%	46.8	50.0	93.6%	24.4%
2-Butanone	249	250	99.6%	180	250	72.0%	32.2%
1,1,1-Trichloroethane	57.0	50.0	114%	45.4	50.0	90.8%	22.7%
Carbon Tetrachloride	60.5	50.0	121%	50.0	50.0	100%	19.0%
Vinyl Acetate	92.4	50.0	185%	53.6	50.0	107%	53.2%
Bromo-dichloromethane	53.8	50.0	108%	45.6	50.0	91.2%	16.5%
1,2-Dichloropropane	53.4	50.0	107%	48.0	50.0	96.0%	10.7%
cis-1,3-Dichloropropene	53.6	50.0	107%	46.0	50.0	92.0%	15.3%
Trichloroethene	52.9	50.0	106%	47.6	50.0	95.2%	10.5%
Dibromochloromethane	56.5	50.0	113%	48.6	50.0	97.2%	15.0%
1,1,2-Trichloroethane	59.5	50.0	119%	51.0	50.0	102%	15.4%
Benzene	50.4	50.0	101%	45.5	50.0	91.0%	10.2%
trans-1,3-Dichloropropene	49.6	50.0	99.2%	43.3	50.0	86.6%	13.6%
2-Chloroethylvinylether	53.4	50.0	107%	54.9	50.0	110%	2.8%
Bromoform	55.7	50.0	111%	47.0	50.0	94.0%	16.9%
4-Methyl-2-Pentanone (MIBK)	271	250	108%	237	250	94.8%	13.4%
2-Hexanone	257	250	103%	233	250	93.2%	9.8%
Tetrachloroethene	54.0	50.0	108%	49.6	50.0	99.2%	8.5%
1,1,2,2-Tetrachloroethane	54.6	50.0	109%	42.9	50.0	85.8%	24.0%
Toluene	51.2	50.0	102%	74.3	50.0	149%	26.8%
Chlorobenzene	52.3	50.0	105%	48.2	50.0	96.4%	8.2%
Ethylbenzene	53.5	50.0	107%	51.4	50.0	103%	4.0%
Styrene	54.0	50.0	108%	51.6	50.0	103%	4.5%
Trichlorofluoromethane	58.6	50.0	117%	43.6	50.0	87.2%	29.4%
1,1,2-Trichloro-1,2,2-trifl	63.7	50.0	127%	53.2	50.0	106%	18.0%
m,p-Xylene	113	100	113%	109	100	109%	4.6%
o-Xylene	51.8	50.0	104%	47.8	50.0	95.6%	8.0%
1,2-Dichlorobenzene	52.8	50.0	106%	46.4	50.0	92.8%	12.9%
1,3-Dichlorobenzene	54.9	50.0	110%	48.9	50.0	97.8%	11.6%
1,4-Dichlorobenzene	53.8	50.0	108%	46.7	50.0	93.4%	14.1%
Acrolein	332	250	133%	249	250	99.6%	20.6%
Methyl Iodide	65.0	50.0	130%	58.6	50.0	117%	10.4%
Bromoethane	53.4	50.0	107%	48.8	50.0	97.6%	9.0%
Acrylonitrile	56.9	50.0	114%	47.7	50.0	95.4%	17.6%
1,1-Dichloropropene	53.8	50.0	108%	46.5	50.0	93.1%	14.7%
Dibromomethane	57.0	50.0	114%	46.0	50.0	92.0%	21.4%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method #260B

Page 2 of 3

Sample ID: LCS-051903

LCS/LCSD

Lab Sample ID: LCS-051903

LIMS ID: 03-5916

Matrix: Water

Date Analyzed: 05/19/03 14:16

LCSD: 05/19/03 15:11

QC Report No: FW15-The Boeing Company

Project: Renton LOT 13B

8888.000

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
1,1,1,2-Tetrachloroethane	56.1	50.0	112%	50.8	50.0	102%	9.9%
1,2-Dibromo-3-chloropropane	56.0	50.0	112%	44.8	50.0	89.6%	22.2%
1,2,3-Trichloropropane	60.1	50.0	120%	46.3	50.0	92.6%	25.9%
trans-1,4-Dichloro-2-butene	56.0	50.0	112%	50.4	50.0	101%	10.5%
1,3,5-Trimethylbenzene	54.0	50.0	108%	46.9	50.0	93.8%	14.1%
1,2,4-Trimethylbenzene	55.8	50.0	112%	47.3	50.0	94.6%	16.5%
Hexachlorobutadiene	54.9	50.0	110%	46.6	50.0	93.2%	16.4%
Ethylene Dibromide	55.5	50.0	111%	49.3	50.0	98.6%	11.8%
Bromochloromethane	56.8	50.0	114%	46.2	50.0	92.4%	20.6%
2,2-Dichloropropane	51.1	50.0	102%	39.3	50.0	78.6%	26.1%
1,3-Dichloropropane	53.1	50.0	106%	47.5	50.0	95.0%	11.1%
Isopropylbenzene	50.7	50.0	131%	43.2	50.0	86.4%	16.0%
n-Propylbenzene	54.6	50.0	110%	45.4	50.0	92.8%	16.6%
Bromobenzene	54.1	50.0	108%	45.6	50.0	91.2%	17.1%
2-Chlorotoluene	51.9	50.0	104%	42.5	50.0	85.0%	19.9%
4-Chlorotoluene	52.3	50.0	105%	48.0	50.0	96.0%	8.6%
tert-Butylbenzene	51.7	50.0	102%	44.5	50.0	89.0%	13.8%
sec-Butylbenzene	54.2	50.0	108%	47.2	50.0	94.4%	13.8%
4-Isopropyltoluene	58.5	50.0	111%	48.7	50.0	97.4%	13.1%
n-Butylbenzene	52.7	50.0	105%	47.3	50.0	94.6%	10.8%
1,2,4-Trichlorobenzene	48.8	50.0	97.6%	41.6	50.0	83.2%	25.9%
Naphthalene	50.0	50.0	100%	43.6	50.0	87.2%	13.7%
1,2,3-Trichlorobenzene	53.2	50.0	106%	46.8	50.0	93.6%	12.4%

Results reported in µg/kg

RPD calculated using sample concentrations per SW846.

Volatile Surrogate Recovery

	LCS	LCSD
d4-1,2-Dichloroethane	106%	87.6%
d8-Toluene	94.2%	94.2%
Bromofluorobenzene	95.0%	95.7%
d4-1,2-Dichlorobenzene	97.2%	90.1%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method 8260B

Sample ID: LCS-052803

Page 1 of 2

LCS/LCSD

Lab Sample ID: LCS-052803

QC Report No: FM15-The Boeing Company

LIMS ID: 03-5914

Project: Renton LOT 138

Matrix: Soil

8888.000

Data Release Authorized:

Date Sampled: NA

Reported: 06/03/03

Date Received: NA

Instrument/Analyst: FINNI/PAB

Sample Amount: 5.00 g

LCSD: FINNI/PAB

LCSD: 5.00 g

Date Analyzed: 05/28/03 14:23

LCSD: 05/28/03 14:56

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Chloromethane	41.4	50.0	82.8%	43.7	50.0	87.4%	5.4%
Bromomethane	51.2	50.0	102%	53.5	50.0	107%	4.4%
Vinyl Chloride	52.3	50.0	119%	62.7	50.0	125%	5.6%
Chloroethane	54.9	50.0	110%	56.6	50.0	113%	3.0%
Methylene Chloride	45.8	50.0	91.6%	46.3	50.0	92.6%	1.1%
Acetone	256	250	102%	225	250	90.0%	12.9%
Carbon Disulfide	49.7	50.0	99.4%	50.5	50.0	101%	1.6%
1,1-Dichloroethene	48.8	50.0	97.6%	51.1	50.0	102%	4.6%
1,1-Dichloroethane	55.2	50.0	110%	59.7	50.0	119%	7.8%
trans-1,2-Dichloroethene	54.3	50.0	109%	54.2	50.0	108%	0.2%
cis-1,2-Dichloroethene	51.3	50.0	103%	55.9	50.0	112%	8.6%
Chloroform	53.4	50.0	107%	57.1	50.0	114%	6.7%
1,2-Dichloroethane	52.8	50.0	106%	52.3	50.0	105%	1.0%
2-Butanone	216	250	86.4%	222	250	88.8%	2.7%
1,1,1-Trichloroethane	52.1	50.0	104%	58.1	50.0	116%	10.9%
Carbon Tetrachloride	52.9	50.0	106%	56.6	50.0	113%	6.8%
Vinyl Acetate	53.9	50.0	108%	53.3	50.0	107%	1.1%
Bromodichloromethane	46.0	50.0	92.0%	47.4	50.0	94.8%	3.0%
1,2-Dichloropropane	54.1	50.0	108%	54.8	50.0	108%	0.2%
cis-1,3-Dichloropropene	48.8	50.0	97.6%	49.5	50.0	99.0%	1.4%
Trichloroethane	57.1	50.0	114%	59.3	50.0	119%	3.8%
Dibromochloromethane	41.8	50.0	83.6%	45.4	50.0	90.8%	8.3%
1,1,2-Trichloroethane	47.6	50.0	95.2%	50.7	50.0	101%	6.3%
Benzene	52.8	50.0	106%	52.4	50.0	105%	0.8%
trans-1,3-Dichloropropene	45.4	50.0	90.8%	46.2	50.0	92.4%	1.7%
2-Chloroethylvinylether	48.6	50.0	97.2%	43.1	50.0	86.2%	12.0%
Bromoform	39.5	50.0	79.0%	38.7	50.0	77.4%	2.0%
4-Methyl-2-Pentanone (MIBK)	219	250	87.6%	214	250	85.6%	2.3%
2-Hexanone	236	250	94.4%	233	250	93.2%	1.3%
Tetrachloroethene	43.2	50.0	86.2%	67.2	50.0	134%	43.7%
1,1,2,2-Tetrachloroethane	43.5	50.0	87.0%	44.3	50.0	88.6%	1.6%
Toluene	54.5	50.0	109%	56.0	50.0	112%	2.7%
Chlorobenzene	54.6	50.0	109%	57.8	50.0	116%	5.7%
Ethylbenzene	56.1	50.0	112%	59.2	50.0	118%	5.4%
Styrene	52.5	50.0	105%	53.7	50.0	107%	2.3%
Trichlorofluoromethane	57.9	50.0	116%	64.2	50.0	128%	10.3%
1,1,2-Trichloro-1,1,2-Trifl	53.1	50.0	106%	58.8	50.0	118%	10.2%
m,p-Xylene	114	100	114%	117	100	117%	2.6%
o-Xylene	51.6	50.0	103%	52.6	50.0	105%	1.9%
1,2-Dichlorobenzene	39.3	50.0	119%	57.0	50.0	114%	4.0%
1,3-Dichlorobenzene	61.4	50.0	123%	64.2	50.0	128%	4.5%
1,4-Dichlorobenzene	59.6	50.0	119%	61.0	50.0	122%	2.3%
Acrolein	242	250	96.8%	244	250	97.6%	1.2%
Methyl Iodide	63.6	50.0	131%	68.8	50.0	138%	4.8%
Bromoethane	60.5	50.0	121%	60.8	50.0	122%	0.5%
Acrylonitrile	44.0	50.0	88.0%	38.6	50.0	77.2%	13.1%
1,1-Dichloropropene	55.9	50.0	112%	58.9	50.0	118%	5.2%
Dibromomethane	47.5	50.0	95.0%	47.5	50.0	95.0%	0.0%

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method 8260B

Sample ID: LCS-052803

Page 2 of 2

LCS/LCSD

Lab Sample ID: LCS-052803

Report No: FM15 The Boeing Company

LIMS ID: 03 5914

Project: Renton LOT 13B

Matrix: Soil

8885.000

Date Analyzed: 05/28/03 14:23

LCSD: 05/28/03 14:56

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
1,1,1,2-Tetrachloroethane	48.0	50.0	96.0%	30.9	50.0	102%	5.9%
1,2-Dibromo-3-chloropropane	33.2	50.0	66.4%	35.5	50.0	71.0%	6.7%
1,2,3-Trichloropropane	49.6	50.0	99.2%	47.8	50.0	95.6%	3.7%
trans-1,4-Dichloro-2-butene	43.9	50.0	87.8%	41.9	50.0	83.8%	4.7%
1,3,5-Trimethylbenzene	61.2	50.0	122%	60.8	50.0	122%	0.7%
1,2,4-Trimethylbenzene	60.4	50.0	121%	59.2	50.0	118%	2.0%
Hexachlorobutadiene	61.8	50.0	124%	62.4	50.0	125%	1.0%
Ethylene Dibromide	45.5	50.0	91.0%	46.0	50.0	92.0%	1.1%
Bromochloromethane	48.1	50.0	96.2%	51.2	50.0	102%	6.2%
2,2-Dichloropropane	50.0	50.0	100%	52.6	50.0	105%	5.1%
1,3-Dichloropropane	46.4	50.0	92.8%	50.7	50.0	101%	8.9%
Isopropylbenzene	61.7	50.0	122%	62.2	50.0	124%	1.6%
n-Propylbenzene	67.8	50.0	136%	66.6	50.0	133%	1.8%
Bromobenzene	54.1	50.0	108%	55.3	50.0	111%	2.2%
2-Chlorotoluene	62.5	50.0	125%	61.6	50.0	123%	1.5%
4-Chlorotoluene	64.0	50.0	128%	60.2	50.0	120%	6.1%
tert-Butylbenzene	59.9	50.0	120%	57.3	50.0	115%	4.4%
sec-Butylbenzene	62.2	50.0	124%	59.8	50.0	120%	3.9%
4-Isopropyltoluene	70.6	50.0	141%	69.0	50.0	138%	3.3%
n-Butylbenzene	75.9	50.0	152%	76.6	50.0	153%	0.9%
1,2,4-Trichlorobenzene	61.4	50.0	123%	61.7	50.0	123%	0.5%
Naphthalene	45.5	50.0	91.0%	44.8	50.0	89.6%	1.6%
1,2,3-Trichlorobenzene	54.3	50.0	109%	56.6	50.0	113%	0.1%

Results reported in µg/kg

RPD calculated using sample concentrations per SW846

Volatiles Surrogate Recovery

	LCS	LCSD
d4-1,2-Dichloroethane	94.7%	101%
d8-Toluene	103%	101%
Bromofluorobenzene	103%	104%
d4-1,2-Dichlorobenzene	102%	94.2%

SIM SW8270 SURROGATE RECOVERY SUMMARY

Media: Soil

QC Report No: FM15-The Boeing Company
Project: Renton LOT 13B
8888.000

Client ID	MNP	DBA	TOT QTT
MB-052103	95.0%	81.3%	0
LCS-052103	99.0%	92.7%	0
U-SB06-L13B-0090	57.0%	74.0%	0
U-SB07-L13B-0090	85.7%	64.7%	0
U-SB08-L13B-0090	79.3%	79.7%	0

	LCS/MB LIMITS	QC LIMITS
(MNP) = 1,2,3-Methylnaphthalene	(35-113)	(11-127)
(DBA) = 1,2,4-Dibenzo(a,h)anthracene	(26-142)	(10-153)

Prep Method: SW3550B
Log Number Range: 03-5913 to 03-5915

ORGANICS ANALYSIS DATA SHEET
PNAs by Selected Ion Monitoring GC/MS
Page 1 of 1

Sample ID: MB-052103
METHOD BLANK

Lab Sample ID: MB-052103
LIMS ID: 03-5913
Matrix: Soil
Data Release Authorized:
Reported: 05/27/03

QC Report No: PM15-The Boeing Company
Project: Renton LOT 13B
8888.000
Date Sampled: NA
Date Received: NA

Date Extracted: 05/21/03
Date Analyzed: 05/23/03 09:04
Instrument/Analyst: NT1/Van
GPC Cleanup: NO
Alumina: 1:1

Sample Amount: 7.50 g
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00
Percent Moisture: NA
pH: NA

CAS Number	Analyte	µg/kg
91-20-3	Naphthalene	6.7 U
91-57-6	2-Methylnaphthalene	6.7 U
208-96-8	Acenaphthylene	6.7 U
83-32-9	Acenaphthene	6.7 U
86-73-7	Fluorene	6.7 U
85-01-8	Phenanthrene	6.7 U
120-12-7	Anthracene	6.7 U
206-44-0	Fluoranthene	6.7 U
129-00-0	Pyrene	6.7 U
56-55-3	Benzo (a) anthracene	6.7 U
218-01-9	Chrysene	6.7 U
205-99-2	Benzo (b) fluoranthene	6.7 U
207-08-9	Benzo (k) fluoranthene	6.7 U
50-32-8	Benzo (a) pyrene	6.7 U
193-39-5	Indeno (1,2,3-cd) pyrene	6.7 U
53-70-3	Dibenz (a,h) anthracene	6.7 U
191-24-2	Benzo (g,h,i) perylene	6.7 U
132-64-3	Dibenzofuran	6.7 U

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	95.0%
d14-Dibenzo (a, h) anthracene	81.3%

ORGANICS ANALYSIS DATA SHEET

PNAs by Selected Ion Monitoring GC/MS

Page 1 of 1

Sample ID: U-SB06-L13B-0090

SAMPLE

Lab Sample ID: FM15A

LIMS ID: 03-5913

Matrix: Soil

Data Release Authorized:

Reported: 05/27/03

QC Report No: FM15-The Boeing Company

Project: Renton LOT 13B

8888.000

Date Sampled: 05/16/03

Date Received: 05/16/03

Date Extracted: 05/21/03

Date Analyzed: 05/25/03 13:21

Instrument/Analyst: NT1/Van

GPC Cleanup: NO

Sample Amount: 7.02 g-dry-wt

Final Extract Volume: 0.50 mL

Dilution Factor: 1.00

Percent Moisture: 6.7 %

pH: 6.0

CAS Number	Analyte	µg/kg
91-20-3	Naphthalene	7.1 U
91-57-6	2-Methylnaphthalene	7.1 U
208-96-8	Acenaphthylene	7.1 U
83-32-9	Acenaphthene	7.1 U
86-73-7	Fluorene	7.1 U
85-01-8	Phenanthrene	7.1 U
120-12-7	Anthracene	7.1 U
206-44-0	Fluoranthene	7.1 U
129-00-0	Pyrene	7.1 U
56-55-3	Benzo(a)anthracene	7.1 U
218-01-9	Chrysene	7.1 U
205-99-2	Benzo(b)fluoranthene	7.1 U
207-08-9	Benzo(k)fluoranthene	7.1 U
50-32-8	Benzo(a)pyrene	7.1 U
193-39-5	Indeno(1,2,3-cd)pyrene	7.1 U
53-70-3	Dibenz(a,h)anthracene	7.1 U
191-24-2	Benzo(g,h,i)perylene	7.1 U
132-64-9	Dibenzofuran	7.1 U

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	57.0%
d14-Dibenzo(a,h)anthracene	74.0%

ORGANICS ANALYSIS DATA SHEET

PNAs by Selected Ion Monitoring GC/MS

Page 1 of 1

Sample ID: U-SB07-L13B-0090

SAMPLE

Lab Sample ID: FM15B

DIMS ID: 03-5914

Matrix: Soil

Data Release Authorized:

Reported: 05/27/03

QC Report No: PM15-The Boeing Company

Project: Renton LOT 13B

8888.000

Date Sampled: 05/16/03

Date Received: 05/16/03

Date Extracted: 05/21/03

Date Analyzed: 05/25/03 13:46

Instrument/Analyst: NT1/Van

GPC Cleanup: NO

Sample Amount: 7.05 g-dry-wt

Final Extract Volume: 0.50 mL

Dilution Factor: 1.00

Percent Moisture: 6.6 %

pH: 6.0

CAS Number	Analyte	µg/kg
91-20-3	Naphthalene	7.1 U
91-57-6	2-Methylnaphthalene	11 M <i>7/1/03 LN</i>
208-96-8	Acenaphthylene	7.1 U
83-32-9	Acenaphthene	9.2 <i>U 0/1/03</i>
86-73-7	Fluorene	33
85-01-8	Phenanthrene	110
120-12-7	Anthracene	21
206-44-0	Fluoranthene	67
129-00-0	Pyrene	110
56-55-3	Benzo(a)anthracene	22
218-01-9	Chrysene	33 M <i>7/1/03</i>
205-99-2	Benzo(b)fluoranthene	14 <i>U</i>
207-08-9	Benzo(k)fluoranthene	14 <i>U</i>
50-32-8	Benzo(a)pyrene	21 <i>U</i>
193-39-5	Indeno(1,2,3-cd)pyrene	7.1 U
53-70-3	Dibenz(a,h)anthracene	7.1 U
191-24-2	Benzo(g,h,i)perylene	21 <i>U</i>
132-64-9	Dibenzofuran	7.1 U

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	85.7%
d14-Dibenzo(a,h)anthracene	64.7%

ORGANICS ANALYSIS DATA SHEET

PNAs by Selected Ion Monitoring GC/MS

Page 1 of 1

Sample ID: U-SB08-L13B-0090

SAMPLE

Lab Sample ID: FM15C

LIMS ID: 03-5915

Matrix: Soil

Data Release Authorized:

Reported: 05/27/03

QC Report No: FM15-The Boeing Company

Project: Renton LOT 13B

8888.000

Date Sampled: 05/16/03

Date Received: 05/16/03

Date Extracted: 05/21/03

Date Analyzed: 05/25/03 14:08

Instrument/Analyst: NT1/Van

GPC Cleanup: NO

Sample Amount: 6.11 g-dry wt

Final Extract Volume: 0.50 mL

Dilution Factor: 1.00

Percent Moisture: 18.9 %

pH: 5.9


CAS Number	Analyte	µg/kg
91-20-3	Naphthalene	8.2 U
91-57-6	2-Methylnaphthalene	8.2 U
208-96-8	Acenaphthylene	8.2 U
81-32-9	Acenaphthene	8.2 U
86-73-7	Fluorene	8.2 U
85-01-8	Phenanthrene	8.2 U
120-12-7	Anthracene	8.2 U
206-44-0	Fluoranthene	8.2 U
129-00-0	Pyrene	8.2 U
56-55-3	Benzo(a)anthracene	8.2 U
218-01-9	Chrysene	8.2 U
305-99-2	Benzo(b)fluoranthene	8.2 U
207-08-9	Benzo(k)fluoranthene	8.2 U
30-32-8	Benzo(a)pyrene	8.2 U
193-39-5	Indeno(1,2,3-cd)pyrene	8.2 U
53-70-3	Dibenz(a,h)anthracene	8.2 U
191-24-2	Benzo(g,h,i)perylene	8.2 U
132-64-9	Dibenzofuran	8.2 U

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene	79.3%
d14-Dibenzo(a,h)anthracene	79.7%

ORGANICS ANALYSIS DATA SHEET
PNAs by Selected Ion Monitoring GC/MS
 Page 1 of 1

Sample ID: LCS-052103
 LAB CONTROL

Lab Sample ID: LCS-052103
 LIMS ID: 03-5913
 Matrix: Soil
 Data Release Authorized: 
 Reported: 05/27/03

QC Report No: FM15-The Boeing Company
 Project: Renton LOT 13B
 8888.000
 Date Sampled: 05/16/03
 Date Received: 05/16/03

Date Extracted: 05/21/03
 Date Analyzed: 05/23/03 09:27
 Instrument/Analyst: NT1/Van
 GPC Cleanup: NO
 Alumina Cleanup: YES

Sample Amount: 7.50 g
 Final Extract Volume: 0.50 mL
 Dilution Factor: 1.00
 pH: NA
 Moisture: NA

Analyte	Lab Control	Spike Added	Recovery
Phenanthrene	177	200	88.5%
Chrysene	197	200	98.5%
Benzo(k)fluoranthene	157	200	78.5%

SIM Semivolatile Surrogate Recovery

d10-2-Methylnaphthalene 99.0%
 d14-Dibenzo(a,h)anthracene 92.7%

Results reported in $\mu\text{g}/\text{kg}$

ALPH SURROGATE RECOVERY SUMMARY

Matrix: Soil

QC Report No: FM15-The Boeing Company
Project: Renton LOT 13B
8888.000

Client ID	1-COD TOT OUT	
MB-052103	68.0%	0
LCS-052103	60.7%	0
U-SB06-L13B-0090	61.3%	0
U-SB07-L13B-0090	44.0%	0
U-SB08-L13B-0090	66.0%	0

	LCS/MB LIMITS	QC LIMITS
(1-COD) = 1-Chlorooctadecane	(30-160)	(30-160)

Prep Method: 8W3550B
Log Number Range: 03-5913 to 03-5915

AREPH SURROGATE RECOVERY SUMMARY

Matrix: Soil

QC Report No: FM15-The Boeing Company
Project: Renton LOT 13B
8888.000

Client ID	o-Ter TOT OUT	
MB-052103	97.3%	0
LCS-052103	84.7%	0
U-SB06-L13B-0090	88.0%	0
U-SB07-L13B-0090	93.0%	0
U-SB08-L13B-0090	91.3%	0

	LCS/MB LIMITS	QC LIMITS
(o-Ter) = Ortho-terphenyl	(30-160)	(30-160)

Prep Method: SW350B
Log Number Range: 03-5913 to 03-5915

ORGANICS ANALYSIS DATA SHEET
Aliphatic/Aromatic GC-EPH
Page 1 of 1

Sample ID: MB-052103
METHOD BLANK

Lab Sample ID: MB-052103
LIMS ID: 03-5913
Matrix: Soil
Data Release Authorized: *WV*
Reported: 05/30/03

QC Report No: FM15-The Boeing Company
Project: Renton LOT 13B
0000.000
Date Sampled: NA
Date Received: NA

Date Extracted: 05/21/03
Percent Moisture: NA

Sample Amount: 3.00 g
Final Extract Volume: 1.0 mL

Aliphatic

Date Analyzed: 05/26/03
Instrument/Analyst: FID4A/MDR

Dilution Factor: 1.00

Aromatic

Date Analyzed: 05/26/03
Instrument/Analyst: FID4A/MDR

Dilution Factor: 1.00

Analyte	µg/kg
C8-C10 Aliphatics	3,300 U
C10-C12 Aliphatics	3,300 U
C12-C16 Aliphatics	3,300 U
C16-C21 Aliphatics	3,300 U
C21-C34 Aliphatics	3,300 U
C8-C10 Aromatics	3,300 U
C10-C12 Aromatics	3,300 U
C12-C16 Aromatics	3,300 U
C16-C21 Aromatics	3,300 U
C21-C34 Aromatics	3,300 U

EPH Surrogate Recovery

Aliphatic	1-Chlorooctadecane	68.0%
Aromatic	Ortho-terphenyl	97.3%

ORGANICS ANALYSIS DATA SHEET
Aliphatic/Aromatic GC-EPH
Page 1 of 1

Sample ID: U-SB06-L13B-0090
SAMPLE

Lab Sample ID: FM15A
LIMS ID: 01-5913
Matrix: Soil
Data Release Authorized: *WV*
Reported: 05/30/03

QC Report No: FM15-The Boeing Company
Project: Renton LOT 13B
8888.000
Date Sampled: 05/16/03
Date Received: 05/16/03

Date Extracted: 05/21/03
Percent Moisture: 6.7%

Sample Amount: 2.81 g-dry-wt
Final Extract Volume: 1.0 mL

Aliphatic

Date Analyzed: 05/26/03
Instrument/Analyst: FID4A/MDR

Dilution Factor: 1.00

Aromatic

Date Analyzed: 05/27/03
Instrument/Analyst: FID4A/MDR

Dilution Factor: 1.00

Analyte	µg/kg
C8-C10 Aliphatics	3,600 U
C10-C12 Aliphatics	3,600 U
C12-C16 Aliphatics	3,600 U
C16-C21 Aliphatics	6,000
C21-C34 Aliphatics	4,600
C8-C10 Aromatics	3,600 U
C10-C12 Aromatics	3,600 U
C12-C16 Aromatics	3,600 U
C16-C21 Aromatics	3,600 U
C21-C34 Aromatics	3,600 U

EPH Surrogate Recovery

Aliphatic	1-Chlorooctadecane	61.3%
Aromatic	Ortho-terphenyl	88.0%

ORGANICS ANALYSIS DATA SHEET
Aliphatic/Aromatic GC-EPH
Page 1 of 1

Sample ID: U-SB07-L13B-0090
SAMPLE

Lab Sample ID: FM15B
LTMS ID: 03-5914
Matrix: Soil
Data Release Authorized: *mm*
Reported: 05/30/03

DC Report No: FM15-The Boeing Company
Project: Renton LOT 13B
8888.000
Date Sampled: 05/16/03
Date Received: 05/16/03

Date Extracted: 05/21/03
Percent Moisture: 6.6%

Sample Amount: 2.85 g-dry-wt
Final Extract Volume: 1.0 mL

Aliphatic

Date Analyzed: 05/26/03
Instrument/Analyst: FID4A/MDR

Dilution Factor: 1.00

Aromatic

Date Analyzed: 05/27/03
Instrument/Analyst: FID4A/MDR

Dilution Factor: 1.00

Analyte	µg/kg
C8-C10 Aliphatics	24,000
C10-C12 Aliphatics	43,000
C12-C16 Aliphatics	58,000
C16-C21 Aliphatics	94,000
C21-C34 Aliphatics	1,000,000
C8-C10 Aromatics	3,500 U
C10-C12 Aromatics	4,600
C12-C16 Aromatics	22,000
C16-C21 Aromatics	20,000
C21-C34 Aromatics	280,000

EPH Surrogate Recovery

Aliphatic	1-Chlorooctadecane	44.0%
Aromatic	Ortho-terphenyl	92.0%

ORGANICS ANALYSIS DATA SHEET
Aliphatic/Aromatic GC-EPH
Page 1 of 1

Sample ID: U-SE08-113B-0090
SAMPLE

Lab Sample ID: FM15C
LIMS ID: 03-5915
Matrix: Soil
Data Release Authorized: *WV*
Reported: 05/10/03

QC Report No: FM15-The Boeing Company
Project: Renton LOT 13B
8888,000
Date Sampled: 05/16/03
Date Received: 05/16/03

Date Extracted: 05/21/03
Percent Moisture: 18.9%

Sample Amount: 2.43 g-dry-wt
Final Extract Volume: 1.0 mL

Aliphatic

Date Analyzed: 05/26/03
Instrument/Analyst: FID4A/MDR

Dilution Factor: 1.00

Aromatic

Date Analyzed: 05/27/03
Instrument/Analyst: FID4A/MDR

Dilution Factor: 1.00

Analyte	µg/kg
C8-C10 Aliphatics	4,100 U
C10-C12 Aliphatics	4,100 U
C12-C16 Aliphatics	4,100 U
C16-C21 Aliphatics	4,100 U
C21-C34 Aliphatics	4,500
C8-C10 Aromatics	4,100 U
C10-C12 Aromatics	4,100 U
C12-C16 Aromatics	4,100 U
C16-C21 Aromatics	4,100 U
C21-C34 Aromatics	4,100 U

EPH Surrogate Recovery

Aliphatic	1-Chlorooctadecane	66.0%
Aromatic	Ortho-terphenyl	91.3%

ORGANICS ANALYSIS DATA SHEET
Aliphatic/Aromatic GC-EPH
Page 1 of 1

Sample ID: LCS-052103
LAB CONTROL

Lab Sample ID: LCS-052103
LIMS ID: 03-5913
Matrix: Soil
Data Release Authorized: *YW*
Reported: 05/30/03

QC Report No: EM15-The Boeing Company
Project: Renton LOT 13B
8888.000
Date Sampled: NA
Date Received: NA

Date Extracted: 05/21/03

Sample Amount: 3.00 g
Final Extract Volume: 1.0 mL

Aliphatic

Date Analyzed: 05/26/03
Instrument/Analyst: FID4A/MDR

Dilution Factor: 1.00

Aromatic

Date Analyzed: 05/26/03
Instrument/Analyst: FID4A/MDR

Dilution Factor: 1.00

Analyte	Lab Control	Spike Added	Recovery
C8-C10 Aliphatics	28000	50000	56.0%
C10-C12 Aliphatics	26000	50000	52.0%
C12-C16 Aliphatics	31000	50000	62.0%
C16-C21 Aliphatics	36000	50000	72.0%
C10-C12 Aromatics	32300	50000	64.6%
C12-C16 Aromatics	37000	50000	74.0%
C16-C21 Aromatics	76700	100000	76.7%
C21-C34 Aromatics	86300	100000	86.3%

EPH Surrogate Recovery

Aliphatic	1-Chlorooctadecane	50.7%
Aromatic	Ortho-terphenyl	84.7%

Results reported in $\mu\text{g}/\text{kg}$

SOIL TPHg SYSTEM MONITORING COMPOUND SUMMARY

Matrix: Soil

QC Report No: FM15

LIMS ID	Lab ID	Client ID	TFT	BB	TOT OUT
03-5913MB	052303MBS	Method Blank	84.6%	96.2%	0
03-5913LC	052303LCS	Lab Control	104%	105%	0
03-5913LCD	052303LCD6	LCDuplicate	107%	106%	0
03-5913	FM15A	U-SB06-L13B-0090	70.8%	83.7%	0
03-5913	FM15A-MS	U-SB06-L13B-0090	94.1%	95.7%	0
03-5913	FM15A-MSD	U-SB06-L13B-0090	93.0%	94.4%	0
03-5914	FM15B	U-SB07-L13B-0090	77.3%	102%	0
03-5915	FM15C	U-SB08-L13B-0090	67.2%	76.7%	0

	MB/LCS QC LIMITS	SAMPLE QC LIMITS
(TFT) = Trifluorobenzene	(74-127)	(61-132)
(BB) = Bromobenzene	(74-123)	(52-141)

Limits Updated - 07/01/02

Column to be used to flag recovery values

D System Monitoring Compound diluted out

TOTAL GASOLINE RANGE HYDROCARBONS
NWTPHg Toluene to Naphthalene

Matrix: Soil
 QC Report No: FM15-The Boeing Company
 Project: Renton LOT 13B
 8888.000
 Data Release Authorized: *mm* Date Received: 05/15/03
 Reported: 05/29/03

Lab ID	Client Sample ID	Date Analyzed	Gas Range Hydrocarbons	Gasoline ID	Surr A Rec	Surr B Rec
052303MB	Method Blank	05/23/03	5.0 U	---	84.6%	96.2%
03-5913-FM15A	U-SB06-L13B-0090	05/23/03	5.3 U	---	70.8%	83.7%
03-5914-FM15B	U-SB07-L13B-0090	05/23/03	98	GRO	77.3%	102%
03-5915-FM15C	U-SB08-L13B-0090	05/23/03	5.5 U	---	67.2%	76.7%

Surrogate A is Trifluorotoluene.

Surrogate B is Bromobenzene.

Values reported in ppm (mg/kg) on a dry weight basis.

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

GAS: Indicates the presence of gasoline or weathered gasoline.

(GRO) Positive result that does not match an identifiable gasoline pattern.

TOTAL GASOLINE RANGE HYDROCARBONS
NWTPHg - Toluene to Naphthalene

Lab Sample ID: 052303LCS QC Report No: FM15-The Boeing Company
LIMS ID: 0345913 Project: Renton LOT 13B
Matrix: Soil 8888.000

Data Release Authorized: *MW*
Reported: 05/29/03

LABORATORY CONTROL SAMPLE RECOVERY REPORT
Analysed 05/23/03

CONSTITUENT	SPIKE FOUND	SPIKE ADDED	% RECOVERY	RPD
LABORATORY CONTROL				
Gasoline Range Hydrocarbons	132	125	99.6%	
LABORATORY CONTROL DUPLICATE				
Gasoline Range Hydrocarbons	123	125	98.4%	0.84

TPHg Surrogate Recovery

	LCS	LCSD
Trifluorotoluene	104%	107%
Bromobenzene	105%	106%

Values reported in parts per million (mg/kg)

TPHg SPIKE CONTROL LIMITS

Percent Recovery 61.0-123%

Advisory QA Limits

TFHD SURROGATE RECOVERY SUMMARY

Matrix: Soil

QC Report No: FM15-The Boeing Company
Project: Benton LOT 13B
8888.000

Client ID	O-TER	TOT OUT
052003MBS	86.2%	0
052003LCS	87.6%	0
U-SB06-L13B-0090	65.0%	0
052703MBS	80.0%	0
052703LCS	72.0%	0
U-SB07-L13B-0090	53.0%	0
U-SB08-L13B-0090	57.9%	0

LCS/MS LIMITS QC LIMITS

(O-TER) = o-Terphenyl

(41-131)

(30-106)

Prep Method: SW1545
Log Number Range: 03-5913 to 03-5915

ORGANICS ANALYSIS DATA SHEET
 TOTAL DIESEL RANGE HYDROCARBONS
 NWTPHD by GC/PID
 Page 1 of 1
 Matrix: Soil



QC Report No: FM15-The Boeing Company
 Project: Renton LOT 135
 8888.000

Data Release Authorized:
 Reported: 06/02/03

ARI ID	Sample ID	Extraction Date	Analysis Date	DL	Range	Result mg/kg
MB-052003 03-5913	Method Blank	05/20/03	05/23/03	1.0	Diesel Motor Oil HC ID o-Terphenyl	< 5.0 U < 10 U --- 80.2%
FM15A 03-5913	U-8806-L13B-0090	05/27/03	05/28/03	1.0	Diesel Motor Oil HC ID o-Terphenyl	19 < 10 U DRO 65.0%
MB-052703 03-5914	Method Blank	05/27/03	05/28/03	1.0	Diesel Motor Oil HC ID o-Terphenyl	> 5.0 U < 10 U --- 80.0%
FM15B 03-5914	U-8807-L13B-0090	05/20/03	05/23/03	10	Diesel Motor Oil HC ID o-Terphenyl	580 1,700 DRO/RRO 53.0%
FM15C 03-5915	U-8808-L13B-0090	05/20/03	05/23/03	1.0	Diesel Motor Oil HC ID o-Terphenyl	17 12 DRO/RRO 57.9%

Diesel quantitation on total peaks in the range from C12 to C24.
 Motor Oil quantitation on total peaks in the range from C24 to C38.
 HC ID: DRO/RRO indicates results of organics or additional hydrocarbons in
 ranges are not identifiable.

ORGANICS ANALYSIS DATA SHEET

NWTPED by GC/FID

Page 1 of 1

Sample ID: LCS-052003

LAB CONTROL

Lab Sample ID: LCS-052003

LIMS ID: 03-5913

Matrix: Soil

Data Release Authorized: 

Reported: 06/02/03

QC Report No: FM15-The Boeing Company

Project: Renton LOT 13B

8888.000

Date Sampled: 05/16/03

Date Received: 05/16/03

Date Extracted: 05/20/03

Date Analyzed: 05/23/03 01:12

Instrument/Analyst: PID/MDR

Sample Amount: 10.0 g

Final Extract Volume: 1.0 mL

Dilution Factor: 1.00

Range	Lab Control	Spike Added	Recovery
Diesel	125	150	82.0%

TPHD Surrogate Recovery

o-Terphenyl 87.6%

Results reported in mg/kg



ORGANICS ANALYSIS DATA SHEET

NWTRPD by GC/FID

Page 1 of 1

Sample ID: LCS-052703

LAB CONTROL

Lab Sample ID: LCS-050703

LIMS ID: 03-5914

Matrix: Soil

Data Release Authorized: *[Signature]*

Reported: 05/02/03

QC Report No: FM15-The Boeing Company

Project: Renton LOT 13B

8888,000

Date Sampled: 05/16/03

Date Received: 05/16/03

Date Extracted: 05/27/03

Date Analyzed: 05/28/03 11:37

Instrument/Analyst: FID/MDR

Sample Amount: 10.0 g

Final Extract Volume: 1.0 mL

Dilution Factor: 1.00

Range	Lab Control	Spike Added	Recovery
Diesel	107	150	71.3%

TPHD Surrogate Recovery

<i>o</i> -Terphenyl	72.0%
---------------------	-------

Results reported in mg/kg

TOTAL DIESEL RANGE HYDROCARBONS-EXTRACTION REPORT

Matrix: Soil
Date Received: 05/16/03

ARI Job: FM15
Project: Renton LOT 138
8888.000

ARI ID	Client ID	Sample Amt	Final Vol	Basis	Prep Date
03-5913-052003MB1	Method Blank	10.0 g	1.00 mL	-	05/20/03
03-5913-052003LCS1	Lab Control	10.0 g	1.00 mL	-	05/20/03
03-5913-FM15A	U-SB06-L13B-0090	9.33 g	1.00 mL	D	05/27/03
03-5914-052703MB1	Method Blank	10.0 g	1.00 mL	-	05/27/03
03-5914-052703LCS1	Lab Control	10.0 g	1.00 mL	-	05/27/03
03-5914-FM15B	U-SB07-L13B-0090	9.39 g	1.00 mL	D	05/20/03
03-5915-FM15C	U-SB08-L13B-0090	8.15 g	1.00 mL	D	05/20/03



**OnSite
Environmental Inc.**

Analytical Testing and Mobile Laboratory Services

May 21, 2003

Stephanie Lucas
Analytical Resources, Inc.
4611 South 134th Place, Suite 100
Tukwila, WA 98168

Re: Analytical Data for Project FM15
Laboratory Reference No. 0305-151

Dear Stephanie:

Enclosed are the analytical results and associated quality control data for samples submitted on May 19, 2003.

The standard policy of OnSite Environmental Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: May 21, 2003
Samples Submitted: May 19, 2003
Lab Reference: 05-151
Project: FM15

Case Narrative

Samples were collected on May 16, 2003. Samples were maintained at the laboratory at 4°C and followed SW846 analysis and extraction methods.

Volatile Petroleum Hydrocarbons Analysis

Any QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: May 21, 2003
 Samples Submitted: May 19, 2003
 Lab Reference: 05-151
 Project: FM15

VOLATILE PETROLEUM HYDROCARBONS

Date Extracted: 5-19-03
 Date Analyzed: 5-19-03

Matrix: Soil
 Units: mg/kg (ppm)

Lab ID: 05-151-01
 Client ID: 03-5913-FM15A

VPH:	Results	PQL
Aliphatic C5-C6	ND	5.0
Aliphatic C6-C8	ND	5.0
Aliphatic C8-C10	ND	5.0
Aliphatic C10-C12	ND	5.0
Total Aliphatic:	NA	
Aromatic C8-C10	ND	5.0
Aromatic C10-C12	ND	5.0
Aromatic C12-C13	ND	5.0
Total Aromatic:	NA	
Target Analytes:		
Methyl t-butyl ether	ND	0.052
Benzene	ND	0.010
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylene	ND	0.50
o-Xylene	ND	0.50

Surrogate:	Percent Recovery	Control Limits
Fluorobenzene	95	60-128

Flags:

Date of Report: May 21, 2003
 Samples Submitted: May 19, 2003
 Lab Reference: 05-151
 Project: FM15

VOLATILE PETROLEUM HYDROCARBONS

Date Extracted: 5-19-03
 Date Analyzed: 5-19-03

Matrix: Soil
 Units: mg/kg (ppm)

Lab ID: 05-151-02
 Client ID: 03-5914-FM15B

VPH:	Results	PQL
Aliphatic C5-C6	ND	5.0
Aliphatic C6-C8	ND	5.0
Aliphatic C8-C10	ND	5.0
Aliphatic C10-C12	7.2	5.0
Total Aliphatic:	7.2	
Aromatic C8-C10	ND	5.0
Aromatic C10-C12	14	5.0
Aromatic C12-C13	39	5.0
Total Aromatic:	53	
Target Analytes:		
Methyl t-butyl ether	ND	0.054
Benzene	ND	0.011
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylene	ND	0.50
o-Xylene	ND	0.50

Surrogate:	Percent Recovery	Control Limits
Fluorobenzene	93	60-128

Flags:

Date of Report: May 21, 2003
 Samples Submitted: May 19, 2003
 Lab Reference: 05-151
 Project: FM15

VOLATILE PETROLEUM HYDROCARBONS

Date Extracted: 5-19-03
 Date Analyzed: 5-19-03

Matrix: Soil
 Units: mg/kg (ppm)

Lab ID: 05-151-03
 Client ID: 03-5915-FM15C

VPH:	Results	PQL
Aliphatic C5-C6	ND	5.0
Aliphatic C6-C8	ND	5.0
Aliphatic C8-C10	ND	5.0
Aliphatic C10-C12	ND	5.0
Total Aliphatic:	NA	
Aromatic C8-C10	ND	5.0
Aromatic C10-C12	ND	5.0
Aromatic C12-C13	ND	5.0
Total Aromatic:	NA	
Target Analytes:		
Methyl t-butyl ether	ND	0.063
Benzene	ND	0.013
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylene	ND	0.50
o-Xylene	ND	0.50

Surrogate:	Percent Recovery	Control Limits
Fluorobenzene	76	60-128

Flags:

Date of Report: May 21, 2003
 Samples Submitted: May 19, 2003
 Lab Reference: 05-151
 Project: FM15

**VOLATILE PETROLEUM HYDROCARBONS
 METHOD BLANK QUALITY CONTROL**

Date Extracted: 5-19-03
 Date Analyzed: 5-19-03

Matrix: Soil
 Units: mg/kg (ppm)

Lab ID: MB0519S1

VPH:	Results	PQL
Aliphatic C5-C6	ND	5.0
Aliphatic C6-C8	ND	5.0
Aliphatic C8-C10	ND	5.0
Aliphatic C10-C12	ND	5.0
Total Aliphatic:	NA	
Aromatic C8-C10	ND	5.0
Aromatic C10-C12	ND	5.0
Aromatic C12-C13	ND	5.0
Total Aromatic:	NA	
Target Analytes:		
Methyl t-butyl ether	ND	0.050
Benzene	ND	0.010
Toluene	ND	0.50
Ethylbenzene	ND	0.50
m,p-Xylene	ND	0.50
o-Xylene	ND	0.50

Surrogate:	Percent Recovery	Control Limits
Fluorobenzene	91	60-128

Date of Report: May 21, 2003
Samples Submitted: May 19, 2003
Lab Reference: 05-151
Project: FM15

**VOLATILE PETROLEUM HYDROCARBONS
MS/MSD QUALITY CONTROL**

Date Extracted: 5-19-03

Date Analyzed: 5-19-03

Matrix: Soil

Units: mg/kg (ppm)

Spike Level: 1.00 ppm

Lab ID: 05-124-09 MS

05-124-09 MSD

	Result	Percent Recovery	Result	Percent Recovery	PQL	RPD
Methyl t-butyl ether	0.901	90	0.870	87	0.050	3.5
Benzene	0.905	91	0.870	87	0.010	3.9
Toluene	0.920	92	0.890	89	0.50	3.3
Ethylbenzene	0.945	95	0.915	92	0.50	3.2
m,p-Xylene	0.930	93	0.905	91	0.50	2.7
o-Xylene	0.920	92	0.895	90	0.50	2.8

Surrogate:	Percent Recovery	Percent Recovery	Control Limits
Fluorobenzene	89	86	60-128

Date of Report: May 21, 2003
Samples Submitted: May 19, 2003
Lab Reference: 05-151
Project: FM15

% MOISTURE

Date Analyzed: 5-19-03

Client ID	Lab ID	% Moisture
03-5913-FM15A	05-151-01	4.0
03-5914-FM15B	05-151-02	8.0
03-5915-FM15C	05-151-03	20



Data Qualifiers and Abbreviations

- A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.
- B - The analyte indicated was also found in the blank sample.
- C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.
- D - Data from 1:___ dilution.
- E - The value reported exceeds the quantitation range, and is an estimate.
- F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.
- G - Insufficient sample quantity for duplicate analysis.
- H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.
- I - Compound recovery is outside of the control limits.
- J - The value reported was below the practical quantitation limit. The value is an estimate.
- K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.
- L - The RPD is outside of the control limits.
- M - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.
- O - Hydrocarbons outside the defined gasoline range are present in the sample.
- P - The RPD of the detected concentrations between the two columns is greater than 40.
- Q - Surrogate recovery is outside of the control limits.
- S - Surrogate recovery data is not available due to the necessary dilution of the sample.
- T - The sample chromatogram is not similar to a typical _____.
- U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
- V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.
- W - Matrix Spike/Matrix Spike Duplicate RPD is outside control limits due to sample inhomogeneity.
- X - Sample extract treated with a silica gel cleanup procedure.
- Y - Sample extract treated with a silica gel/acid cleanup procedure.
- Z -
- ND - Not Detected at PQL
- MRL - Method Reporting Limit
- PQL - Practical Quantitation Limit
- RPD - Relative Percent Difference

Laboratory: Onsite Environmental, Inc.
Lab Contact: David Baumeister
Lab Address: 14648 N.E. 95th Street
Redmond, WA 98052
Phone: 425-883-3881
Fax: 425-885-4602

ARI Client: The Boeing Company
Project ID: 8888.000
ARI PMgr: Stephanie Lucas
Phone: (206) 340-2856 Ext 211
Fax: (206) 695-6201

05-151

Analytical Protocol: In-house
Special Instructions:

Requested Turn Around: **5/30/03**
Fax Results (Y/N): **YES**

Limits of Liability. Subcontractor is expected to perform all requested services in accordance with appropriate methodology following Standard Operating Procedures that meet standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the negotiated amount for said services. The agreement by the Subcontractor to perform services requested by ARI releases ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Subcontractor.

ARI Sample ID	Client Sample ID/ Add'l Sample ID	Sampled	Matrix	Bottles	Analyses	%MOISTURE	
1 03-5913-FM15A	U-SB06-L13B-0090	5/16/03	Soil	1	VPH	✓	
Special Instructions: NONE							
2 03-5914-FM15B	U-SB07-L13B-0090	5/16/03	Soil	1	VPH	↓	
Special Instructions: NONE							
3 03-5915-FM15C	U-SB08-L13B-0090	5/16/03	Soil	1	VPH		
Special Instructions: NONE							

⊕ Not full Package -
Regular Deliverables + excel add.

Carrier	ARI COURIER	Airbill	Date
Relinquished by	<i>[Signature]</i>	Company	ARI
Received By	<i>[Signature]</i>	Company	OSE
		Date	5/19/03
		Date	5/19/03
		Time	1320
		Time	120

BORING LOGS

PROJECT: LOT 13B, BOEING RENTON PLANT Renton, Washington		Log of Boring No. SB-06	
BORING LOCATION: Lot 13B; 23' S of North 6th St. & 5' W of fence		ELEVATION AND DATUM: Not surveyed; datum is ground surface	
DRILLING CONTRACTOR: Lynn Goble, Cascade Drilling, Inc.		DATE STARTED: 5/16/03	DATE FINISHED: 5/16/03
DRILLING METHOD: Direct push		TOTAL DEPTH (ft.): 10.0	MEASURING POINT: Ground surface
DRILLING EQUIPMENT: Dledrich D-25		DEPTH TO WATER (ft.):	FIRST 9.0
SAMPLING METHOD: Geoprobe large bore sampler [22" x 1.0625"]		LOGGED BY: K. Alexander	
HAMMER WEIGHT: NA	DROP: NA	RESPONSIBLE PROFESSIONAL: K. Alexander	REG. NO. L.H.G. 2281

DEPTH (feet)	SAMPLES			OVM READING (ppm)	DESCRIPTION NAME (USCS): color, moist, % by wt., plasti. density, structure, cementation, react. w/HCl, geo. inter.	REMARKS
	Sample No.	Sample	Blows/ Foot			
					Surface Elevation: Not surveyed	
0					ASPHALTIC CONCRETE AGGREGATE BASE	
1				0	SILTY SAND (SM): olive (5Y 5/4), dry, 70% fine sand, 20% nonplastic fines, 10% coarse subrounded sand, dense [FILL]	OVM = Thermo Environmental Instruments 580B PID calibrated with 100 ppm isobutylene standard.
2					SILT (ML): olive brown (2.5Y 4/4), dry, nonplastic, trace brown mottling, trace rootlets, stiff	
3				0	SILTY SAND (SM): olive brown (2.5Y 4/4), dry, fine sand, medium dense	
4						
5				0	WELL GRADED SAND with GRAVEL (SW): olive brown (2.5Y 4/3), dry, 75% fine to coarse sand, 20% subrounded to subangular gravel (to 3/4"), 5% fines, very dense	
6						
7				1	WELL GRADED GRAVEL with SILT and SAND (GW-GM): various brown and gray color, dry, 80% subrounded gravel (to 3/4"), 30% fine to coarse sand, 10% low plasticity fines, very dense	
8						
9				0	WELL GRADED SAND with SILT and GRAVEL (SW-SM): various brown and gray color, moist, 60% fine to coarse sand, 30% subrounded gravel (to 1"), 10% low plasticity fines, very dense ↓ wet	
10					Bottom of boring at 10.0 feet	
11						
12						
13						
14						
15						



PROJECT: LOT 13B, BOEING RENTON PLANT Renton, Washington		Log of Boring No. SB-07	
BORING LOCATION: Lot 13B; 32' S of North 6th St. & 4.5' W of fence		ELEVATION AND DATUM: Not surveyed; datum is ground surface	
DRILLING CONTRACTOR: Lynn Goble, Cascade Drilling, Inc.		DATE STARTED: 5/16/03	DATE FINISHED: 5/16/03
DRILLING METHOD: Direct push		TOTAL DEPTH (ft.): 11.0	MEASURING POINT: Ground surface
DRILLING EQUIPMENT: Diedrich D-25		DEPTH TO WATER (ft.): 9.0	FIRST COMPL NA
SAMPLING METHOD: Geoprobe large bore sampler [22" x 1.0625"]		LOGGED BY: K. Alexander	
HAMMER WEIGHT: NA	DROP: NA	RESPONSIBLE PROFESSIONAL: K. Alexander	REG. NO. L.H.G. 2281

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			
					Surface Elevation: Not surveyed.	
					ASPHALTIC CONCRETE AGGREGATE BASE	
1				0	SILTY SAND (SM): olive (5Y 5/4), dry, 70% fine sand, 20% nonplastic fines, 10% coarse subrounded sand, trace subrounded gravel (to 1/2"), dense [FILL]	OVM = Thermo Environmental Instruments 580B PID calibrated with 100 ppm isobutylene standard.
2				0	SILT (ML): olive brown (2.5Y 4/4), dry, trace brown mottling trace rootlets, nonplastic, stiff	
3				0	SILTY SAND (SM): olive brown (2.5Y 4/4), dry, fine sand, medium dense	
4						
5				0	WELL GRADED SAND with GRAVEL (SW): olive brown (2.5Y 4/3), dry, 75% fine to coarse sand, 20% subrounded to subangular gravel (to 3/4"), 5% fines, very dense	
6						
7				0	WELL GRADED GRAVEL with SILT and SAND (GW-GM): various brown and gray color, dry, 60% subrounded gravel (to 3/4"), 30% fine to coarse sand, 10% low plasticity fines, very dense	
8						
9				11	WELL GRADED SAND with SILT and GRAVEL (SW-SM): various brown and gray color, 60% fine to coarse sand, 30% subrounded gravel (to 1"), 10% low plasticity fines, very dense wet visible sheen on gravel	
10						
11					Bottom of boring at 11.0 feet	Borehole sealed with bentonite granules.
12						
13						
14						
15						

PROJECT: LOT 13B, BOEING RENTON PLANT Renton, Washington		Log of Boring No. SB-08	
BORING LOCATION: Lot 13B; 51' S of North 6th St. & 4.25' W of fence		ELEVATION AND DATUM: Not surveyed; datum is ground surface	
DRILLING CONTRACTOR: Lynn Goble, Cascade Drilling, Inc.		DATE STARTED: 5/16/03	DATE FINISHED: 5/16/03
DRILLING METHOD: Direct push		TOTAL DEPTH (ft.): 10.0	MEASURING POINT: Ground surface
DRILLING EQUIPMENT: Diedrich D-25		DEPTH TO WATER (ft.)	FIRST 9.0
SAMPLING METHOD: Geoprobe large bore sampler [22" x 1.0625"]		LOGGED BY: K. Alexander	
HAMMER WEIGHT: NA	DROP: NA	RESPONSIBLE PROFESSIONAL: K. Alexander	REG. NO.: LHG 2281

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			
					Surface Elevation: Not surveyed	
0					ASPHALTIC CONCRETE AGGREGATE BASE	
1				0	SILTY SAND (SM): olive (5Y 5/4), dry, 70% fine sand, 20% nonplastic fines, 10% coarse subrounded sand, trace subrounded gravel (to 1/2"), dense [FILL]	OVM = Thermo Environmental Instruments 580B PID calibrated with 100 ppm isobutylene standard.
2					SILT (ML): olive brown (2.5Y 4/4), dry, trace brown mottling trace rootlets, nonplastic, stiff	
3				1	SILTY SAND (SM): olive brown (2.5Y 4/4), dry, fine sand, medium dense	
4						
5				0		
6					WELL GRADED SAND (SW): olive brown (2.5Y 4/3), dry, fine to coarse sand, trace subrounded gravel (to 3/8"), dense	
7				0		
8					WELL GRADED SAND with GRAVEL (SW): olive brown (2.5Y 4/3), dry, 80% fine to coarse sand, 20% subrounded gravel (to 3/4"), dense	
9					POORLY GRADED SAND (SP): brown (7.5Y 4/4), dry, fine sand, trace subrounded gravel (to 3/4"), dense	
10				2	WELL GRADED SAND with SILT and GRAVEL (SW-SM): various brown and gray color, moist, 60% fine to coarse sand, 30% subrounded gravel (to 1"), 10% low plasticity fines, very dense	Borehole sealed with bentonite granules.
10					wet	
10					WOOD, 100%, saturated	
11					Bottom of boring at 10.0 feet	
12						
13						
14						
15						

